



INTERPLAN

INTEgrated opeRation PLAnning tool towards the Pan-European Network

Work Package 7

Dissemination, communication and exploitation

Deliverable 7.4

Progress report on the cooperation with national and international projects and initiatives (second year)

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Abbreviations

<i>AIT</i>	Austrian Institute of Technology
<i>CSA</i>	Coordination and support actions
<i>DER</i>	Distributed Energy Resource
<i>DERlab</i>	European Distributed Energy Resources Laboratories
<i>DG</i>	Distribution Grid
<i>DR</i>	Demand Response
<i>DSO</i>	Distribution System Operator
<i>EDF</i>	Électricité de France
<i>ELECTRA IRP</i>	European Liaison on Electricity Committed Towards long-term Research Activity Integrated Research Programme
<i>EMS</i>	Energy Management System
<i>ENEA</i>	Italian National Agency for New Technologies, Energy and Sustainable Economic Development
<i>ENTSO-E</i>	European Network of Transmission System Operators for Electricity
<i>ESS</i>	Energy Storage System
<i>EU</i>	European Union
<i>EV</i>	Electric Vehicle
<i>H2020</i>	Horizon 2020
<i>ICT</i>	Information and Communication Technology
<i>IEE</i>	Fraunhofer Institute for Energy Economics and Energy System Technology
<i>IEn</i>	Institute of Power Engineering
<i>INEA</i>	Innovation and Networks Executive Agency
<i>IRED</i>	International Conference on Integration of Renewable and Distributed Energy Resources
<i>JP</i>	Joint Program
<i>LCS</i>	Low Carbon Society Strategy
<i>LV</i>	Low Voltage
<i>MI</i>	Mission Innovation
<i>MV</i>	Medium Voltage
<i>PC</i>	Project Coordinator
<i>PV</i>	Photovoltaics
<i>R&D</i>	Research and Development
<i>RES</i>	Renewable Energy System
<i>SC</i>	Steering Committee
<i>SET-Plan</i>	Strategic Energy Technology Plan
<i>TRL</i>	Technology Readiness Level

<i>TSO</i>	Transmission System Operator
<i>UCY</i>	University of Cyprus
<i>VPP</i>	Virtual power plant
<i>WP</i>	Work Package

Executive Summary

Deliverable D7.4 reports the collaborative activities with international and national research and development (R&D) projects, initiatives, networks, and platforms in the field of smart grids, which have been planned and performed during the second year of the INTERPLAN project. During this period, a cooperation with 14 EU funded projects, 3 national projects, 2 European programs, one European platform, one national electric authority, one laboratory, one working group, one international network and one global initiative, which all are dealing with different aspects of smart grids, has been established. This collaboration and information exchange has been realized by means of emails exchange, webinars, joint events like workshops and joint papers, round tables, etc.

Most collaborative activities in this period focused on use cases and showcases developments. They have already brought various benefits and inputs like valuable feedback on the integrated network operation planning tool development and for the INTERPLAN scenarios and use cases i.e., forming the grid case study, time series etc., the identification of possible synergies and joint opportunities. Furthermore, valuable feedback on INTERPLAN's intermediary results has been received. INTERPLAN had also the chance to visualise the basic principle of one of the use cases developed (Use case 5 "Power balancing at DSO level") within a laboratory the project is in collaboration with.

1 Introduction

The goal of the INTERPLAN project is to provide an INTEgrated opeRation PLANning tool towards the pan-European network, to support the European Union in reaching the expected low-carbon targets, while maintaining the network's security. The project aims to generate grid equivalent models as a growing library able to cover all relevant system connectivity possibilities occurring in the real grid by addressing operation planning issues at all network levels (transmission, distribution and TSO-DSO interfaces). The chosen top-down approach leads to an "integrated" tool, both in terms of voltage levels, going from high voltage down to low voltage up to the end-user, and in terms of building a bridge between static, long-term planning and considering operational issues by introducing controllers in the operation planning. Proper cluster and interface controllers are developed to intervene in presence of criticalities, by exploiting the flexibility potentials throughout the grid.

To facilitate the work targeted through the project, it is necessary to identify the current policies, regulations and practices in the Member States and relate these to the needs of the grid to merge with the specific characteristics of the emerging technologies: distributed intermittent RES, storage systems, EVs including smart charging, and DR. These findings have been assigned to the required system functionalities, and related to possible scenarios that have been put forward in other projects and were identified in WP3. These scenarios were finalised in WP3 and used in WP4 and 5 to develop the targeted solutions of INTERPLAN for effectively handling the above referred emerging technologies. This process has helped identifying the real shortcomings faced by the industry today, which will gradually grow into substantial limitations that will hinder the optimal development of the grid and its effective operation in the day-to-day work of system operators.

1.1 Purpose of the Document

The purpose of deliverable D7.4 is to summarise the progress of the collaborative activities that have been planned and performed during the second year of the INTERPLAN project within WP7 "Dissemination, communication and exploitation". Collaborations will be fostered and monitored throughout the project duration. An updated version of deliverable D7.4 is planned for the third which is the final year of INTERPLAN to document the status of the networking activities. The provided information in this document was gathered through a questionnaire circulated between all INTERPLAN partners. The exchange activities are realised through regular contacts with consortia of relevant smart grid projects in form of webinars, newsletters, email exchange, joint papers, meetings and workshops. The cooperation fosters the establishment of liaisons with relevant international initiatives, networks and platforms, dealing with similar topics. DERlab ensures a close contact with relevant academia, industry and research institutes from Europe and the US via its networks. In addition to the collaborative activities, a short description and an overview of each international/European/national project, initiative, network, and platform is provided. Moreover, relevant contact persons and representatives of each side are being introduced.

