



Report on the activities of the open call

D12.1

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About OneNet

OneNet will provide a seamless integration of all the actors in the electricity network across Europe to create the conditions for a synergistic operation that optimizes the overall energy system while creating an open and fair market structure.

The project OneNet (One Network for Europe) is funded through the EU's eighth Framework Programme Horizon 2020. The topic it was awarded through was titled "TSO – DSO Consumer: Large-scale demonstrations of innovative grid services through demand response, storage and small-scale (RES) generation" and responds to the call "Building a low-carbon, climate resilient future (LC)".

While the electrical grid is moving from being a fully centralized to a highly decentralized system, grid operators have to adapt to this changing environment and adjust their current business model to accommodate faster reactions and adaptive flexibility. This is an unprecedented challenge requiring an unprecedented solution. For this reason, the two major associations of grid operators in Europe, ENTSO-E and EDSO, have activated their members to put together a unique consortium.

OneNet will see the participation of a consortium of over 70 partners. Key partners in the consortium include: ENTSO-E and EDSO, Elering, E-REDES, RWTH Aachen University, University of Comillas, VITO, European Dynamics, Ubitech, Engineering, and the EU's Florence School of Regulation (Energy).

The key elements of the project are:

1. Definition of a common market design for Europe: this means standardized products and key parameters for grid services which aim at the coordination of all actors, from grid operators to customers;
2. Definition of a Common IT Architecture and Common IT Interfaces: this means not trying to create a single IT platform for all the products but enabling an open architecture of interactions among several platforms so that anybody can join any market across Europe; and
3. Large-scale demonstrators to implement and showcase the scalable solutions developed throughout the project. These demonstrators are organized in four clusters coming to include countries in every region of Europe and testing innovative use cases never validated before.



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List of Abbreviations and Acronyms

Acronym	Meaning
ABCM	Active Balancing Congestion Management
AI	Artificial Intelligence
DERs	Distributed Energy Resources
DSO	Distribution System Operator
FSPs	Flexibility Service Providers
GIS	Geographic Information System
GMM	Gaussian Mixture Model
ICT	Information and Communication Technologies
kNN	K-Nearest Neighbor
LOF	Local Outlier Factor
MAD	Median Absolute Deviation
PCI	Projects of Common Interest
TP	Transparency Platform
TSO	Transmission System Operator

Executive Summary

In the H2020 Framework programme, the OneNet project makes use of the cascade funding mechanism that offers financial support to Third Parties for the incorporation of developers (SMEs and start-ups) of innovative energy services (in particular for household consumers). The cascade funding mechanism will create new business opportunities, deliver added value to the OneNet project, stimulate further interest and spread the accomplishments of OneNet and its technological framework to a broader audience.

OneNet launched an Open Call on December 1st 2021 and will provide financial support to 9 Third Parties with the aim of enhancing the current work of both real demonstration efforts and tools to elevate the OneNet overall framework. Applicants were asked to introduce new services for the network operators and the household consumers by adopting the OneNet infrastructure and framework. Particularly, applicants were asked to address one of the seven demo-specific scenarios published within the Call. The seven scenarios are the following:

1. Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server) _ Greek Demo
2. Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform
3. DSO-TSO interaction _ Portuguese Demo
4. Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels _ Spanish Demo
5. Flexibility resources to provide flexibility services to the Northern Demonstrator
6. Advanced Data Quality Analysis of Data Exchange Platforms
7. Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers

The OneNet Consortium – in order to support the whole process from the open call announcement until the successful closure of the 9 selected applications – designed and developed a set of mechanisms, based on existing knowledge of its partners, as well as the set guidelines of the EC/H2020 Framework related to the cascade funding and the financial support to third parties. This set of mechanisms included a series of documentation and procedures for the guidance of applicants to submit a proposal to answer any of the aforementioned scenarios that would be within their research and business interests. At the same time, all scenarios were prescribed in detail to assure that the potential applicants would be in the position to understand the requirements of OneNet, at the same time to ensure that what will be offered as a proposal from applicants would make sense and would become integral part of the OneNet ecosystem. A contracting procedure that would safeguard the interests of all sides was put in place as part of this preparatory activity. Finally, the evaluation/monitoring/mentoring processes, the roles and responsibilities of the experts involved were defined.

1 Introduction

1.1 Overview

This deliverable is reporting the OneNet Open Call processes and results, under Task 12.2. *“Management of external call and cascading fundings”* and includes all the key information related to this initiative. The structure of the report is the following:

a) In the first part (Chapters 2-4), the scope and the technical requirements of the OneNet Open Call are described. The public documentation that was prepared for the launch of the Open Call is included as Appendixes. This documentation is: a) the Guide for Applicants, describing the call rationale, the eligibility criteria for participation of applicants that are in line with EU rules and criteria, the technical description of the envisaged work, the expected impact on the OneNet project, the available budget and amounts related to different cost categories (e.g. personnel, equipment, etc.), the evaluation and selection criteria and procedure, the timeline, and all details related to the Open Call procedures, (b) the Proposal Template, tailored to the target group and (c) the Guide for Evaluators that describes the evaluation process, the evaluators’ code of conduct and their role, the evaluation criteria according to the EU rules and conditions, the evaluation reports that experts have to conduct during the evaluation procedure.

b) The second part of the report (Chapters 5-7) includes the Evaluation, Selection and Contracting processes of the Open Call. The Evaluation and Selection processes are led by CINTech in close collaboration with Fraunhofer. However, Consortium technical partners connected to the scenarios of the Open Call (UoA COMILLAS, ENTSO-E, ELERING, Fingrid, ENERIM, EnergoInfo, UCY, E-REDES, I-DE, UFD, R&D NESTER, EOP) had an active role in the evaluation procedure and contributed with their technical expertise to the well progress of the evaluation. The main priority was to safeguard the Evaluation procedure so as to select proposals of high quality, in line with the scope of the OneNet project, addressing the predefined criteria of Impact, Technical Quality and Quality of the Work Plan, with the overall aim to ensure that the selected proposals will deliver added value and augment the impact of OneNet project and its infrastructures.

The contracting is led by RWTH, a main beneficiary of the OneNet project which was tasked with the preparation of the contracts and the monitoring of the contracting process. RWTH created a contract template to facilitate the on-boarding of the successful applicants, outlining all of the legal, financial and Intellectual Property (IP) terms that should be agreed between each applicant and the OneNet consortium. The contract includes the financing terms, the payment plan and the IP that will be brought as background by the applicants and the IP of the OneNet consortium that will be shared with the Open Call Projects.

c) The third part of this report Chapter 8) presents brief descriptions of the 9 projects selected for funding under the OneNet Open Call. The development phase of the Open Call projects deviates from 6-9 months

depending on the workplan of the OneNet demonstration they address. The projects did not start simultaneously but in groups. The first group started on M22 (July 2022) of the project and the last one on M25 (October 2022).

1.2 Objectives

The goal of D12.1 is to report the actions undertaken for the successful realization of the OneNet Open Call, from the launch to the evaluation-selection-contracting processes.

2 OneNet Open Call Scope

For the implementation of the OneNet Open Call a thorough research on the rules and regulations of the European Commission, in particular H2020 Framework Programme Regulation No 1291/2013 was reviewed. Cascade funding rules and regulations were identified. Other Open Calls of H2020 and PCI projects were reviewed. Based on the above, the Open Call documentation was prepared and the OneNet Open was launched on the December 1st 2021 with a deadline two months later on February 04, 2022).

The OneNet Consortium through this Open Call was looking for new application experiments that will address end users, by taking up and validating the results gained in the first phase of OneNet. The main initiative is to select Third Parties to contribute to the impact of OneNet project in the energy ecosystem and the generalisation and validation of OneNet framework.

SMEs and Start-ups legally established in an EU Member State or in an Associated Country (as stated in Article 7 of the Horizon2020 Regulation) were eligible to take part in the call. Only single legal entities could apply for funding. The funding budget to be distributed was up to 550.000 EUR among up to 9 Third Parties. The funding budget per third party should not exceed 60.000 EUR.

The financial support follows the EU funding scheme (70% funding for for-profit organizations and 100% for-non-profit organizations). Selected Third Parties received a pre-financing of up to 25% of their respective total cascade fund. Further payments will be delivered after successful completion of milestones and/or deliverables.



Figure 2.1 – OneNet Open Call graphic

This OneNet Open Call

- will create new business opportunities by involving external SMEs and Starts-ups
- will spread the technology and the methods developed during the first months of the OneNet project

- invites third parties to take benefit from the working space, the wealth of data available, the tools and applications that has been formulated on the OneNet network of platforms, in order to test different scenarios from a different perspective
- engages many different actors and roles to promote energy-based business and services, based on the early results of the demonstrators, the need of the energy value chain as this is defined within the project, the implementation of the OneNet network of platforms

The selected Third Parties

- will benefit from the OneNet demonstrations and at the same time with their developed services contribute to them, and deliver added value on the energy ecosystem.
- will receive technical support and feedback on the developed services from the OneNet Consortium and its technical experts
- will get in direct exchange with the responsible system operators, policy makers, market actors and technology providers in order to fulfill the requirements of the scenarios that their proposed services address
- will shape and impact OneNet's results, especially in the field of Business Use Case, consumer engagement and flexibility activation
- will be a part of the largest European project in the field of TSO-DSO-Consumer coordination

2.1 Technical Definition of the Call

The OneNet Consortium followed a demo-specific approach for the OneNet Open Call in close collaboration with demonstration partners, which resulted in the identification of specific needs to be fulfilled by external third parties through the cascade funding mechanism.

Several workshops and communication between the Open Call Partner and demo partners (UoA COMILLAS, ENTSO-E, ELERING, Fingrid, ENERIM, EnergoInfo, UCY, E-REDES, I-DE, UFD, R&D NESTER, EOP, PSE) resulted in the identification and specification of **seven** demo-specific **scenarios/topics** for the OneNet Open Call.

A short description of the seven scenarios as included in the Guide for Applicants follows:

2.1.1 No 1. : Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server) _ Greek Demo

Services include: Georeferenced deep/vertical grid modeling for TSO, DSO and micro grid voltage levels using the GIS technology and geo server, for the regions of Crete Island and Peloponnese in Greece. GIS (Geo) server installation and deployment. Systems will be modelled to the lowest level entity, DSO MV/LV substation (e.g.

10/0.4 kV) or a commercial/industrial/residential building possessing its own MV/LV substation. Georeferenced model should be further used for power system analysis on the selected region (Crete Island and Peloponnese) including both TSO and DSO grid simulation models that will be available. Power system analysis shall be performed jointly with the Work Package partners using an open source tools that are available. Services should also include assistance with the development of the geographic visualization of simulation results, exposing results and linking to other services being developed under f-channel via GIS technologies.

The complete description of the aforementioned Scenario is included as Annex 1 in the Guide for Applicants document.

2.1.2 No 2. : Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform

The Cyprus demo of the OneNet project aims to demonstrate an effective collaboration between the different entities of the Cyprus power system namely the TSO, DSO, Market Operator, and prosumer/aggregator. In this context, the integration of an actual consumer in the demonstration framework will have an added value not only to the Cyprus demo but also to the OneNet project results. Thus, the potential applicants for this scenario, must develop a prosumer-level energy management solution with API to facilitate the secure interconnection between the Active Balancing Congestion Management platform (of the distribution grid) that will be developed in the OneNet Cyprus demo and the prosumer. The applicants must have at their disposal a prosumer that will be based on Cyprus, meets the technical specification of the call and is willing to participate in the demonstration of the solutions proposed in the Cyprus demo.

The complete description of the aforementioned Scenario is included as Annex 2 in the Guide for Applicants document.