1.2 Structure of the Document

This document is organised as follows: section 0 provides information about the performed, ongoing and planned collaborative activities with relevant smart grid projects' consortia. In addition, short descriptions of these projects are provided. Section 3 describes collaborative activities within international initiatives, networks, and programs dealing with relevant activities for INTERPLAN. Other collaborations are described in section 4. Finally, a conclusion of the report is provided in section 5.

2 Collaboration and Information Exchange with relevant European and National Projects

The following table provides a brief overview of the R&D projects which have been in cooperation with INTERPLAN during the second year of the project or have the potential of performing collaborative activities with the project in the near future.

Table 1: List of European and national projects

ID No.	Name	Funding Framework	Website	INTERPLAN Contact Persons	Project Contact Persons
1	PANTERA	H2020	https://pantera-platform.eu/	Ata Khavari, Melissa Setakhr (DERlab)	Venizelos Efthymiou, Christina Papadimitriou (FOSS) Mohamed Shalaby (DERlab)
2	EU SysFlex	H2020	https://eu-sysflex.com/	Jan Ringelstein (IEE)	Sebastian Wende-von Berg (IEE)
3	E-Lobster	H2020	http://www.e-lobster.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Gianni Loriga
4	Storage4grid	H2020	http://www.storage4grid.eu/pages/index.html	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Mihai Sanduleac (MicroDERlab)
5	Net2dg	H2020	http://www.net2dg.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Karsten Handrup
6	United-grid	H2020	https://united-grid.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Tuan Le
7	Sogno	H2020	https://www.sogno-energy.eu/	Viviana Cigolotti, Marialaura Di Somma,	Antonello Monti (RWTH Aachen)

				Giorgio Graditi (ENEA)	
8	TDX-ASSIST	H2020	http://www.tdx-assist.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Gareth Taylor
9	Plan4res	H2020	https://www.plan4res.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Sandrine Charousset (EDF)
10	eDream	H2020	https://edream-h2020.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Vincenzo Croce (ENGINEERING)
11	Flexcoop	H2020	http://www.flexcoop.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Silke Cuno (Fraunhofer FOKUS)
12	Delta	H2020	https://www.delta-h2020.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Dimosthenis Ioannidis
13	Drive	H2020	https://www.h2020-drive.eu/	Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)	Monjur Mourshed
14	Chester	H2020	https://www.chester-project.eu/	Ata Khavari (DERlab)	Federico Bava (PlanEnergy)
15	Netzregelung 2.0	National German	<a href="https://www.iee.fraunhofer.de/de/presse-
infothek/Presse-
Medien/Pressemitteilungen/2018/netzregelung-2-0.html">https://www.iee.fraunhofer.de/de/presse- infothek/Presse- Medien/Pressemitteilungen/2018/netzregelung-2-0.html	Ata Khavari (DERlab)	Keerthi Vishwanath (DERlab)
16	SystemKontext	National German	-	Saber Talari (IEE, DERlab)	Denis Mende (IEE)
17	Ladeinfrastruktur 2.0	National German	<a href="https://www.iee.fraunhofer.de/de/projekte/su
che/laufende/ladeinfrastruktur2-0.html">https://www.iee.fraunhofer.de/de/projekte/su che/laufende/ladeinfrastruktur2-0.html	Jan Ringelstein (IEE)	Christian Spalthoff (IEE)
18	LEAFS	National Austrian	<a href="https://www.energieforschung.at/projekte/28
4/integration-of-loads-and-electric-storage-
systems-into-advanced-flexibility-schemes-">https://www.energieforschung.at/projekte/28 4/integration-of-loads-and-electric-storage- systems-into-advanced-flexibility-schemes-	Helfried Brunner (AIT)	Johannes Kathan (AIT)

			<u>for-lv-networks</u>		
19	ABS4TSO	National Austrian	<u>https://www.energieforschung.at/projekte/1012/advanced-balancing-services-for-transmission-system-operators</u>	Helfried Brunner (AIT)	Michaela Leonhardt (APG) Adolfo Anta (AIT)

2.1 PAN European Technology Energy Research Approach (PANTERA)

Type – Country: Project/ Platform - European

Funding Framework: Horizon 2020

Coordinator: FOSS

Website: <https://pantera-platform.eu/>

Project duration: January 2019 - December 2022

Contact persons on behalf of INTERPLAN: Ata Khavari, Melissa Setakhr (DERlab)

Contact persons on behalf of PANTERA: Venizelos Efthymiou, Christina Papadimitriou (FOSS), Mohamed Shalaby (DERlab)

Description: PAN European Technology Energy Research Approach (PANTERA) is a EU H2020 project aimed at setting up a European forum composed of Research & Innovation stakeholders active in the fields of smart grids, storage and local energy systems, including policy makers, standardisation bodies and experts in both research and academia, representing the EU energy system.

Collaboration activities: PANTERA project aims to identify the needs and missing links that hinder the R&D on smart grids for the European platform by engaging different stakeholders through workshops and consultation processes. Under this prism, PANTERA is in collaboration with INTERPLAN and especially with WP2 activities that highlight the needs for regulation and grid codes and provide recommendation.