2.1.3 No 3. : DSO-TSO interaction _ Portuguese Demo

The increase in generation from renewable resources, with its uncertainty, and the increase in the use of electricity (due to EVs for example) means that system operators have to improve their strategies for managing the grid more efficiently in order to avoid unnecessary investments. In this scenario, the strategy is to optimize coordination between DSO and TSO by identifying and sharing the information that enables better operational planning for their networks. In order to share the information, a set of APIs and related services (potential links with existing systems, backend servers and databases) to enable a streamlined automated communication between system operators, namely the Portuguese DSO and TSO, need to be implemented.

For the longterm planning, the information that needs to be exchanged bidirectionally regarding the expected evolution of the transmission and distribution grids and their associated supply, consumption, production and flexibility services configuration will be defined.

Concerning the medium term, the effort will be focused on the definition of the information regarding the capacity and availability for load connection in the EHV/HV substation, as well as the information regarding the load transfers availability between EHV/HV interconnecting points, providing a better management of the distribution network loops by the DSO. This allows, in case of emergency, the possibility of the DSO to manage the transfer of load between networks.

For the efficient use of the flexibility services and enhancement of the operational planning, the increase of the information exchanged on short-term is key. Once well-defined the observability area of both operators around the TSO-DSO border, the focus will be in the definition of information to exchange about:

- Short-circuit power at the TSO-DSO border

- Scheduled maintenance actions in the observability area

- Aggregated consumption and production forecast by technology (solar, wind, hydro, etc)

The complete description of the aforementioned Scenario is included as Annex 3 in the Guide for Applicants document.

2.1.4 No 4. : Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels _ Spanish Demo

This scenario aims to involve in the Spanish Demo some Flexibility Service Providers that offer different type of flexibility resources in order to test new local markets able to alleviate network congestions at medium and low voltage distribution network level.

A Flexibility Service Provider (FSP) is either an aggregator, providing flexibility services, or the owner or the representative of large-scale or small-scale assets, which are connected to the distribution network and which can provide flexibility services to DSOs.

The FSP will have to develop the appropriate communication and interaction tools with resources and DSO and/or MO specific platforms.

FSPs participating should have resources connected to medium or low voltage levels at DSOs networks participating in Spanish demo in the indicated locations in Madrid and Murcia.

Recipients are requested to demonstrate clearly in their expressions of interest that they are aware of the areas in which their specific services fit best the project goals and the ongoing developments.

Potential aggregators must attach documentation evidencing commitment of resources from the FSPs that they represent.

The minimum required flexibility capacity to participate is 0.1MW.

The complete description of the aforementioned Scenario is included as Annex 4 in the Guide for Applicants document.

2.1.5 No 5. : Flexibility resources to provide flexibility services to the Northern Demonstrator

Northern Cluster (Finland, Estonia, Lithuania, Latvia) is looking for flexibility resources to connect the OneNet demonstration framework and provide new grid services for system operators. Flexibility provider (FP) should develop capabilities to steer distributed energy resources, register the resources in OneNet system, place bids and participate some flexibility market and provide validation data of the performed control actions.

System operators have new needs for flexibility in the future and the OneNet project is developing tools to facilitate the needs. SOs are also looking for new type of service providers. For FP this enables new possibilities and business potential for market participation.

The complete description of the aforementioned Scenario is included as Annex 5 in the Guide for Applicants document.

2.1.6 No 6. : Advanced Data Quality Analysis of Data Exchange Platforms

This scenario aims to encourage the development of tools and services for data quality checks from a general perspective that will be flexible enough to adapt to the different needs of data exchanges among TSOs, DSOs and consumers. Considering the rich content of the ENTSO-E Transparency Platform (TP), the applicants are expected to demonstrate developed methodologies utilizing the TP data. The scenario requires expertise in the fields of Big Data Analytics, Machine Learning and advanced AI methodologies to perform data quality measurements in the energy domain. The expected services and tools for data quality measurements will ensure that the exchanged data among players has high quality standards. The applicants will have the chance to be part of the growing collaboration among TSOs-DSOs-Consumers by providing data services. The applicants will also achieve a good knowledge of the developing concepts and infrastructures in that field to better address their services with the growing market needs.

The complete description of the aforementioned Scenario is included as Annex 6 in the Guide for Applicants document.

2.1.7 No 7. : Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers.

In order to effectively conduct a demonstration in the Polish East Cluster demonstrator, in the scope of providing balancing services to the TSO on the existing Balancing Market by resources located in the Medium

Voltage and Low Voltage grid, it is necessary to represent such prequalified resources on the Balancing Market by an active Balancing Market Participant.

Successful applicants will become Balancing Market Participant representing prequalified resources on Balancing Market. Balancing Market Participant will submit offers for balancing capacity and / or balancing energy to the existing Balancing Market. If the offer is selected, activated and executed relevant remuneration according to existing rules will be paid. Chosen Balancing Market Participant will have an opportunity to test new solutions and explore the potential of a new customer segment.

The complete description of the aforementioned Scenario is included as Annex 7 in the Guide for Applicants document.

2.2 Open Call Documents

A set of documentation was prepared to support the launch and realization of the Open Call. The documents created for the OneNet Open Call are the ones displayed in the table below:

Table 2.1 - Open Call Documents' list

Open Call Documents' list				
Call Announcement	Guide for Applicants	Proposal Template	Model Contract Funding Agreement	Guide for Evaluators

The **Guide for Applicants**, included in this deliverable as Appendix 2, summarizes the main features of the OneNet Open Call for Third Parties. It serves as a complement to the following documents (and their annexes): a). the **Open Call Announcement**, b). the **Proposal Template** and c.) the **Model Contract Funding Agreement**. The Guide for Applicants serves as a helpful tool and provides additional information for the submission of proposals and the evaluation process in the framework of the OneNet project. It complements the Open Call Announcement and the Proposal Template documents and their annexes. It does not supersede the Open Call Announcement and Model Contract Funding Agreement documents which take precedence over the Guide for Applicants.

Applicants were requested to use the **Proposal Template** that was prepared for the current Open Call and is included in this report as Appendix 3. This document provides in the first page general instructions on completing the Proposal Template to ensure that the important aspects of applicants' work were presented in such a way that evaluators would be able to make an effective assessment against the evaluation criteria described in the Guide for Applicants.

All documents and material prepared for the OneNet Open Call that applicants should refer to are available on the Open Call portal, especially developed for OneNet Open Call. The OneNet portal is linked to the OneNet website and serves as a platform where all referential documentation and information are provided.

OneNet Open Call website: <https://opencall-onenet.cintechsolutions.eu/?wpdmdl=1216>

OneNet Open Call documentation: <https://opencall-onenet.cintechsolutions.eu/important-documents/>

The **Model Contract Funding Agreement** is a legal contract prepared to be signed between the Cascade funding partner and the Third Parties selected to be funded. The Contract Funding Agreement regulates (i) the conditions of transfer and usage of the cascade funding, (ii) the IPR rules, and (iii) the other collaboration mechanisms. It includes payment modalities, financing payments, IPR handling, conflict resolution rules, the rights by the EC and other European bodies to carry out checks and audits, etc. It is a confidential document, not included in this report.

For the support of the evaluation process, the **Guide for Evaluators** document was prepared and circulated to the Evaluators experts during the allocation phase. This document is a confidential document that describes the evaluation process, the evaluators' code of conduct and their role, the evaluation criteria according to the EU rules and conditions, the evaluation reports that experts have to conduct during the evaluation procedure and tips and guidelines for high quality reports.

3 Open Call workplan and timeline

The Open Call was divided into sub-tasks related to its preparation and realization, as depicted in the figure below:

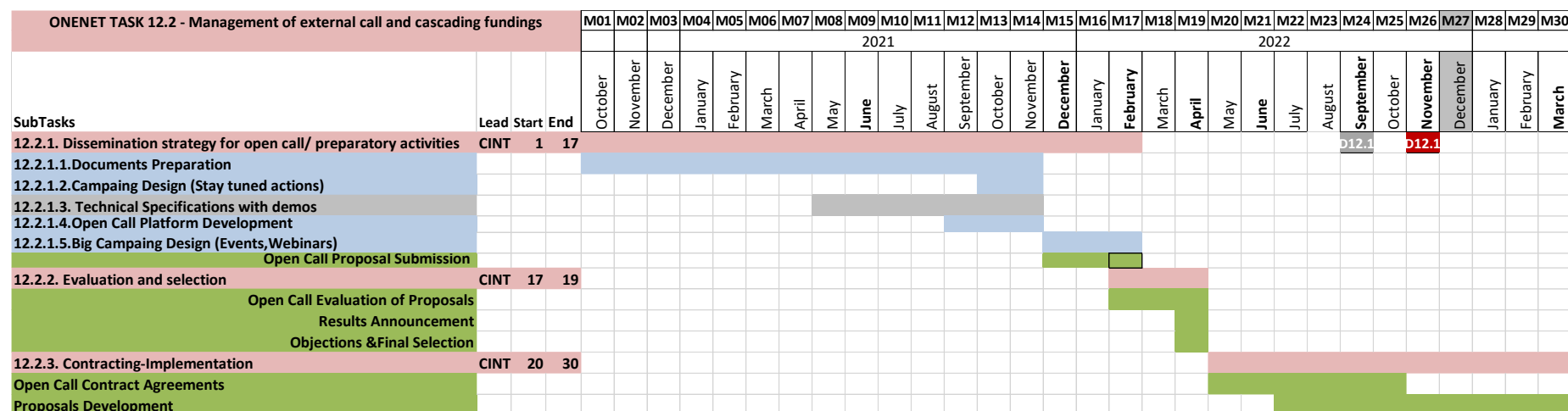


Figure 3.1 – OneNet Open Call workplan

The preparation of the Call lasted from M1-M17. It included the preparation of the documentation, the development of an Open Call platform that host the Open Call and serves as a submission tool, the design and the realization of the dissemination campaign of the Call. The most demanding task was the technical definition of the Call. The OneNet project was not mature enough and the demos could not at the time of the early preparation to identify the needs that would occur later. There was a difficulty in involving the technical partners in such an early phase of the project. However, the cooperation and the belief in the cascade funding initiative resulted in seven well-defined scenarios strongly connected to the project demonstrations. The Consortium was aware that the highly-specific scenarios would confront a difficulty to attract applicants but by following the strategy of the demo-specific topics of the Call, the Consortium would guarantee receiving highly aligned proposed solutions to the OneNet project.

The realisation of the Open Call is divided in the sub-tasks connected to different stages of the Open Call life cycle, from the launch of the Call to the evaluation, selection and development (M17-M30).

The table below shows the key dates of the Call.

Table 3.1 – OneNet Open Call key dates

OneNet Open Call actual dates:	
December 01, 2021	Submission opening
February 04, 2022, 17:00 CET	Submission deadline
April 6, 2022	Results Announcement
5 business days after results notification	Objections
June 2022	Contracting Period starts
from July-October	Development phase began into groups

The extension of the duration of the OneNet project affected the development phase of the Open Call projects since they are highly-connected with the demos. OneNet Demonstrations changed their workplan due to the project extension and this resulted to the modification of the workplan of the Open Call projects, by changing the starting date in some cases or extending the development phase of the Open Call projects in other cases.

4 Submission process

OneNet Open Call launched on **December 1st 2021**. The duration of the submission was two months with a deadline of February 4, 2022.

The official language of OneNet Open Call is English. The OneNet Open Call is under Horizon 2020 programme and follows the rules and conditions of the aforementioned programme.

Only proposals submitted through OneNet Open Call portal (<https://opencall-onenet.cintechsolutions.eu/>) within the given deadline will be accepted. Proposals submitted by any other means, will not be considered for funding. All potential applicants should register beforehand to the portal to receive additional material and updates (if any) regarding the process.