2.2 EU SysFlex “Pan-European system with an efficient coordinated use of flexibilities for the integration of a large share of RES “

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: EIRGRID

Website: <https://eu-sysflex.com/>

Project duration: November 2017 – October 2021

Contact persons on behalf of INTERPLAN: Jan Ringelstein (IEE)

Contact persons on behalf of EU SysFlex: Sebastian Wende-von Berg (IEE)

Description: EU-SysFlex stands for “Pan-European system with an efficient coordinated use of flexibilities for the integration of a large share of RES”. It develops new types of services to meet the needs of the European electric energy supply with over 50% of renewable sources. The project identifies issues and solutions related to integrating such large-scale of renewables, provide practical assistance to power system operators across Europe, and identify a long-term roadmap for renewables integration in Europe. Part of this work is finding the right blend of flexibility and system services to support secure and resilient transmission system operation. The project

receives 20 Mio € EC contribution and includes 34 partners: TSOs, DSOs, aggregators, technology providers, consultants and research.

Collaboration activities: INTERPLAN was presented by Prof. Martin Braun along with EU-SysFlex at the IEEE PES General Meeting in Atlanta, GA, USA, on August 6th 2019. Since Fraunhofer is involved in both projects, there will be the opportunity to exchange findings and results.

2.3 E-Lobster

Type - Country: Project - European

Funding Framework: Horizon 2020

Coordinator: RINA CONSULTING SPA

Website: <http://www.e-lobster.eu/>

Project duration: June 2018 - November 2021

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of E-Lobster: Gianni Loriga

Description or focus area: The RES progressive penetration introduced an increasing degree of uncertainty on the direction of power flows. The networks are looking at integrated solutions targeting: i) reduction of electricity losses ii) increase the grid stability in a high local RES penetration scenario iii) accommodate the needs of new energy actors such as EVs, electrical storages and prosumers. Electrified transport networks such as light railways could act to enhance distribution grid stability providing ancillary services inter-exchanging electricity. However such potential is still unexploited. E-LOBSTER intends to capture such potential through the development of an innovative, economically viable and easily replicable electric Transport-Grid Inter-Connection System that will be able to establish synergies between power distribution networks, electrified transport networks (metro, trams, light railways etc.) and charging stations for EVs. The proposed solution encompasses the integration of high-power flow electric storage with smart soft open points providing flexible control. The system will be managed by an integrated railway plus grid management system which starting from the real time analysis of energy losses will be able to optimise the interexchange of electricity between the networks maximising local RES self-consumption.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
- Exchange deliverables;
- Common distribution list, repository, discussion forum;
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels.

2.4 Storage4grid

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: FONDAZIONE LINKS - LEADING INNOVATION & KNOWLEDGE FOR SOCIETY

Website: <http://www.storage4grid.eu/>

Project duration: December 2016 - February 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Storage4grid: Mihai Sanduleac (MicroDERlab)

Description or focus area: The Storage4Grid (S4G) vision is to provide utilities and end-users with new tools for optimal grid planning, use and evaluation of storage technologies. S4G pre-designs new storage control models and interfaces built upon existing standards and suitable to support scalable and cost-efficient coordination of heterogeneous ESS. S4G will deliver: (i) a Decision Support Framework allowing utilities to evaluate costs and benefits of existing and hypothetical storage installations, for various energy use patterns and regulatory landscapes; (ii) a Distributed Control methodology for ESS; (iii) an innovative Unbundled Smart Meter to enable ESS control in real-life settings; (iv) an Energy Router for provision of future grid services by ESS.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
- Exchange deliverables;
- Common distribution list, repository, discussion forum;

Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels.

2.5 Net2dg

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: AALBORG UNIVERSITET

Website: <http://www.net2dg.eu>

Project duration: January 2018 - June 2021

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Net2dg: Karsten Handrup

Description or focus area: The Net2DG project develops a proof-of-concept solution based on off-the-shelf computing hardware that uses existing communication technologies to leverage measurement capabilities of Smart Meters and DER inverters deployed in low-voltage (LV) grids. The solution will correlate this data with information from existing DSO subsystems in order to provide novel LV grid observability applications for voltage quality, grid operation efficiency and LV grid outage diagnosis. The resulting observability is subsequently used by specifically developed robust control and coordination approaches, which utilise existing actuation capabilities for voltage quality enhancement and loss minimisation in the LV grid.

The use of off-the-shelf components, the system level resilience and security solution, and the offered customisability of the Net2DG approach specifically address the needs of small and medium-sized DSOs (less than 100.000 clients).

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
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- Common distribution list, repository, discussion forum;
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2.6 United-grid

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: CHALMERS TEKNISKA HOEGSKOLA AB

Website: <https://united-grid.eu/>

Project duration: November 2017 - April 2021

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of United-grid: Tuan Le

Description or focus area: UNITED-GRID develops a tool-box with technologies enabling at least 80% renewable-based energy production on an annual basis, with an increased reliability performance of 50%, while decreasing grid losses by 10%. The developed technologies include solutions for real-time system awareness and control, short term generation and load forecasting, setting-less protection schemes and new business models. The tool-box will be integrated into a professional system ensuring interoperability and smooth integration with existing EMS/DMS on the market.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls

within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
- Exchange deliverables;
- Common distribution list, repository, discussion forum;
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels.

2.7 Sogno

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: ERICSSON GMBH

Website: <https://www.sogno-energy.eu/>

Project duration: January 2018 - June 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Sogno: Antonello Monti (RWTH Aachen)

Description or focus area: SOGNO combines the application of deep intelligence techniques, industry grade data analysis and visualisation tools, advanced sensors, an advanced power measurement unit and 5G based ICT to provide fine grained visibility and control of both MV and LV power networks using end-to-end automation in a virtualised environment. The project’s results are provided as turnkey services, validated in DSO field trials (to TRL level 6) preparing them for market introduction, beginning shortly after the project ends.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
- Exchange deliverables;
- Common distribution list, repository, discussion forum;
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels.

2.8 TDX-ASSIST

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: BRUNEL UNIVERSITY LONDON

Website: <http://www.tdx-assist.eu>

Project duration: October 2017 - September 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of TDX-ASSIST: Gareth Taylor

Description or focus area: The project aims to design and develop novel ICT tools and techniques that facilitate scalable and secure information systems and data exchange between TSO and DSO. The three novel aspects of ICT tools and techniques to be developed in the project are: scalability – ability to deal with new users and increasingly larger volumes of information and data; security – protection against external threats and attacks; and interoperability – information exchange and communications based on existing and emerging international smart grid ICT standards.

The project focuses on TSO-DSO interoperability. In this context, the project will also consider DSO to other Market-participants (DSOs, Aggregators, Distributed Energy Resource Operators, Micro-grid Operators) and information or data access portals that enable business processes involving relevant actors in the electrical power sector.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 2 “New compatible architectures for the grid” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together;
- Exchange deliverables;
- Common distribution list, repository, discussion forum;

Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.9 Plan4RES

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: BRUNEL UNIVERSITY LONDON

Website: <https://www.plan4res.eu/>

Project duration: November 2017 - October 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Plan4RES: Sandrine Charouset (EDF)

Description or focus area: Plan4RES is a collaborative research and innovation project which aims at developing an end-to-end planning tool to successfully increase the share of renewable energy into the European Energy system without compromising on system reliability. The targeted platform gives account for the Pan-European interconnected electricity system, potential synergies with other energy systems, emerging technologies and flexibility resources, providing a fully integrated modelling environment. The objective is to strive towards a system where a multiplicity of models, properly organised in a functional hierarchy, synergistically contribute to the analysis of

such complex systems. Targeting all main stakeholders of the power system, from generation to retail through grid operators, this innovative modelling platform will deliver a full system planning capability while considering a large set of future uncertainties, thus acting as a decision-making tool for future investments.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 4 “Flexibility assessment and modelling, including probabilistic services” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together
- Exchange deliverables
- Common distribution list, repository, discussion forum
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.10 eDream

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: ENGINEERING - INGEGNERIA INFORMATICA SPA

Website: <https://edream-h2020.eu/>

Project duration: January 2018 - December 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of eDream: Vincenzo Croce (ENGINEERING)

Description or focus area: The eDREAM project aims to develop new solutions for DSOs, as well as improving decision-making of aggregators and energy retailers using a new decentralised and community-driven energy ecosystem by fully integrating the micro-grid and VPPs (Virtual Power Plants) to local power disruption network.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 4 “Flexibility assessment and modelling, including probabilistic services” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together
- Exchange deliverables
- Common distribution list, repository, discussion forum
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.11 Flexcoop

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: Fraunhofer FOCUS

Website: <http://www.flexcoop.eu/>

Project duration: January 2018 - December 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Flexcoop: Silke Cuno (Fraunhofer FOKUS)

Description or focus area: FLEXCoop introduces an end-to-end Automated Demand Response Optimisation Framework. It enables the realisation of novel business models, allowing energy cooperatives to introduce themselves in energy markets under the role of an aggregator. It equips cooperatives with innovative and highly effective tools for the establishment of robust business practices to exploit their microgrids and dynamic VPPs as balancing and ancillary assets toward grid stability and alleviation of network constraints.

Optimisation in FLEXCoop applies to multiple levels. It spans local generation output, demand and storage flexibility, as well as the flexibility offered by EVs to facilitate maximum RES integration into the grid, avoidance of curtailment and satisfaction of balancing and ancillary grid needs. This is achieved via automated, human-centric demand response schemes with the participation of appropriately selected residential prosumers.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 4 “Flexibility assessment and modelling, including probabilistic services” and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together
- Exchange deliverables
- Common distribution list, repository, discussion forum
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.12 Delta

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS

Website: <https://www.delta-h2020.eu/>

Project duration: May 2018 - April 2021

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Delta: Dimosthenis Ioannidis

Description or focus area: DELTA proposes a DR management platform that distributes parts of

the Aggregator's intelligence into lower layers of a novel architecture, based on VPP principles, in order to establish a more easily manageable & computationally efficient DR solution, ultimately aiming to introduce scalability & adaptiveness into the Aggregator's DR toolkits; the DELTA engine will be able to adopt & integrate multiple strategies & policies provided from its energy market stakeholders, making it authentically modular & future-proof.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 4 "Flexibility assessment and modelling, including probabilistic services" and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together
- Exchange deliverables
- Common distribution list, repository, discussion forum
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.13 Drive

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: R2M SOLUTION SPAIN SL

Website: <https://www.h2020-drive.eu/>

Project duration: December 2017 - November 2020

Contact persons on behalf of INTERPLAN: Viviana Cigolotti, Marialaura Di Somma, Giorgio Graditi (ENEA)

Contact persons on behalf of Drive: Monjur Mourshed

Description or focus area: DRIVE project develops and validates a fully-integrated ICT infrastructure consisting of interoperable DR-enabling Energy Management solutions for residential and tertiary buildings and platform for effective and secure management of flexibility at the level of the distribution grid.