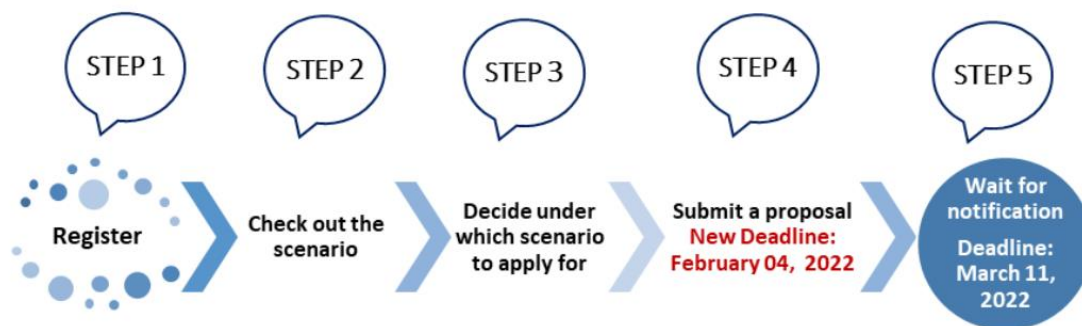


Figure 4.1 – OneNet Open Call Application Steps

In short, the supporting material of the Open Call are:

1. The Guide for Applicants (<https://opencall-onenet.cintechsolutions.eu/?wpdmdl=1216>)
2. The OneNet Open Call Portal with all available material (<https://opencall-onenet.cintechsolutions.eu/>)
3. The Helpdesk email (onenet_opencall@cintechsolutions.eu)
4. A Frequently Asked Questions (<https://opencall-onenet.cintechsolutions.eu/frequently-asked-questions/>)

Applicants, during the submission period, could communicate with Open Call helpdesk email for any questions or queries regarding the Call and the Portal, as well. The FAQs page was updated on a current basis.

For the support of the interested applicants to OneNet Open Call, an Open Call webinar was realized on Tuesday, 11 January 2022 at 12:00 (CET).

Some topics that the webinar covered:

- What is OneNet?

- Why apply for OneNet Open Call?
- How to apply?
- Which are the Open Call scenarios?
- Open Call support?
- Open questions?

Interested parties had the opportunity to address directly queries on how to fulfil the technical requirements of the Open Call scenarios and elaborate a winning application. Following the webinar, the recording video of the Open Call webinar was uploaded on the following link: https://opencall-onenet.cintechsolutions.eu/gmt20220111-110417_recording_1920x1080/ and the OneNet experts' presentations were uploaded on the Open Call portal: <https://opencall-onenet.cintechsolutions.eu/onenet-open-call-webinar/>

5 Evaluation process

5.1 Evaluation phases

The evaluation workflow of the OneNet Open Call for Third Parties, in line with European Commission's evaluation process, is displayed on the figure below.

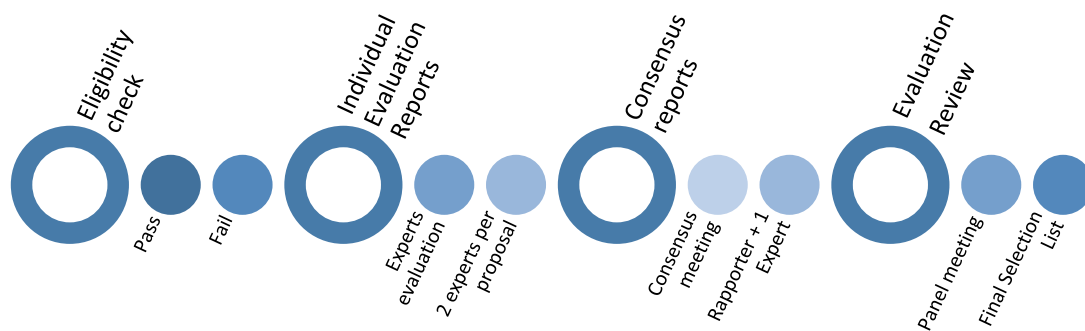


Figure 5.1 – OneNet Open Call Evaluation workflow

5.1.1 Eligibility check

The Cascade funding partner (RWTH) performed a first check of admissibility and eligibility of submitted proposals. Namely, the eligibility criteria, which are described in detail in section 3 of the Guide for Applicants, are:

1. Legal status
2. English language
3. One Submission per Applicant
4. Submission through OneNet Open Call portal 's Submission Tool
5. Submission before the deadline
6. Absence of Conflict of Interest

18 proposals were submitted in the Call. No proposals were submitted under scenario No7. Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers. The first eligibility check resulted in 16 eligible proposals. The reasons for exclusion was for not complying with the funding scheme

for for-profit organisations (70% funding). A proposal could be declared ineligible at any phase of the evaluation procedure.

Following the eligibility check, a briefing meeting was organized for the support of the Evaluators. During this meeting tips and guidelines, based on the EC Evaluation guidelines, were presented to experts for high quality reports. COI conditions were discussed and clarifications on the evaluation process were provided.

5.1.2 Individual Evaluation Reports (IERs)

Each eligible proposal was allocated to two Consortium Experts Evaluators according to their field of expertise by the Call Coordinator (CINTECH). 19 Consortium Experts Evaluators participated in the evaluation process. The whole process was implemented by email. For the support of the Evaluators, the Guide for Evaluators was circulated to experts together with the Evaluation Form.

The Consortium Technical experts that participated in the Evaluation process are partners connected to the 6 scenarios of the Open Call under which proposals were submitted. Evaluators signed a Confidentiality and Conflict of Interest declaration prior to the evaluation procedure. The two Expert Evaluators assessed independently the proposal that was allocated to them and prepared an Individual Evaluation Report (IER). Each evaluator ranked the proposal assigning a score from 0 to 5 for each awarded criterion IMPACT, TECHNICAL QUALITY, QUALITY OF WORK PLAN in Section 6.2. The default threshold for each criterion was 3 out of 5. The default overall threshold was 10 out of 15.

Evaluators performed their work by complying with the EU guiding principles that are also adapted by the OneNet Open Call. Independence, impartiality, objectivity, accuracy are some of the principles that characterize the whole process.

5.1.3 Consensus Reports (CRs)

Following this, as soon as the IERs for each proposal were submitted to the Call Coordinator, the Evaluator who was also assigned to the specific proposal as “Rapporteur” drafted a first Consensus Report based on the 2 IERs.

The two Evaluators exchanged views on the basis of the individual evaluations during a Consensus meeting (or by email). Points of disagreement were discussed. The initiative was for the two Evaluators to come to an agreement on the comments provided for each criterion. The comments should be in alignment with the scores.

Once the Consensus Report was conducted, each Evaluator provided her/his comments and final approval. The outcome of all CRs was an initial ranking list of the eligible proposals based on the individual scores assigned to each proposal.

5.1.4 Evaluation Summary Reports (ESRs)

The Evaluation Panel, conducted by the Support Team and all experts, met on a remote Panel Review Meeting to identify the most promising candidates. The scope of the Panel Review was to perform an additional quality check to the reports, to prioritise ex-aequo cases and to approve the final ranked list of proposals. The outcome was strongly based on the ranking produced by the Experts Evaluators.

The main initiative of the Panel meeting was to ensure that the proposals are realistic in terms of time and effort, in line with the OneNet scope, address the technical requirements of the scenarios and would have significant impact and bring added value to OneNet project.

During the Panel meeting, each rapporteur described the process and the results of each evaluation. PC and Consortium experts resulted in a slight alteration on the ranking list with clear justification. One proposal was also declared ineligible for not complying with the funding scheme of the 70% for for-profit organisations.

The outcome of the Panel Meeting was one 'Final Ranked List' of 9 proposals and a 'Reserve List' of 3 proposals. The ranking list is depicted in the figure below.

ONENET OPEN CALL FINAL RANKED LIST					
Rank No	Proposal No	Scenario	Demo	Organisation Name	City/ Country
#1	6	4	Spanish	Odin Solutions SL (ODINS)	Spain
#2	17	6	ENTSOE	Beedata Analytics SL	Spain
#3	4	1	Greek	SOFTWARE COMPANY EOOD	Bulgaria
#4	5	4	Spanish	Stemy Energy	Spain
#5	3	2	Cypriot	H. Wise Wire Energy Solutions Limited (WiseWire)	Cyprus
#6	18	3	Portuguese	Watt-IS S.A.	Portugal
#7	15	5	Northern	Northeast Flow Oy	Finland
#8	9	5	Northern	Flinkenberg Oy Ab	Finland
#9	8	6	ENTSOE	ARTELYS	Paris
RESERVE LIST					
#10	10	1	Greek	Enfidal d.o.o	Montenegro
#11	14	6	ENTSOE	Presify Analytic Software Inc.	Turkey
#13	1	5	Northern	EVONE SOLUTIONS	Lithuania

Figure 5.2 – OneNet Open Call Final Ranked List-Reserve List

The proposals in the final ranking list covered 6 out of 7 offered scenarios ensuring a balanced portfolio. No exceptions or prioritizations were requested since all proposals had different scoring.

5.2 Evaluation Timeline

The exact timeline of the Evaluation process is depicted in the table below:

Table 5.1 – OneNet Open Call key dates

OneNet Open Call Evaluation Timeline	
Submission Opening	December 1, 2021
Submission Closure	February 04, 2022 at 17.00h CET
Eligibility check	By 10/02/2021
Briefing	11/02/2022
Allocation to experts	14/02/2022
Evaluation	
Individual Evaluation Reports (IERs)	By 21/02/2022
Consensus Reports (draft CRs)	By 25/02/2022
Panel Review Meeting	08/03/2022
Consensus Reports (Final CRs)	By 21/03/2022
Evaluation Summary Reports (ESRs)	By 04/04/2022 (06/04/2022 notification to applicants)

5.3 Roles and Responsibilities

For the evaluation process, three different teams were composed: the Support Team, the Evaluators and the Rapporteurs.

The role and responsibilities of each team is described below:

Support Team: Responsible for the management of the evaluation procedure. It is a project body composed of certain Consortium partners that are connected to the OneNet Open Call. These are representatives from CINTech, Fraunhofer and partners involved in scenarios (UOA, UCY, E-REDES, UFD, ENERIM, ENTSO-E)

Role:

- Act as an impartial moderator to the Consensus Meeting procedure and ensure the quality of the evaluation process.
- Check the quality of each individual evaluation, as well as the CRs.

- Cross-read the CRs of all proposals in order to check the quality and consistency of comments and scores.
- Contact the Evaluators and Rapporteur to provide feedback or ask for clarifications, if needed.
- Participate in the Panel Review Meeting where the ranking lists will be approved.
- Has the final decision on whether a conflict of interest exists.

(Expert) Evaluator: Each Evaluator independently assesses the proposal and prepares an Individual Evaluation Report (IER). There are two Evaluators per eligible proposal.

Role:

- Reads the proposal and evaluate it against the evaluation criteria without disclosing information to any other party or the other appointed evaluator.
- Evaluates the proposal as submitted and not on its potential if certain changes were to be made.
- Completes an Individual Evaluation Report (IER):
- Gives scores for all evaluation(sub-)criteria
- Provides comments to justify their scoring, but does not recommend substantial modifications (comments shall mainly include weaknesses and should be explained.)
- Submits the IER in the given deadline
- Participates in the remote Consensus Meeting and in the Panel Review Meeting

Rapporteur: Expert responsible for drafting and finalizing the Consensus Report (CR).

Role:

- Is one person among the two Experts Evaluators that participated in the evaluation of a proposal
- Conduct a draft Consensus Report based on the IERs submitted by the two Evaluators and when approved by both submit the Consensus Report.
- Identify agreements of assessment and suggest a consensus description
- Identify divergences of assessment and exchange opinions
- Moderate the discussion to reach an agreement on the comments
- The report should reflect the scoring –scores can't be changed
- The CR brings together pertinent comments from the IERs to form a coherent report which outlines mainly the weaknesses for each criterion
- Contact the other Evaluator to provide feedback or ask for clarifications, if needed.