Collaboration activities: INTERPLAN collaborated with this project within the framework of H2020 Smart Grids and Storage projects clustering initiative. In more detail, the collaboration falls within the cluster area 4 "Flexibility assessment and modelling, including probabilistic services" and consists of the following actions:

- Establish common terminology, common workshops, discuss business cases or use cases together
- Exchange deliverables
- Common distribution list, repository, discussion forum
- Common events like the H2020 Smart Grids and Storage projects clustering workshop 2019 organised by INEA on October 2019 in Brussels

2.14 Chester

Type – Country: Project - European

Funding Framework: Horizon 2020

Coordinator: Tecalia

Website: <https://www.chester-project.eu>

Project duration: April 2018 – March 2022

Contact persons on behalf of INTERPLAN: Ata Khavari (DERlab)

Contact persons on behalf of Drive: Mo Federico Bava (PlanEnergy)

Description or focus area: The main objective of the CHESTER project is the development and validation of an innovative system that allows for energy management, storage and dispatchable supply of many different RES by combining the electricity sector with the heat sector. This is done by combining an innovative power-to-heat-to-power energy storage system, the so called CHEST (Compressed Heat Energy Storage) system with Smart District Heating thus leading to a very flexible and smart renewable energy management system that is able to store electric energy with a round trip efficiency of 100% or even higher, site-independent unlike pumped hydro, cyclically stable unlike batteries, able to convert power into heat, able to convert renewable low temperature heat into power, able to store and deliver independently from each other upon request both, heat and power, cost competitive.

Collaboration activities: INTERPLAN shared the identified future pan-European grid scenarios within the first year of the project with Chester consortium. This collaboration was initiated in “H2020 Low TRL Smart Grids and Storage Projects clustering event” organised by European commission.

2.15 Netzregelung 2.0 (Grid Control 2.0)

Type – Country: Project – National German

Funding Framework: Federal Ministry of Economic Affairs and Energy

Coordinator: Fraunhofer IEE

Project duration: December 2017 - November 2021

Website: <https://www.iee.fraunhofer.de/de/presse-infothek/Presse-Medien/Pressemitteilungen/2018/netzregelung-2-0.html>

Contact persons on behalf of INTERPLAN: Ata Khavari (DERlab)

Contact persons on behalf of Netzregelung 2.0: Keerthi Vishwanath A. R. (DERlab)

Description: To cut down the greenhouse gases emission levels, conventional power plants will be replaced with decentralised generation (renewable energy resources) in the near future. In this research project “Grid Control 2.0”, research institutes, inverter manufacturing company, technical regulator of power grids in Germany and grid operators are trying to coming up with new technologies in which the electric grid will be mainly operated from inverter-connected generators, without compromising safety and stability of the grid. To attain frequency and voltage stability from the grid inverters, it should possess similar properties like that of synchronous generators. Grid-

forming inverters would replace today's conventional power plants providing virtual inertia.

Grid codes set the minimum technical requirements for connecting renewable energy resources and battery systems, which were harmonised recently at all the voltage levels. After completion of this project, the results from this project would also help in further improvising the aforementioned technical guidelines.

Collaboration activities: Information exchange in the IRED 2018 Side Event, on 17 October 2018. Maria Valenti (ENEA) shared key research questions and project objectives of INTERPLAN. The research work done in INTERPLAN would be useful in grid code development in Netzregelung 2.0.

2.16 SystemKontext

Type – Country: Project - National German

Funding Framework: Federal Ministry of Economic Affairs and Energy

Coordinator: Fraunhofer IEE

Project duration: March 2016 – February 2019

Contact persons on behalf of INTERPLAN: Saber Talari (IEE, DERlab)

Contact persons on behalf of SystemKontext: Denis Mende

Description or focus area: The project aims to tackle several current and emerging challenges arising for the electrical power system because of the paradigm shift in the electric power generation towards decentralised generation and the coupling of different energy sectors such as electricity, transportation and heating. To be able to model these challenges and find proper solutions to today's' and tomorrow's' questions, power market and power grid modelling are connected. The overall aim of the project SystemKontext is to identify an appropriate level of detail for modelling the European energy system in order to evaluate a specific region, e. g. Germany. To reach this aim, the first step is to compare established scenarios.

Collaboration activities: The concept of SystemKontext is about the modelling of national energy supply structures in the European context and the implementation of the appropriate optimization approach in a new structure of European energy system. This can give a useful perspective of the INTERPLAN tool and will be further studied in the context of the exploitation activities of the tool.

2.17 Ladeinfrastruktur 2.0

Type – Country: Project - National German

Funding Framework: Federal Ministry of Economic Affairs and Energy

Coordinator: Fraunhofer IEE

Website: <https://www.iee.fraunhofer.de/de/projekte/suche/laufende/ladeinfrastruktur2-0.html>

Project duration: November 2018 – October 2022

Contact persons on behalf of INTERPLAN: Jan Ringelstein (IEE)

Contact persons on behalf of Ladeinfrastruktur 2.0: Christian Spalthoff (IEE)

Description: The growing share of electric mobility requires a sustainable integration of battery powered vehicles into the German energy system. Because of the complexity of the system and the interdependencies of technological solutions, a consideration of singular subsystems, e.g. electric grid, IT network, charging technology or cars, is not sufficient. Hence, the project aims at finding a technological and economical optimal solution for building up and operating electric vehicle charging stations in distribution networks with high shares of renewables expected until 2040. The focus is on grid planning and grid operation in low and medium voltage levels. The project includes eight partners: car technology providers, DSOs, and research.

Collaboration activities: Like INTERPLAN, the project uses the OpSim platform for co-simulation of grid operation with usage of distributed controllers. As Fraunhofer IEE is participating in both projects; there is an ongoing exchange of knowledge.