- During the drafting process or after submitting the CR for approval, other experts may provide comments to the rapporteur to suggested amendments or errors
- Participate in the Panel Review Meeting where the ranking lists will be approved.

5.4 Evaluation criteria

The evaluation criteria that submitted proposals were asked to address in OneNet Open Call are described below. The criteria reflect European Commission's criteria, in particular the expected impact of the proposal funded under those services. The evaluation was strictly based on those criteria.

1. EXPECTED IMPACT aiming at strengthening the use of the OneNet open reference architecture to provide innovative services to energy grid stakeholders (mainly focusing on household consumers):	
<p>Is there a measurable enhancement in the management of energy (produced and consumed by households) if applicable for the scenario?</p> <p>To what extent has the proposal the potential to address future / wider applications in the field?</p> <p>— Does the proposed service/tool/activity to be developed add a new approach to the improvement of the energy system operation, and specifically on the facilitation of Flexibility market access, and/or on TSO-DSO cooperation, and/or uptake of OneNet proposed products and services?</p>	<p>Score: /5</p> <p>(Threshold 3/5)</p>
2. TECHNICAL QUALITY	
<p>To what extent does the proposal addresses the scenario's initiative/ requirements under, which it is submitted to?</p> <p>Are the use cases and the technical approach for the adaptation/integration of the addressed scenario following the current state-of-art?</p>	<p>Score: /5</p> <p>(Threshold 3/5)</p>
3. QUALITY OF THE WORK PLAN	
<p>Is the work plan coherent and effective and appropriate regarding the allocation of tasks and resources?</p> <p>Is the work plan coherent and effective and appropriate regarding the justification of resources?</p> <p>— To what extent does the application identify the implementation risks</p>	<p>Score: /5</p> <p>(Threshold 3/5)</p>

(technical, commercial and other) and how the work plan foresee to mitigate these risks?	
Remarks	
Ethical implications and compliance with applicable international, EU and national law	Essential
Overall score:	Score: /15 (Threshold 10/15)

5.4.1 Scoring

Evaluators score each criterion and sub-criterion in the IER (two decimals may be used). The scores range from 0 to 5. The meaning of the scores is indicated below: Each score is complemented by detailed comments. The score should reflect comments and be based on the definitions as indicated below.

0 – Fail: The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information;

1 – Poor: The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses;

2 – Fair: While the proposal broadly addresses the criterion, there are significant weaknesses;

3 – Good: The proposal addresses the criterion well, although improvements would be necessary;

4 – Very good: The proposal addresses the criterion very well, although certain improvements are still possible;

5 – Excellent: The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

5.4.2 Threshold and Weighting

Each criterion is scored from 0 to 5. Scores may be awarded down to two decimal places. The threshold for each criterion is 3. The overall threshold, meaning the sum of the three individual scores, is 10. The consensus score of a proposal at the level of the three evaluation criteria is the mean (average) of the separate scores given by each evaluator.

Each evaluation sub-criterion is given a score between 0 and 5 (two decimals may be used) and each question bears the same weight. The individual scores (from 0 to 5) given to each sub-criterion are used to calculate the main Criterion score per evaluator. The overall score is obtained by summing the three criteria average scores.

Each proposal was assessed by 2 evaluators. The average score is across all 2 evaluators for each criterion. The overall score is the sum of the 3 criteria average scores.

6 Objections

Following the evaluation results, the objections period started. Applicants could send objections to the evaluation results for 5 business days after the notification of the evaluation results to applicants, by sending e-mail to the Helpdesk email. No objections were received by applicants. Following this, the contracting process was initiated.

7 Contracting

The contracting process started in June and was completed in October 2022. Due to unexpected issues, the contracting process lasted longer than initially planned. There were significant delays in communication due to the period of summer vacations and the involvement of partners from across Europe. The lack of experience of some of the third parties in Horizon procedures slowed down the process additionally.

One applicant that was initially in the list of projects-to-be-funded withdrew their proposal for internal reasons (limited resources). The Open Call Team followed the foreseen procedure and sent notifications to the applicants of the reserve list in the sequence they were positioned. The Open Call Team successfully managed - with an additional delay though - to invite the applicant substituting the resigned one and completed the contracting process. The contracts were thoroughly reviewed and the contracting process was completed.

The Open Call beneficiaries that completed the contracting process and will be funded by OneNet project under the Cascade funding mechanism are listed below, described by Organisation, Title, Country, the Scenario they address and the funding budget.

The total amount funded in the OneNet Open Call is 474.635 EUR.

OneNet Open Call Beneficiaries					
Ranking Winner List	Organisation	Proposal Title	Country	Scenario No	Funding budget
1	Odin Solutions SL (ODINS)	FLEXUM: Flexibility services provision by University of Murcia premises	Spain	4	59718
2	Beedata Analytics SL	ODINA-TS Proposal: Outliers Detection and Imputation: New Approaches for Time Series Energy	Spain	6	57728
3	SOFTWARE COMPANY EOOD	GEOGRID	Bulgaria	1	59063
4	Stemy Energy	FLAGS	Spain	4	45150
5	H. Wise Wire Energy Solutions Limited (WiseWire)	OneNet – ActiveProsumer: Active Prosumer in the loop with the Cyprus demo of the OneNet project	Cyprus	2	59997
6	Watt-IS S.A.	WISeGrid - Electrical Grid Web-based optimization services	Portugal	3	49000
7	Northeast Flow Oy	Decentralized digital heating as a flexibility provider	Finland	5	24479
8	ARTELYS	ADREE :Advanced Data Reliability analysis for European Energy systems	Paris	6	59500
9	Presify Analytic Software Inc.	RUNADMTS: Robust Unsupervised Anomaly Detection Model for Time Series Data	Turkey	6	60000

The list with the OneNet Open Call Beneficiaries is published on the Open Call portal (<https://opencall-onenet.cintechsolutions.eu/onenet-open-call-beneficiaries/>) and a press release with the winning ranked list has been produced to be circulated through OneNet media channels. The aforementioned press release is included as Appendix 4 of this deliverable.

8 Development phase- Expected Results

This section includes the description of the Open Call projects that were selected for funding under OneNet Open Call. The rank follows the number of the scenario that they address and where there are more than one proposals under the same scenario the rank of the selection list was followed. The Open Call projects did not start simultaneously but into groups. The duration of the projects is 6 to 9 months depending on the workplan of the OneNet demonstration they address.

A joint-kick-off meeting for the Open Call projects was realised in 19 October 2022. Open Call projects introduced themselves to the OneNet Consortium and presented their projects' objectives and expected outcome.

During the development phase, OneNet will support the selected Third Parties, offering free coaching and free access to high end infrastructure. A mentoring team was composed by technical partners connected to the Scenarios to support each party, monitor the project progress and give guidelines and technical knowledge to beneficiaries so as to guarantee a high-quality services and tools that will be integrated in OneNet and augment the impact of OneNet project to the energy ecosystem.

8.1 GEOGRID by Software Company



8.1.1 Project Description

8.1.1.1 Challenge & aim

The software packages commonly used by the system operators are mostly focused on those tools that can guarantee the reliable power system analyses. The ways in which the results could be offered to the wider audience, are being heavily neglected. In order to mitigate these events, the tool that would be developed in the scope of this proposal intends to cover both of the mentioned aspects of work. The detailed power system analyses (corresponding to the main advantages of the currently commercially available tools) and the comprehensive way of presenting results, guaranteeing the novel functionalities that would be offered to any potential users.

The aim of GEOGRID is to prototype a multisided platform to complement the F-channel platform for the additional modelling of the grid, power system analysis and illustration of the results on the georeferenced GUI through GIS server application. The proposed use case will particularly focus on residential prosumer and other low voltage installations which are usually not scope of the modelling by TSO or DSO, simulating a portfolio of Prosumers equipped with PV, flexible storage as well as EV smart charging (V1G and potentially V2G) providing a large variety of flexibility options into balancing and TSODSO congestion management processes particularly, as well as usage of DER flexibility potential on a higher levels, especially by TSO operators. To achieve that, SOFTWARE COMPANY EOOD (SC) will develop the necessary simulation models, as well as geographic visualization of simulation results, exposing results and linking to other services being developed under F-channel platform via GIS technologies. The proposed solution will be coupled with the F-channel platform for performing the necessary calculations in the power system, such as the power flow analyses, voltage state estimations and the N-1 reliability assessments. This will give the system operator the level of insight that was not available ever before, with the benefits being almost immeasurable. Finally, the GIS layers and the blueprints of the interlinked layers could be further used on other similar projects, through the developed geo server and associated database/s.

8.1.1.2 Proposed solution

Power system is obviously evolving and rapidly changing the last few decades. This change will continue, and a vision of the fully decentralized system will soon become the reality. The new vision, based upon the distributed production of the energy in the renewable sources, brings the new challenges with it, where the particular attention should be given to the need for providing the necessary, additional amount of flexibility to the system. Flexibility, in new power system paradigm is no longer strictly connected to the high voltage, controllable resources, but is also distributed in a lower level entities. This brings us to the problem of identifying and exploiting those new distributed FSPs, but also it brings a huge chance of making flexibility services capable for finer “tuning” of the targeted power system parameters. Like the change from old low resolution robust TV screens, into subtle, high resolution screens, which change both quality of usage and perspective for the end users. In order for this to be achieved, the strong cooperation between the TSO and the DSO needs to be established, with each of the operators being aware of the state of the system beyond those voltage levels that were previously of interest to them. In order to avoid misinterpretation of the results/information by the end users, the solutions proposed in the scope of this proposal would use the geographical map for showing any of the requested information, as the universal medium that literally all of the potential clients would find clear and easily understandable, being scalable and useful for any future application. An additional feature that could further assist the operators in the appropriate fulfillment of the tasks they are assigned would be the modification of the aggregation level, meaning that the operators would not have to deal with the enormous amount of data (even in the visual form, it could be tedious and slow down the process significantly) shown in

the entire map of the power system. Instead, the level of granularity that will be used when presenting the data to the end users will solely depend on the zoom-level of the client's window, with the higher level of zoom also providing the higher level of map granularity, i.e., the higher resolution in which the results are shown. To simplify, if the user would not be satisfied with the resolution of the map, they could simply zoom in and, by that, reduce the geographical scope of the map that they are shown, but also increase the resolution all the way to the single entities in the system. Finally, regarding the potential for replication of the described solution, it should be stated that it is rather high, since the necessary input data for the proper implementation of the solution would not differ much from the standard set of data that is available to every system operator – the technical characteristics of the system, the geographical characteristics of the power system (above all, the coordinates of each system element, including the single energy entities) and the weather forecasts for the area of interest. Of course, the latter could prove to be more difficult to obtain than the prior two, but, if this information would be at disposal, the developed tool could be adapted to accommodate nearly every real-life power system and to fit the needs of the various potential users, starting from the system operators, but also including both academic and the industry-oriented projects that could get important insights by using this tool.

The goals that would be covered by the proposed solution would match the ones requested by the Scenario 1 of the OneNet Open Call (i.e., Deep power system analysis through GIS server application). The details on the ways in which these goals would be reached are presenting in the following sections.

It is clear that the vision and the requests of this scenario are founded upon the two main goals that are supposed to be achieved by the proposed solution. The first of those would be the development of the mathematical model that could incorporate the sufficient details on the characteristics of the distribution system down to the lowest level entities (in the Call, the households, the solar units and the wind turbines are listed as those entities that should be taken into consideration). The second main goal would be the development of the connection to the GIS server that would be used as a tool for combining the geographic and the technological characteristics of the system, allowing the results to be shown on the accurate map of the selected region. Since the description of the tool that is submitted via this proposal includes both of the mentioned improvements, it can be said with confidence that it is aligned with the scope of the Call.

This section will be separated into three paragraphs, each of them dealing with one of the KPIs listed in the previous part of the proposal. First of all, the model itself would be developed in such a way that its modification and the adaptation to fit the needs of the user at the easiest possible way, with the exact format to be defined by the potential employers. What is certain, however, is that the proposed under development tool will include the model of the sufficient granularity and level of details to fulfil the requirements stated in the Call. Also, it should be highlighted that all of the codes for performing the necessary analyses would be written in one of the Open Source programming languages, giving the opportunity for the quick and simple modifications in case of need, whether for some of the more prominent corrections or for the adaptations to some cases that are not

initially foreseen by the project in question. The second objective of the GEOGRID is the development of the GIS server and map in which the entire power system of the analyzed region would be shown. The main aspect upon which the focus is placed is the possibility of changing the amount of the data and number of elements shown in the map with the change of the zoom-level of the map itself. Along with this, the map will also include the option of spatial query, i.e., by definition, the option of providing the user with the required set of information upon the simplest actions, such as the clicking at or hovering the mouse cursor above the element of interest to them. Finally, the custom-tailored GUI, that is envisaged so that it could reflect the customer needs verbatim, is founded upon the idea of allowing the client to use with the most efficient way the developed tool. The appearance of this GUI will be defined in cooperation with the employer, but what is already decided is that it would give the users an overview of the map of the system, allow the simple initiation of any actions that user may want to undertake and print out the on demand automatic report of the results by the specifications provided by the user.

The software packages commonly used by the system operators are mostly focused on those tools that can guarantee the reliable power system analyses. The ways in which the results could be offered to the wider audience, are being heavily neglected. In order to mitigate these events, the tool that would be developed in the scope of this proposal intends to cover both of the mentioned aspects of work. The detailed power system analyses (corresponding to the main advantages of the currently commercially available tools) and the comprehensive way of presenting results, guaranteeing the

Development of the solution will be divided into 5 tasks:

1. Development of the georeferenced grid simulation model which contains consumer's (different types and connection schemes of prosumers) detailed physical models of the connected production units (microgrid simulation models), for different types which can be integrated with the rest of the F-channel modelled grid on Crete.
2. Development of the load profiles of a typical industrial consumer, commercial consumer, and residential consumer for characteristic days in summer, winter, and system peak.
3. Development of the database tables based on a GIS server, its connection towards the developed microgrid simulation models as well as load behavior models and its integration into the F-channel GIS server.
4. Development of the GUI to support the simulations and calculations with GIS map results presentation.
5. Overall GUI integration within the F-channel app existing GUI.

8.1.1.3 Expected results

This solution will allow for full inclusion of residential and industrial prosumers, with its detailed simulation models into the overall power system simulations (TSO network model + DSO network model + prosumer model). It will enable inclusion of the lowest level energy entities into the list of flexibility service providers. The common simulation model of the selected part of the system in the required resolution, together with the GIS server upon which the necessary data will be uploaded and the custom-made GUI will make the overall solution useful and handy for both TSO and DSO short and mid-term planning departments through the f-channel platform. More on this will be given in the separate chapter of this application that will go into the individual KPIs and the deliverables that should be provided during the project realization.

The two main improvements that are aimed in this proposal are the development of the power system simulation model that will include the voltage levels down to the lowest ones, and the creation of the GIS server that will be used for the visualization of the obtained results. In accordance to that, those two improvements can be treated as the first two KPIs that can be used to measure the success of the work that will be done in GEOGRID project. The third KPI that is relevant to this proposal revolves around the user-friendly GUI that is imagined as a mean of making the usage of this tool rather simple and intuitive representing the final step in making the services offered by the tool that is getting developed accessible to any interested stakeholder.

8.1.2 Company Description

Software Company Ltd (SC) is a Bulgarian private firm that specializes in software development. Since 1996, the company has offered a wide range of high-quality services in the development, delivery, and maintenance of software in Europe and USA.

SC's key market advantage is the ability to leverage a wealth of experience in this sector, a network of local and international partners, and a very competitive pricing strategy to deliver quality software solutions. The company is also ISO 9001:2015 certified.

SC has experience in gathering requirements, designing, building and testing software related to electricity networks, renewable energy, medical imaging, business intelligence and others. In addition, the company is experienced in developing and customizing business intelligence applications, as well as software for managing databases and data mining.

- SC has worked with a number of partners from Europe and USA in the following areas:
- Transmission and Distribution grids applications/software
- Green Energy and Energy Efficiency software
- Medical Software – PACS and RIS
- Custom software development
- Web sites and Internet aware software
- Database management software, Data Warehousing, Business Intelligence

Software Company has successfully participated in several FP7 projects while participates in ongoing Horizon 2020 projects related to transmission and distribution grids such as: FLEXITRANSTORE (<http://www.flexitranstore.eu/>), INTERFACE (<http://www.interrface.eu/>), FARCROSS (<https://farcross.eu/>), ENERGYSHIELD (<https://energy-shield.eu/>) and others.

8.2 OneNet - ActiveProsumer by WiseWire



8.2.1 Project Description

8.2.1.1 Challenge

The green and digital transformation of power systems considers the replacement of large conventional generation plants with decentralized generation based on renewable energy and the adaptation of information and communication technologies (ICT) to enable intelligent operational functionalities for future energy systems. Current trends indicate a fast transition for the electrical grid from a fully centralized architecture to a decentralized one. This transition, however, demands the cooperation and increased flexibility and adaptability from all related stakeholders (i.e., system operators, energy market, and active prosumers). At the same time, prosumers are currently faced with rapid changes and increased energy costs while they are unable to actively participate in the energy market and grid operations actions. This can lead to a non-cost-effective operation of both the prosumers and the grid.

Therefore, innovative solutions are required which breach the gap between the power system operators and active prosumers to achieve a synergistic and mutually beneficial operation at both the market and the network levels of the future power systems. These solutions need to support the active participation of prosumers and the efficient and reliable grid operation while maximizing the allowable penetration of renewable energy.

8.2.1.2 Proposed solution

The ambitious vision of the OneNet project contributes towards the evolution of the European power system by developing new market, products, services, and ICT systems. To support this vision, the OneNet – ActiveProsumer project will develop new innovative grid services based on ICT technologies to fully exploit demand-response, storage, and distributed generation while creating fair, transparent and open conditions for the consumer; thus, enhancing the engagement of household consumers towards the cost-effective and reliable operation of power grids.

The key objective of OneNet – ActiveProsumer project is to enable the participation of actual prosumers in distribution grid management by allowing the provision of flexibility services to the grid. Towards this direction, the project will focus in two enabling pillars. The first pillar focuses on the development of a fast, secure and



reliable communication between the prosumer and the DSO control center, while the second pillar emphasizes on intelligent power control methodologies.

Initially a secure two-level communication framework will be developed. This framework will be responsible for a) the internal communication at building level to allow the coordination of flexible resources within the prosumer infrastructure, and b) the external communication allowing the exchange of measurements and coordination signals between the prosumer and the DSO. The internal communication at the consumer level will be established over the prosumer local area network (LAN) and will be managed by the WiseWire Energy Box (see Figure 8.2.1) which will receive fast measurements and send coordination signals to key power equipment at building level (i.e., PV inverter, battery inverter, fast-reporting smart meter, etc.). The external communication will be established between the prosumer (WiseWire Energy Box) and the DSO control center (ABCM-D platform) through the WiseWire Cloud platform (see Figure 8.2.1). The communication will employ MQTT for communication, a widely utilized protocol in IoT applications offering scalability and a cost-effective solution for plug-n-play applications. Proper API frameworks will also be developed to facilitate the data exchange between the prosumers and the DSO control center.

The intelligent power management schemes that enable the provision of ancillary services by the prosumer will be developed and integrated in the local processing unit of the WiseWire Energy Box and the cloud within the WiseWire Cloud platform. The intelligent power management algorithms will monitor and utilize forecasting and optimization methodologies to control the flexible resources of the building while ensuring the capability of provisioning of ancillary services efficiently and effectively. These services will maintain a regulated active and reactive power exchange between the prosumer and the grid according to the DSO coordination set-points.

The proposed solutions will be integrated into an actual prosumer located in Nicosia, equipped with a rooftop photovoltaic system, a battery storage, and a fast-reporting smart meter. The prosumer will continuously interact (e.g., every 30 seconds) with the DSO control center (ABCM-D platform of OneNet), to exchange power measurements and coordination signals. The fast measurements will be provided to the ABCM-D platform to allow the representation of the prosumer operation in the digital twin of Cyprus grid. The coordination signals generated by the ABCM-D platform will be communicated to the actual prosumer, which in turn will manage its own flexible resources to provide ancillary services accordingly.

The infrastructure, architecture and concept of OneNet - ActiveProsumer project are presented in [Figure 8.2.1](#).

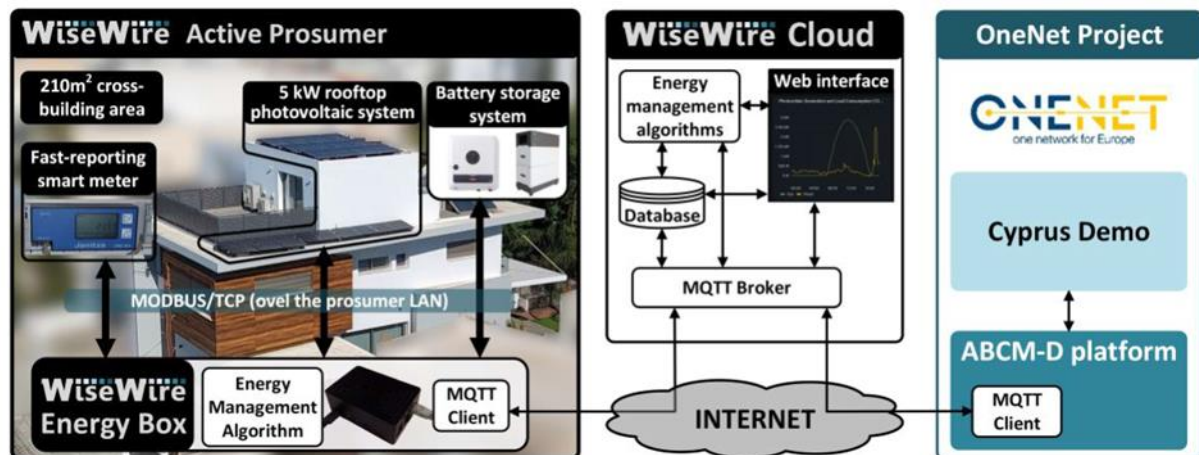


Figure 8.2.1 – The infrastructure, architecture and concept of OneNet - ActiveProsumer project.

8.2.1.3 Expected Results

The scientific outcomes of the project will include cutting edge intelligent control and management methodologies and are expected to act as the foundations of the next generation grid services and products that can increase and fully exploit the flexibility at the prosumer level in a fair and transparent manner as well as ensure prompt demand response for the system operators. In turn, the newly developed technologies that incorporate cloud services and enable active prosumer participation are expected to have a key role in the changing energy system architecture and are envisioned to be considered as necessary pieces for the future customer-centric grids. At the same time, the proposed integration of intelligent control methodologies at the consumer level aims to increase consumer's gains from energy cost savings. Further, the provision of ancillary services by the prosumers enables the market participation of flexible electricity consumers with the aim of reducing their electricity cost up to 20% with great social-economic benefits. On the other hand, the increased flexibility provided to the system operators is expected to significantly increase the utilization of grid capacity by 15%, reducing the investments for upgrading the infrastructure and allowing higher penetration of renewable resources. Distributed flexibility services can also be utilized by the operators to enhance the efficiency by reducing the grid losses by 5-10%. Finally, the facilitation of the active participation of the consumers in the energy generation is expected to significantly increase the adoption rate of renewables and support the transition to a greener energy sector.