2.18 Leafs - LV Loads and Storage Integration

Type – Country: Project – National Austrian

Funding Framework: Climate and Energy Fund, Energy Research

Coordinator: AIT Austrian Institute of Technology

Website: <https://www.energieforschung.at/projekte/284/integration-of-loads-and-electric-storage-systems-into-advanced-flexibility-schemes-for-lv-networks>

Project duration: November 2015 – March 2019

Contact persons on behalf of INTERPLAN: Helfried Brunner (AIT)

Contact persons on behalf of LEAFS: Johannes Kathan (AIT)

Description: Leafs evaluates the effects of increased customer and energy market driven utilisation of energy storage systems and load flexibility on power distribution grids. Technologies and operation strategies are developed that enable optimal use of distribution grid infrastructure by activating flexibilities using direct or indirect control also by the local grid operator or even incentives. The consumer benefits from more flexible integration of distributed energy resources at minimum network reinforcement costs as well as achieving a higher self-consumption level for customers operating their own DG-unit.

Collaboration activities: Within LEAFS extensive scalability investigations in Austrian distribution grids have been performed. For that reason data of more than 10.000 Austrian low voltage grids have been provided by distribution grid operators. The development grid clustering method within INTERPLAN WP 4 on “Grid Equivalenting” has benefited very much by evaluating the method with the available grid data from the LEAFS project.

2.19 ABS4TSO - Advanced Balancing Services for Transmission System Operators

Type – Country: Project - National Austrian

Funding Framework: Climate and Energy Fund, Energy Research

Coordinator: AIT Austrian Institute of Technology

Website: <https://www.energieforschung.at/projekte/1012/advanced-balancing-services-for-transmission-system-operators>

Project duration: May 2018 – April 2021

Contact persons on behalf of INTERPLAN: Helfried Brunner (AIT)

Contact persons on behalf of ABS4TSO: Michaela Leonhardt (APG), Adolfo Anta (AIT)

Description: In the context of an increasing penetration of renewable, non-synchronous sources, this project investigates the provision of highly dynamic services for frequency and angle stability by means of converter-based generation and storage systems. Based on the analysis of expected future demand for such system services, several implementations are examined through comprehensive simulations, laboratory tests and field trials. Combining this with a regulatory and economic analysis, a clear framework can be derived for the contribution of generation sources whose power output can be quickly modified. With the aim of achieving system stability, this investigation focuses on the following applications:

- Frequency stabilisation via virtual inertia
- Provision of highly dynamic control power
- Damping of system oscillations
- Reduction of deterministic frequency deviations
- Quick active power recovery after network failures
- Frequency stabilisation through Defense Plans
- Frequency stabilisation for grid restoration

Collaboration activities: The developments within ABS4TSO, are strongly in line with some of the INTERPLAN Use Cases (show cases). In course of the use case developments there was an interaction with the ABS4TSO consortium in order to get additional feedback on the use case descriptions. In future it is planned to exchange deliverables and to have in depth discussion on aspects concerning dynamic grid support.

3 Collaboration and Information Exchange with Initiatives, Networks and Platform

The following table provides a brief overview of initiatives, networks and platforms which have been in cooperation with INTERPLAN during the second year of the project or have the potential of performing collaborative activities with the project in the near future.

Table 2: List of networks, platforms, and initiatives

<i>ID No.</i>	<i>Name</i>	<i>Type</i>	<i>Website</i>	<i>INTERPLAN contact persons</i>	<i>Network/ Initiative/ Platform contact person</i>
1	EERA JP SG	Network/ Programme	https://www.eera-set.eu/eera-joint-programmes-jps/list-of-jps/smart-grids/	Venizelos Efthymiou, Christina Papadimitriou (FOSS)	Luciano Martini (RSE), Giorgio Graditi (ENEA)
2	INEA	Organisation	https://ec.europa.eu/inea/en	Marialaura Di Somma, Maria Valenti (ENEA), Ata Khavari (DERlab) Christina Papadimitriou (FOSS)	Adas Pangonis (EC)
3	Electricity Authority of Cyprus (EAC)	Company (authority)	https://www.eac.com.cy	Venizelos Efthymou (FOSS)	Minas Patsalides, Tasos Gregoriou (EAC)
4	OpSim industry advisory board	Working Group	https://www.iee.fraunhofer.de/en/schnelleinstieg-wirtschaft/themen/opsim-homepage.html#tabpanel-2	Jan Ringelstein (IEE)	Frank Marten (IEE)
5	Mission Innovation -	Initiative	http://mission-innovation.net/our-	Marialaura Di Somma	Luciano Martini (RSE)

	Innovation Challenge on Smart Grids	(global)	work/innovation-challenges/smart-grids-challenge/	(ENEA)	
6	Laboratory for Innovative Power Technologies and Integration of Renewable Energy Sources (LINTE ²)	Laboratory	https://eia.pg.edu.pl/linte/	Michał Kosmecki (Ien)	Robert Małkowski
7	DERlab e. V.	Network (international)	http://der-lab.net	Michał Kosmecki (Ien) Melissa Setakhr (DERlab)	Ata Khavari (DERlab)

3.1 EERA Joint Programme Smart Grids (EERA JP SM) network

Type – Country: Initiative - European

Coordinator(s): Luciano Martini (RSE)

Website: <https://www.eera-set.eu/eera-joint-programmes-jps/list-of-jps/smart-grids/>

Contact persons on behalf of INTERPLAN: Venizelos Efthymiou, Christina Papadimitriou (FOSS)

Contact persons on behalf of EERA JP SG: Luciano Martini (RSE), Giorgio Graditi (ENEA)

Description: The Joint Programme on Smart Grids was officially launched at the SET Plan Conference in Madrid (3-4 June 2010). The Joint Programme, coordinated by RSE and ENEA from Italy by means of an extended cross-disciplinary cooperation involving many Research and Development (R&D) participants with different and complementary expertise and facilities, aims at addressing in a medium to long-term research perspective, one of the most critical areas directly relating to the effective acceleration of smart grid development and deployment. On December 2013, the JP successfully launched ELECTRA, the EC funded (FP7) Integrated Research Programme on Smart Grids technologies.