8.2.2 Company Description

H. Wise Wire Energy Solutions Limited (WiseWire) is a start-up company offering innovative solutions and consultancy services in the area of smart grids and energy efficient buildings. The company is based in Cyprus and was founded in 2020 with an aim of transforming innovative research results into marketable products and services. The team has strong scientific and technical expertise with significant experience in research-

innovation projects. The mission of the company is to create innovative solutions and services for the green and digital transformation of buildings and energy infrastructure. WiseWire's solutions aim to advance the integration of renewable energy sources and maximize their penetration into the energy infrastructure, reduce the electricity cost for the consumers, and enable zero emission buildings. WiseWire is participating in research and innovation activities and focusing on creating novel ICT-based solutions to enable sophisticated and scalable energy management functionalities and their commercialization.

8.3 WISEGrid by Watt-IS



8.3.1 Project Description

8.3.1.1 Challenge

Critical issues like global warming, depleting fossil fuel reserves, and greenhouse gas (GHG) emissions require attention for ensuring a sustainable future. New technologies and solutions need to be deployed to reach the ambitious targets set by the European Commission. Hence, the vast expansion of renewables (that are variable in nature and have a certain degree of unpredictability) together with the cross-sectorial electrification of the energy systems form a pillar in the sustainable development agenda of most countries, requiring a smarter and more flexible electricity grid, which comes hand in hand with an optimized coordination between system operators. The clean energy transition and the introduction of new consumption dynamics that arise with new technologies such as heat pumps or electric vehicles (EVs) are deeply associated with the digitalization of the energy systems, where unprecedentedly high amounts of data are being generated from smart meters. Such data is esteemed to unlock the full potential to better manage the energy value-chain, including the grid. In fact, more data means the possibility to develop deep analytics that can deliver valuable services such as a more accurate and closer to real-time forecast and management of the demand and supply, the adoption of short-circuit preventive measures and the avoidance of unnecessary system costs. Facing this scenario, an optimized coordination between DSOs and TSOs is paramount to sustain an effective and efficient management of the grid. Hence, identifying and sharing the information that enables better operational planning between their networks is a needed upgrade that will not only allow for a more efficiently managed and resilient grid, but also for a higher capacity to incorporate additional variable renewable energy resources that will bring us closer to the sustainability and climate goals that need to be achieved. Having outlined the existing "Challenge(s)", Watt-IS participation in the OneNet project has the objective to contribute towards an improved coordination between the DSOs and TSOs regarding information exchange about the grid "operational planning" and flexibility related services, to facilitate the definition of necessary actions in order to avoid grid constraints, avoid unnecessary investments and ensure a secure, reliable and efficient grid operation.

8.3.1.2 Proposed solution

Within the scope of the OneNet open call Watt-IS, jointly with the project stakeholders (E-REDES & REN/NESTER) have outlined the proposed solution that will involve the refinement and implementation of a set of APIs, along with the support Backend and Frontend layers, that will facilitate an optimized coordination between the Portuguese DSO and TSO regarding information exchange focused on grid “operational planning” and flexibility service requirements. The set of APIs and related services will be implemented in order to exchange the following information between the Portuguese DSO and TSO: i) daily (next 72h) consumption and generation forecasts; ii) daily (next 72h) forecasted short-circuit information; iii) weekly, monthly and annual maintenance plans, iv) flexibility service providers prequalification and v) daily flexibility needs forecasts (next 24h). These development swill support the Portuguese Stakeholders in the implementation of the different System Use Cases (SUC) that are part of the OneNet Portuguese pilot, namely:

System Use Case 01 (REN/NESTER)–GUI &Integration with REN/NESTER APIs–The goal of this SUC is to evaluate if a given Flexibility Service Provider, connected to the TSO or DSO network, is capable of delivering a given product and therefore to enter in the flexibility market. In order to do that, two types of pre-qualification should be considered: Product Pre-qualification (in this case, performed by the TSO) and Grid Pre-qualification (performed by the system operator of the network that the FSP needs to be connected to).

Regional Use Case (REN/NESTER) –GUI & Integration with REN/NESTER APIs and OneNet Connector–This use case has the same goal of SUC 01, although, the pre-qualifications will occur between system operators of the western cluster, exclusively via the OneNet Connector.

System Use Case 02(REN/NESTER)–GUI &Integration with REN/NESTER APIs–This SUC supports the coordination between the DSO and TSO so that they can determine how much flexibility they will need to acquire, for a short-term timeframe.

System Use Case 06 (E-REDES & REN/NESTER)–The SUC 06foresees the possibility for weekly, monthly and year ahead grid maintenance plans to be exchanged between the DSO (E-REDES) and the TSO (REN/NESTER).

System Use Case 07 (E-REDES & REN/NESTER)–The SUC 07 foresees the possibility for daily energy consumption and generation forecasts (including Wind, Solar (PV), Hydro, Pump Storage, Thermal, Other sources, Load P, Load Q) to be shared between the DSO (E-REDES) and the TSO (REN/NESTER).

System Use Case 08 (E-REDES & REN/NESTER)–The SUC 08 foresees the possibility for the short circuit levels regarding the contribution of distribution and transmission networks to be shared between the DSO (E-REDES) and the TSO (REN/NESTER).

8.3.1.3 Expected results

With the successful implementation of all of the foreseen SUC's within the Portuguese pilot, the DSO and TSO will be empowered to have more efficient and stream lined data exchange mechanisms focused on: i)“operational planning”-being possible to exchange and update between them weekly, monthly and annual maintenance grid plans; ii)“forecasts”-allowing for a more efficient exchange of daily (next 72h)consumption, generation and short circuit forecasts; iii)“flexibility related services”-making possible for Flexibility Service Providers (FSP) prequalification, both at the DSO and TSO level, and exchanging daily (next 24h)flexibility needs forecasts. With these foreseen developments Watt-IS has the objective to contribute towards the achievement of a more efficient information exchange process between Portuguese System Operators, but also to facilitate the creation and development of a new layer of grid flexibility services that, as previously discussed, are key to support the vast expansion of renewables together with the cross-sectorial electrification of the energy systems. Based on the experience gained in the OneNet project Watt-IS expects to have the possibility to deepen the collaboration with the Portuguese System operators in the flexibility services analytics area, but also to expand collaborations with other System Operator within the EU in the field

8.3.2 Company Description

Watt-IS is a Portuguese data analytics company that develops and applies Artificial Intelligence based Data Analytics on top of smart metering data to provide high-value services to energy utilities, grid operators and other partners. They provide advanced data analytics services in a SW as a Service (SaaS) approach (or integrated into user engagement platforms) focused on energy efficiency, leveraging on an existing smart metering infrastructure deployed and managed by System Operators (DSOs& TSOs). Watt-IS main goals are to be able to increase customer satisfaction through innovative services provided and, with that, reduce churn rates and generate new revenue streams to their partners always with a focus on energy efficiency and the reduction of GHG emissions. They have built a cloud-based data analytics architecture & supporting infra-structure that integrates different data analytics modules focused on the needs of energy retailers and grid operators. These data analytics services can be made available via integration with white-label visualization platforms, in a SaaS approach, or via API's following a Data Analytics as a Service (DAaaS) approach Watt-IS provides a wide range of data analytics services that aim to create value at the various layers of the energy value-chain, such as i) Load disaggregation from smart meter data; ii) targeted energy efficiency measures; iii) Load Forecasting; iv) estimation of the Demand Side flexibility potential of individual/group of clients; v) identification of solar PV and EV assets, among others. Currently, Watt-IS is supporting DSO's, energy retailers and other stakeholders, providing real and non-real-time data analytics services to thousands of end clients, processing metering data for commercial settlements, developing user engagement platforms and providing DAaaS data analytics through API's incorporating advanced machine learning/AI services.

8.4 FLEXUM by ODINS

8.4.1 Project Description



8.4.1.1 Challenge

The University of Murcia has power peaks larger than the 4MW. Approximately a 35% of that peak could be well related to the conditioning, what would represent a value larger than 1MW. This is obviously an approximate calculation, and more importantly, it is subjective to the possibility of acting over the majority of buildings on campus, but still, it is a promising value for the demonstration purpose.

These peaks have a substantial economic impact as such power peaks for a consumer like the University of Murcia result in larger energy bills and on a high extra cost of the maintenance of the micro-grid of medium voltage of the campus.

On the other hand, these peaks can also interfere in the normal operation of the grid given its size and can generate network congestions under certain circumstances.

8.4.1.2 Proposed solution

FLEXUM will design, implement and evaluate a flexibility service provision (FSP) to achieve demand adjustments and responses for alleviating the network congestions at medium and low voltage network levels in the Spanish scenario located in Murcia (Espinardo). Using both already existing and new sensing/actuating equipment, the solution will use the shiftable loads and the controllable loads of the UMU infrastructure mainly composed by connected HVACs and electric vehicle chargers to provide demand responses and flexibility capacity. Using the UMU infrastructure, ODINS will be able to act as a Flexibility Services Provider (FSP) to develop and demonstrate flexibility services.

The main project results will be an FSP component, a flexibility engine and demand-response services based on a novel IoT platform developed in H2020 PHOENIX project. The engine will use artificial intelligent algorithms to quantify flexibility and will also design and suggest flexibility strategies for final consumers using a simple friendly dashboard. The flexibility engine included in the IoT platform will be compatible with communication protocols of DSOs and TSOs. ODINS will implement an FSP component in the IoT platform to enable the bidirectional communications of congestion signals and demand events from the OMIE local market platform. Moreover, the FSP component will be design with high interoperability to be compatible with other grid systems.

This project will develop flexibility services and demand responses for the main buildings of the university with existing energy meters, sensors and actuators, so automatized demand response operations could be

implemented to alleviate peaks on the local grid network. This will stay on campus and will allow on the long term to plan actuations that modify the demand. This will serve as an exemplary exercise for other large consumers in the region of Murcia and the whole country. Also, it will facilitate open data that stakeholders such as energy utilities, or ESCOs could use to prepare for the new scenario where energy flexibility and demand responses are the norm.



Figure 8.4.1 – Main test environment (UMU Campus)

8.4.1.3 Expected results

The ambition of FLEXUM is to offer to OneNet a series of beyond state-of-the-art developments to provide the following innovative advances:

1. Optimization of operation of UMU infrastructure to maximize flexibility.
2. Intelligent operations to improve the thermal inertia of multiple UMU buildings.
3. Development of smart plans for contracting flexibility.
4. Forecasting engines to anticipate to flexibility requests.

This project will develop a flexibility demonstrator to experiment demand adjustments and responses for alleviate the network congestions at medium and low voltage network levels in the Spanish scenario located in Murcia.

8.4.1.4 Preliminary tests (previous real tests)

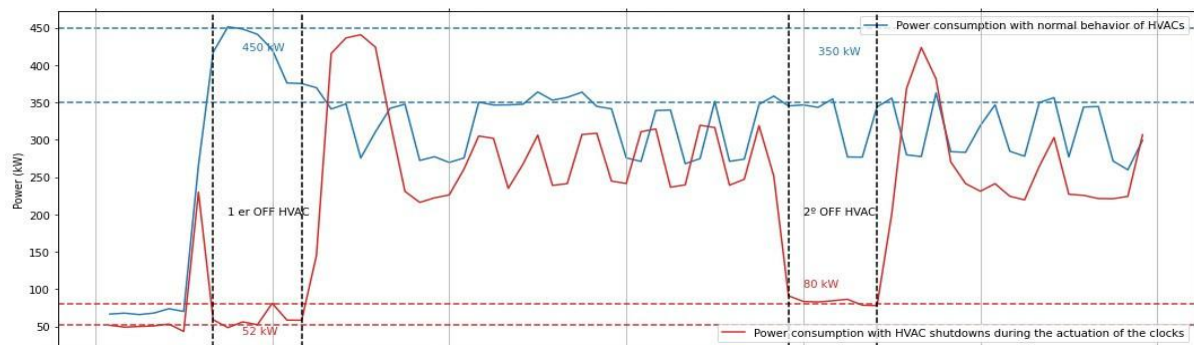


Figure 8.1.2 – General Lecture Building and Mathematics Faculty

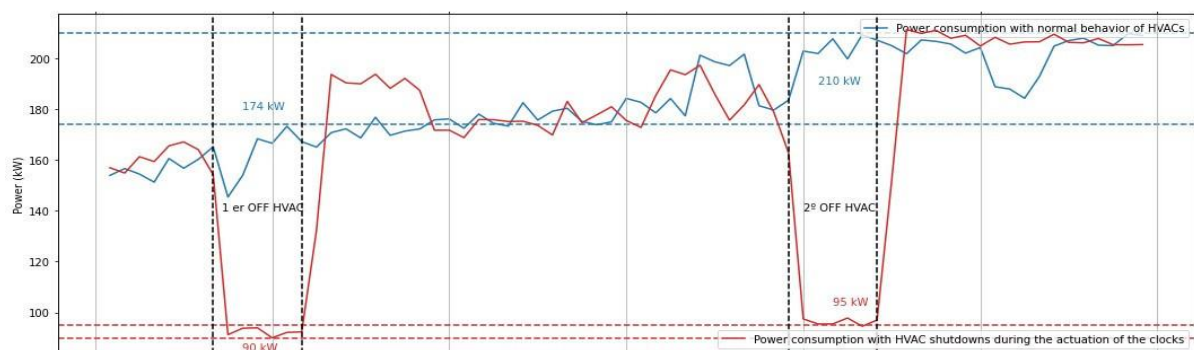


Figure 8.2.3 – General Library and Documentation Faculty

8.4.2 Company Description

OdinS has strong expertise in research and development of embedded systems and data management platforms. OdinS provides secure, flexible and interoperable products able to monitor and control remotely infrastructures in multiple business sectors such as Energy/Grid Management and Smart Cities/Buildings. OdinS has a wide background in the R&I fields of Internet of Things, Edge/Cloud Computing, Cybersecurity and Data Analytic which have been proven in EU research projects. Concretely, OdinS has experience in H2020 projects related to FLEXUM.

- Smart2B (GA 101023666, H2020-LC-SC3-EE-2020) <https://cordis.europa.eu/project/id/101023666/es>
- PHOENIX (GA 893079, H2020-LC-SC3-EE-2019) <https://eu-phoenix.eu/>

In the FLEXUM project, the main goal of OdinS will be the development, deployment and evaluation of FSP component, flexibility engine and services using ICT innovations (i.e. IoT, AI and Data-driven Platforms) as well

as the interoperability with the local market platform developed by OMIE in the OneNet project to achieve the improvement of short-term and long-term congestion management in cooperation with the Murcia demo provider.

8.5 FLAGS by Stemy Energy



8.5.1 Project Description

8.5.1.1 Challenge

The energy market is shifting from the traditional paradigm typified as a passive distribution and one-way communication from the electricity supplier to the consumer (G-DL) to a new energy paradigm focusing on an active role of the customers. Consumers, their daily routines, and the social context in which they operate, should be more central for the DSOs (Distribution System Operators), where the focus is still mainly on technological issues and economic incentives. Stemy's solution, with a new user-centric approach, is the first of this kind of solutions within the energy sector.

Stemy's technology supported by an algorithm with AI, self-learning capacity and big data applied in controlling the energy consumption of each consumer optimizing CAPEX and OPEX and the participation on the existing energy and flexibility markets through the energy assets installed in the buildings. To be noted, it is the first aggregation platform able to optimize energy efficiency while providing flexibility to the grid.

This cost optimization is based on the learning capacity from the energy behavior, comfort levels, building performance and price signals received from the energy markets. This is achieved by acting automatically on the equipment in the building: advising on how to improve the consumption and on adequate investments to obtain greater benefits, suggesting the best rates and powers to contract. Apart from monitoring, forecast is enabled through self-learning algorithms, the Stemy's AI predicts performance, DER performance, weather (temperature, irradiation, and wind), markets (price and flexibility request), behavior & preferences of the final user (e.g., temperature reference). It has the capacity to manage the flexibility of all electrical devices at the consumer level in a cost-effective way, through a simple and connected low-cost technology which connects and operates the charging devices and DER: hot water, HVAC, water pumps, batteries, EV charging posts (V2G, G2V), refrigeration, water filtering, water heating, milling and chemical processes.

Additionally, the platform connects the user with the Energy market, fostering RES and is able to aggregate electricity resources with high precision and in real time, allowing participation in frequency response markets that require an immediate response (in seconds after that the request is sent by the operators).

8.5.1.2 Proposed solution



The project will develop a demonstration located in Cantoblanco (Madrid, Spain). The buildings have a maximum consumption of 500kW. They count with an installed power of 2,7MW of heating and cooling systems, which use to consume ~2,16MWh per day. The annual total consumption is ~1314 MWh.

The approach of the project can be summed in three main actions: 1) onboarding, solution design and installation, 2) operation and tests, 3) result analysis and dissemination.

The onboarding process will be done through Stemy's "Comunidad Flex".

The installation will intervene the fuseboards (installing Ampere, a Flex-ready monitoring device of Stemy) and the heating/cooling system (installing Carrier, a Flex-ready HVAC control device of Stemy).

Then the operation will be done by Stemy's aggregation platform. During this phase there are three main actors:

The network operator (I-DE), who operates the distribution network and assesses the needs and constraints of the network. Thanks to a local flex market, operated by OMIE, DSO can request power consumption modifications to consumers to avoid congestions in the grid.

- A set of buildings which consume electricity and have some energy resources.
- The flexibility provider, who is Stemy. On one hand, Stemy oversees providing the flexibility to the network operator according to the market request. On the other hand, Stemy is in charge of operating the energy resources of the buildings to optimize their performance and fulfill the market commitments.

The relationship between these three agents is key to help achieve the stability of the grid: the network operator will send flexibility signals to the flex provider so it can operate the portfolio of their aggregation platform to accommodate the network needs according to the constraints given by the users. This is done thanks to a deep knowledge of consumers and their consumption patterns and thanks to the synergies generated from aggregating multiple types of resources. Once the flexibility signal is sent to the flexibility provider, the network operator will monitor the affected network to validate the signal and assess the impact of it.

Stemy's aggregation tool can respond effectively to flexibility signals within seconds so it can help the grid at many markets. In the meanwhile, the users will have two interfaces, one app and one web to interface with the "Comunidad Flex".

8.5.1.3 Expected results

To fulfill the scenario and provide flexibility at distribution level the main goals and KPIs defined are:

- Monitor disaggregated consumption and control the buildings' heating and cooling systems in seconds.
- Communicate with the network operator (I-DE) to be able to receive flexibility signals, which will translate in modifying the consumption of the energy resources.

- Respond to the flexibility signals to alleviate congestions by managing loads.
- Prove participation in distribution local markets.
- Generate data from the demand response to flexibility trials and the comfort levels of the users to evaluate impact. For the evaluation of the comfort levels, STEMY will have the temperature measurements that the users will experience at every point of actuation.
- Exploit results after the project, in Redream H2020 project and other offices.

8.5.2 Company Description

STEMY ENERGY S.L (STEMY) is a Spanish company established in 2018, with headquarters in Madrid. Currently, STEMY counts on 26 employees. SteMY encourages consumers to optimize their energy use to have a lighter footprint on the planet – particularly if that means big savings on their energy bills. For that purpose, over the last 10 years, they have developed a self-learning smart energy solution called SPLAYER, which is a cloud-based platform able to optimize existing energy infrastructure one consumer at a time without affecting the customer experience, whilst streamlining the flexibility of the grid. Thanks to SPLAYER end-users can participate in energy markets helping the stability of the electricity system and creating the bases of the renewable system of the future. The consequences are clear: reduction of the energy bill up to 30% from day one and radical reduction of the carbon footprint. In order to connect with SPLAYER, end users need to have some inexpensive/simple sensors installed by the electricity meter. Additionally, actuators need to be installed with those high-power usage devices which ODINS will want SPLAYER to control automatically, examples of these could be heating and cooling systems, hot water control electric car charging points.

STEMY is involved in other H2020, R&I and national projects.

- REDREAM 2020-23. H2020 project, <https://redream-energy-network.eu>
- SPLAYER 2020-21. R&I project
- SUSTAIN-H 2021. Participation in new local congestion markets in the UK

8.6 Decentralized digital heating as a flexibility provider by Northeast Flow Oy



8.6.1 Project Description

8.6.1.1 Challenge

The consumption and production should be balanced in a modern electric grid. Estimating consumption can already be a challenge on its own, but the increase in intermittent renewable energy like wind and solar further

complicates balancing. This calls for innovation in many areas of the electricity markets & its ancillary services, demand side response being one of them.

Electric heating, although mostly seasonal, provides an exceptionally flexible load from the grids' point of view. Buildings themselves store heat well, and short pauses in heating with a duration of minutes or even hours have next to no effect for the living conditions, thus being able to go unnoticed.

8.6.1.2 Proposed Solution

Northeast Flow (further NEF) is using computing power locally in places with a need for heat. This doesn't necessarily increase the total energy consumption. In NEF vision they have a large number of computing sites over a large geographical area and are able to provide customers comfort while also helping the grid to stay in balance.

NEF currently leverages bitcoin-mining due to its location-agnostic properties in building a decentralized data center that uses the by-product of computing, heat, to provide buildings comfortable inside temperatures during cold times. NEF is able to reduce the use of oil, gas and coal and thus even reduce the absolute CO₂-emissions. The service-oriented business model also provides an unique opportunity for heating customers to join in the flexibility markets.

As a result, in this project NEF expect to have a functionality to control their computing units according to grids' needs, while at the respecting the parameters of the building. NEF is also looking to gain more understanding and knowledge about the flexibility/electricity markets in general.

8.6.2 Company Description

Northeast Flow provides intelligent heating as a service. The heat is produced and distributed locally at a site using excess heat of computing, so the same energy is used for two purposes, resulting in a double benefit. Currently NEF has one technical pilot and three commercial pilots running in different locations around Southern Finland. The sites consist of commercial buildings and one residential building. NEF also reports its clients about monetary & carbon savings and is developing its concept further.

8.7 ODINA-TS by Beedata



8.7.1 Project Description

Data and analysis is increasingly becoming an integral part of the everyday electricity system and more specific in data exchanges among Transmission System Operators (TSO), Distribution System Operators (DSO) and consumers. With a growing emphasis on data-led decision making across different organizations, trust in the quality of data is vital. Low quality data is propagated along the organization via erroneous data-driven decisions.

A common error-prone use case would be forecasting. Fitting forecasting models with erroneous data would lead to predicting erroneous scenarios. With the AI data quality toolbox developed in the project Beedata expect to improve the quality of the data managed by the data provider.

The AI data quality toolbox will have two main tasks: Identification of erroneous data and imputation of erroneous data. In order to implement these modules it's mandatory to use the data from the provider to identify use cases and properly train the core models.. In this deliverable evaluation results of the outlier detection and imputation methods (big data) are provided.

Data quality services are focused on analyzing data in order to detect, identify, quantify and fix issues in the provided data. Type and source of issues are multiple and diverse. In this specific project, the use cases are focused on aggregated data from the European Network of Transmission System Operators for Electricity (ENTSO-E), the association of grid operators in Europe, and complementary on smart grids data from other use cases.

8.7.1.1 Challenges

ODINA-TS proposal addresses the “Scenario No 6.: Advanced Data Quality Analysis of Data Exchange Platforms”, by implementing an actively monitoring and performing outlier detection to flag errors in time series data to act as an early indicator for abnormality in the databases of the Transparency Platform, in the power system analysis, the effective collaboration between actors, and in the implementation of flexibility services.