Collaboration activities: EERA JP SG closely follows the project and their outcomes. INTERPLAN partners report in every meeting whereas using stakeholders group of EERA for contribution work to INTERPLAN where needed.

- 31th EERA JP Steering Committee Meeting, Cyprus, May 2019
- 32th EERA JP Steering Committee Meeting, Porto, October 2019

3.2 The Innovation and Networks Executive Agency (INEA)

Type – Country: Initiative - European

Website: <https://ec.europa.eu/inea/en>

Contact persons on behalf of INTERPLAN: Maria Valenti (ENEA), Marialaura Di Somma (ENEA), Ata Khavari (DERlab), Christina Papadimitriou (FOSS)

Contact persons on behalf of INEA: Adas Pangonis (EC)

Description: The Innovation and Networks Executive Agency (INEA) is the successor of the Trans-European Transport Network Executive Agency (TEN-T EA), which was created by the European Commission in 2006 to manage the technical and financial implementation of its TEN-T programme. INEA officially started its activities on 1 January 2014 in order to implement the following EU programmes:

- Connecting Europe Facility (CEF)
- Parts of Horizon 2020 – Smart, green and integrated transport & secure, clean and efficient energy
- Legacy programmes: TEN-T and Marco Polo 2007-2013

INEA's main objective is to increase the efficiency of the technical and financial management of the programmes it manages.

Collaboration activities: Under the prism above, during the second project year INTERPLAN project participated in the workshop taking place in Brussels on 2-3 October 2019. INTERPLAN reported on the activities already carried and next steps planned. The afternoon session was dedicated to the discussions regarding further work within the clusters and foreseen synergies.

3.3 Electricity Authority of Cyprus (EAC-Cyprus)

Type – Country: Company - Cyprus

Website: www.eac.cy

Contact persons on behalf of INTERPLAN: Venizelos Efthymiou (FOSS)

Contact persons on behalf of EAC: Tasos Gregoriou (EAC), Minas Patsalides (FOSS)

Description: EAC is the distribution and transmission operator of the Cyprus grid.

Collaboration activities: The main collaboration activities between INTERPLAN and EAC are:

- Consulting on INTERPLAN tool development and brainstorming sessions
- Provide information and data for INTERPLAN scenarios and use cases i.e. forming the grid case study, time series etc.

3.5 OpSim industry advisory board

Type – Country: Working group - Germany

General Manager: Frank Marten (IEE)

Website: <https://www.iee.fraunhofer.de/en/schnelleinstieg-wirtschaft/themen/opsim-homepage.html#tabpanel-2>

Contact persons on behalf of INTERPLAN: Jan Ringelstein (Fraunhofer IEE)

Contact persons on behalf of OpSim IAB: Frank Marten (Fraunhofer IEE)

Description: During and beyond the projects "OpSim" and "OpSimEval", the further development and application of the OpSim simulation environment is accompanied by an industry advisory board of grid operators, equipment manufacturers, operators of virtual power plants and manufacturers of control systems. Participating in the advisory board is free of charge and only needs signing up at Fraunhofer IEE. In past events, over 10 well-known companies participated in the advisory board.

Collaboration activities: INTERPLAN was presented as an application project for OpSim at the industry advisory board meeting, which took place January 23rd 2019 in Kassel.

3.6 Mission Innovation (Innovation Challenge #1 on Smart Grids)

Type – Country: Initiative - Global

Coordinators of the Innovation Challenge #1 on Smart Grids: Italy, China, India

Website: <http://mission-innovation.net/our-work/innovation-challenges/smart-grids-challenge/>

Contact persons on behalf of INTERPLAN: Marialaura Di Somma (ENEA)

Contact persons on behalf of Mission Innovation (Innovation Challenge #1 on Smart Grids): Luciano Martini (RSE)

Description: Mission Innovation (MI) is a global initiative of 23 countries and the EU which aims to accelerate the global clean energy innovation. As part of the initiative, participating countries have committed to double their governments' clean energy research and development (R&D) investments over five years, while encouraging greater levels of private sector investment in transformative clean energy technologies. These additional resources will dramatically accelerate the availability of advanced technologies, in order to define a future global energy mix that is clean, affordable, and reliable. MI consists of eight Innovation Challenges, aimed at catalysing the global research efforts in areas that could provide significant benefits in reducing GHG emissions, increasing energy security, and creating new opportunities for clean economic growth. Among these challenges, Innovation Challenge #1 is dedicated to smart grids development and has the goal to enable future grids that are powered by affordable, reliable and decentralised renewable electricity systems.

Collaboration activities: There has been information sharing about INTERPLAN project with the Italian members participating to MI Innovation Challenge #1 on Smart Grids. Moreover, on November 2018, INTERPLAN was presented at the 4th Mission Innovation – Innovation Challenge 1 deep-dive workshop in Rome (IT), among the International Initiatives and lighthouse projects, during the public event.

3.7 Laboratory for Innovative Power Technologies and Integration of Renewable Energy Sources (LINTE²)

Type – Country: Laboratory - Poland

Coordinator(s): Gdansk Technical University

Website: <https://eia.pg.edu.pl/linte/>

Contact persons on behalf of INTERPLAN: Michał Kosmecki (Ien)

Contact persons on behalf of: Robert Małkowski (Linte²)

Description: The LINTE² Laboratory is a complex experimental installation dedicated to R&D activities in the area of electric power systems. The installation has the form of a flexibly configured reduced-scale power system equipped with state-of-the-art apparatus, power generating / converting units and a distributed control system based on Ethernet communication.

Activities of the Laboratory include research and development projects carried out with participation and for the industry, demonstration and training actions and other forms of R&D undertakings aimed at the implementation and commercialisation of the results.

Collaboration activities: Being a versatile and flexible platform, LINTE² laboratory offers possibilities to test and validate controllers and algorithms developed as a part of INTERPLAN tool in an environment based on a physical model of the power system. The model can be configured, observed and controlled from control rooms that offer dispatching room experience through real time SCADA and multiple user accessibility.

Due to a finite number of physical units that are available in the laboratory, it is best suited for experiments requiring a limited part of the power system being included in the model. This however fits well into INTERPLAN methodology, which is highly utilising and relying on grid equivalents.

All INTERPLAN partners were acquainted with the capabilities of the laboratory during the INTERPLAN General Assembly in Gdansk organised in October 2019. The demonstration included a general overview of the laboratory and an experiment linked with use case 5 as well as a short networking session. Conducted activities helped to visualise the basic principle of the use case and comprehend limitations imposed by the physical models that are also present in real installations, that might however be neglected in pure simulation. Other INTERPLAN related activities are possible in the future if necessary.

3.8 DERlab: European Distributed Energy Resources Laboratories e.V.

Type – Country: Network - International

General Manager: Diana Strauss-Mincu (DERlab)

Website: <http://der-lab.net>

Contact persons on behalf of INTERPLAN: Michał Kosmecki (Ien), Melissa Setakhr (DERlab)

Contact persons on behalf of DERlab e. V.: Ata Khavari (DERlab)

Description: DERlab is an association of leading laboratories and research institutes in the field of distributed energy resources (DER) equipment and systems. The association develops joint requirements and quality criteria for the connection and operation of (DER) and strongly supports the consistent development of DER technologies. DERlab offers testing and consulting services for distributed generation (DG) to support the transition towards more decentralised power systems

Collaboration activities: News and updates are regularly circulated among members of the DERlab association, which are mainly spread over Europe, in order to keep them informed and get feedback on the project developments. The DERlab members are also invited to attend the INTERPLAN workshops, like for instance the latest workshop during SEST 2019 Conference in Porto in September 2019.

INTERPLAN will also be featured in the upcoming DERlab Public Activity Report, which will be highly publicised inside the DERlab association and outside, offline as well as online.

4. Other collaborations

4.1 The Center of Low Carbon Society Strategy Japan Science and Technology Agency

INTERPLAN project was presented by Giorgio Graditi (ENEA) and Marialaura Di Somma (ENEA) to Prof. Koichi Yamada from University of Tokyo and Dr. Toshihiro Inoue from the Center of Low Carbon Society Strategy Japan Science and Technology Agency, considering their strong interest in the project's activities known through INTERPLAN's website.

The Center of Low Carbon Society Strategy (LCS) was established in December 2009 in the Japan Science and Technology Agency, with the aim to contribute to the creation of a sustainable and affluent low carbon society, leading to the development of a new economy and society in Japan based on the deployment of more efficient energy technologies and the increase of renewable energy use.

The importance of the project for addressing the future issues of the pan-European network was highlighted, with an emphasis on the use cases and showcases and the INTERPLAN integrated operation planning tool. The benefits to become an INTERPLAN stakeholder were also discussed, by encouraging their future involvement in the project's activities.

5 Conclusion and Outlook

This report summarises the planned and performed collaborations of the INTERPLAN partners with other international and national R&D projects, initiatives, networks, and platforms on the topics relevant to the INTERPLAN activity domain. These networking activities are part of the INTERPLAN work package “Dissemination, communication and exploitation” (WP7). For this information exchange and joint activities, mainly emails exchange, webinars, joint events like workshops, and joint papers are used.

During the second project year, INTERPLAN partners have been in touch and cooperated with participants of 14 EU funded projects, 5 national projects, 3 European Programmes/ platform/ organisation, one national electric authority, one laboratory, one working group, one international network and one global initiative, which are all dealing with different aspects of smart grids. These activities have already brought (or are expected to bring) various benefits and inputs for both the sides of the collaborations. The most important ones are highlighted in the following:

- INTERPLAN is in collaboration with H2020 Project PANTERA and especially within WP2 activities that highlight the needs for regulation and grid codes and provide recommendation.
- Identification of possible synergies and joint opportunities with regard to use cases, requirements for DSO/TSO interactions and regulatory aspects between INTERPLAN and the European project TDX-Assist.
- INTERPLAN collaborated with several H2020 projects within the framework of H2020 Smart Grids and Storage projects clustering initiative, especially in the context of the cluster area 2 “New compatible architectures for the grid”, and the cluster area 4 “Flexibility assessment and modelling, including probabilistic services”.
- Received feedback from the Steering Committee (SC) meetings of EERA JP SG as well as DERlab members.
- Information exchange between INTERPLAN and the Italian members of MI Innovation Challenge #1 on Smart Grids.
- INTERPLAN is in collaboration with EAC Cyprus, especially regarding the tool development and for the INTERPLAN scenarios and use cases i.e. forming the grid case study, time series etc.
- Collaboration with LINTE² laboratory, during which took place an experiment linked with project use case 5. The conducted activities helped to visualize the basic principle of the use case and comprehend limitations imposed by the physical models that are also present in real installations, that might however be neglected in a pure simulation environment.

Considering the results so far, it is concluded that successful cooperation with several ongoing international/national activities has been achieved within the second year of the project. For the next cooperation activity period, the activity domain will be expanded by interacting with ongoing research activities beyond the ones in which involves INTERPLAN partners, in order to gain a broader perspective. This will be realised by further dissemination activities.

6 Annex

6.1 List of table

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