The main challenge to be addressed is to design and implement a tool for data quality measurements divided in two main steps; i) Identification of missing or erroneous readings, ii) Imputation of missing or erroneous readings.

8.7.1.2 Proposed solutions

Outlier detection methods

Two different data scenarios are considered for the outlier detection methods and different approach is proposed per each scenario:

A) Big data scenario: Big number (>5K) of single high variable time series. That would be the case of the load or generation from distribution grid through SCADA or energy management systems, and smart meters measurements of consumers and prosumers. The method is based on using Daily Pattern based method to detect the abnormal patterns in data that are considered outliers or anomalies or errors or noise or faults or defects. In this case the method is based on using a daily pattern based approach in order to identify abnormal dates in the time series. Clustering is the core of the pattern based approach. The core of the clustering approach is based on the Gaussian Mixture Model (GMM). The result is the ability to work in a context where

the size of training sample grows as time went on, leading to more training time, more computation resources, failing to detect outliers on time.

B) Small data scenario: Small number of time series data. That would be the case of national load, generation, and the other time series data from the Transparency Platform, as well as or small business cases from the other scenarios (<5K). The method is based on obtaining a baseline model based on LSTM autoencoders, which is a self-supervised method based on neural networks. Our neural network anomaly analysis is able to flag the upcoming bearing malfunction well in advance of the actual physical bearing failure by detecting when the data readings begin to diverge from normal operational value.

Description of the imputation method

Each of the time series have specific domain properties and outliers. Although all the time series are energy domain related, each of them has different dynamics depending on different factors. The dynamics of time series can depend on economics, weather, logistics, etc. The used imputation is based on a variation of the kNN regression method over subsampled data. The subsampling criteria is mainly related to recent similar days in terms of calendar and load profile. Calendar similarity is based on labour/non-labour property or weekdays. Daily load profile similarity is calculated using Euclidean distance between partial available load and partial load of all the other days. The ones with low Euclidean distance between daily profiles are picked as similar profile days. The closest labour or non-labour days with a similar load profile are used by kNN method to evaluate neighbours' similarity. Similarity is used as a weight of the contributions of the neighbours. The imputation result is the weighted average of the neighbour's value. The weight is $1/d$ where d is the distance to the neighbour.

Each of the stages have different customization settings. Detection method customization is used to properly fit the method to the different kinds of time series provided by ENSTO-E.

8.7.1.3 Evaluation results

Outlier detection evaluation

Synthetic outliers are used as the data provided by ENSTO-E is not already classified and has no kind of label to be used as outlier identification. Synthetic data is an industry workaround to evaluate scenarios which are in the domain knowledge but with no available data. Synthetic outliers are created to evaluate the model under outlier scenarios not present in data. Outliers are domain specific but typical outlier patterns are:

- Spikes
- Plateaus
- Null values
- Anomalous patterns

The results of the evaluation method previously described is presented as benchmarking analysis. Recall will be the (from 0 to 1) main indicator and accuracy will be analyzed in each specific case. Benchmarking has been done to compare the results of the outlier detection algorithm against other methods used in the industry.

- Local Outlier Factor (LOF). The LOF algorithm is an unsupervised anomaly detection method which computes the local density deviation of a given data point with respect to its neighbours. It considers as outliers the samples that have a substantially lower density than their neighbours.
- Median Absolute Deviation (MAD). The Median Absolute Deviation is a robust measure of the variability of a univariate sample of quantitative data.

Table 8.7.1 - Specification of the outlier scenarios

Time Serie	Type of Outlier	LOF	MAD	PatternBased
ActualTotalLoad	global_spike_plateau	1	1	1
ActualTotalLoad	contextual	0.04	0	0.8
ActualTotalLoad	collective	0	0	0.95
AggregatedGenerationPerType_NUCLEAR	global_spike_plateau	1	1	0.89
AggregatedGenerationPerType_NUCLEAR	contextual	0.12	0	0.72
AggregatedGenerationPerType_NUCLEAR	collective	0	0	0.27
AggregatedGenerationPerType_SOLAR	global_spike_plateau	0.4	1	0.9
AggregatedGenerationPerType_SOLAR	contextual	0.04	0.6	0.99
AggregatedGenerationPerType_SOLAR	collective	0	0.44	0.85
ForecastedDayAheadTransferCapacities	global_spike_plateau	1	1	1
ForecastedDayAheadTransferCapacities	contextual	0.82	0	0.62
ForecastedDayAheadTransferCapacities	collective	0	0	0.52
TotalCapacityNominated	global_spike_plateau	1	1	0.51
TotalCapacityNominated	contextual	0.03	0	0
TotalCapacityNominated	collective	0.01	0	0.41

Imputation evaluation

See the imputations results in Table 8.7.2:

Table 8.7.2- Specification of the outlier scenarios

TimeSerie	Type of gap	nRMSE
ActualTotalLoad	five_days	0.00787

ActualTotalLoad	partial_days	0.00207
ActualTotalLoad	single_days	0.00355
ActualTotalLoad	single_hours	0.00063
AggregatedGenerationPerType_NUCLEAR	five_days	0.00485
AggregatedGenerationPerType_NUCLEAR	partial_days	0.00170
AggregatedGenerationPerType_NUCLEAR	single_days	0.00242
AggregatedGenerationPerType_NUCLEAR	single_hours	0.00048
AggregatedGenerationPerType_SOLAR	five_days	0.04497
AggregatedGenerationPerType_SOLAR	partial_days	0.01425
AggregatedGenerationPerType_SOLAR	single_days	0.02627
AggregatedGenerationPerType_SOLAR	single_hours	0.00677
ForecastedDayAheadTransferCapacities	five_days	0.00422
ForecastedDayAheadTransferCapacities	partial_days	0.00036
ForecastedDayAheadTransferCapacities	single_days	0.00094
ForecastedDayAheadTransferCapacities	single_hours	0.00000
TotalCapacityNominated	five_days	0.06122
TotalCapacityNominated	partial_days	0.02585
TotalCapacityNominated	single_days	0.03851
TotalCapacityNominated	single_hours	0.00855

Conclusions regarding outlier detection:

- Manual curation of positives is required in order to calculate precision so F1-score
- Accuracy is highly related to the properties of the time series. As it was expected, high stochastic time series have worse results.
- Accuracy in global spike and plateau outliers is quite good in all methods
- Detection in contextual and collective outliers is only done by the pattern based algorithm. LOF could work under some specific time series properties
- Pattern based algorithms detects potential (false/true) positives which should be manually reviewed
- Automatic hyperparameter tuning must be used to improve the results once labeled data is available
- Hyperparameter tuning can be used to generate different kinds of outlier signals. Soft and strict hyperparameter tuning can be used to create warning and severe outliers

- Additional extra-information like holidays or special days could be added to pattern based method in order to improve clustering quality

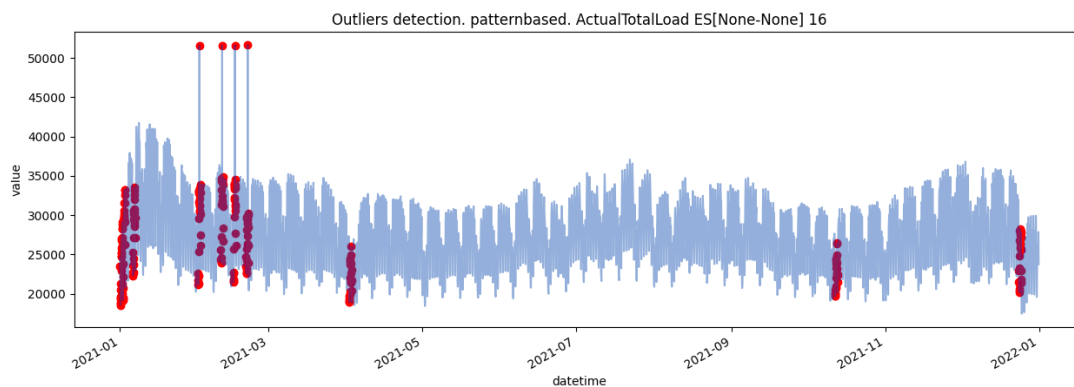
Conclusions regarding imputation:

- Deviation is highly related to the properties of the time series. Best results are obtained in low stochastic time series and worse results are obtained in high stochastic time series
- Partial day gaps and single hour gaps are best predicted as they provide daily pattern contextual information to the imputation method
- Automatic hyperparameter tuning must be used to improve the results once outlier labeled data or extra information on gaps is available
- Additional extra-information like holiday, specials days or specific domain specific data (weather, market info, time series correlation, ...) could be added to improve prediction.

The results per each kind of time series introduced in the evaluation description are displayed below. The red dots are the predicted outliers detected in the time series by the outlier detection.

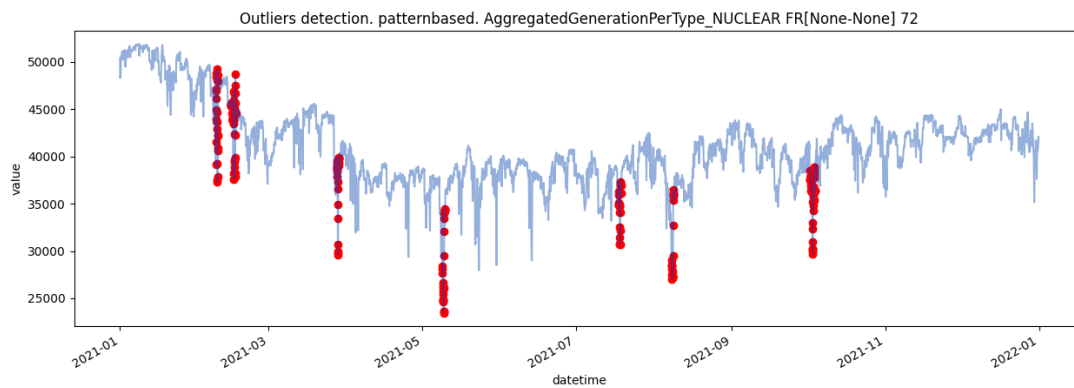
ActualTotalLoad.global_spike_plateau

Daily-pattern based



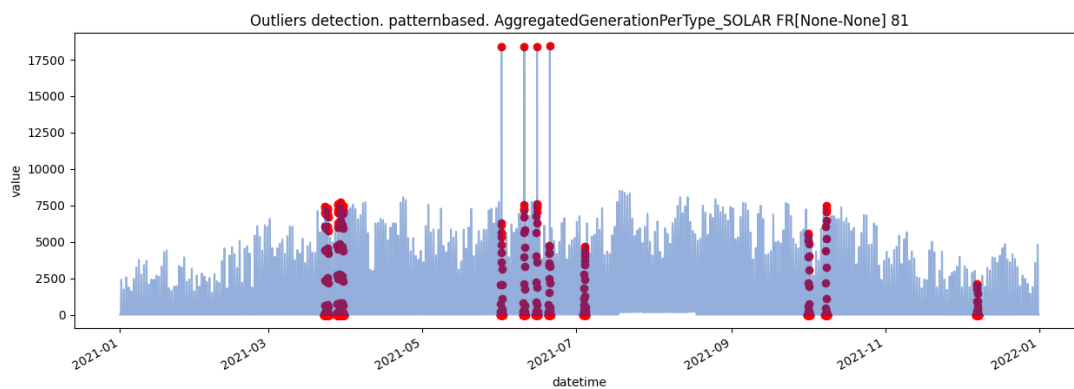
AggregatedGenerationPerType_NUCLEAR.contextual

Daily-pattern based



AggregatedGenerationPerType_SOLAR.global_spike_plateau

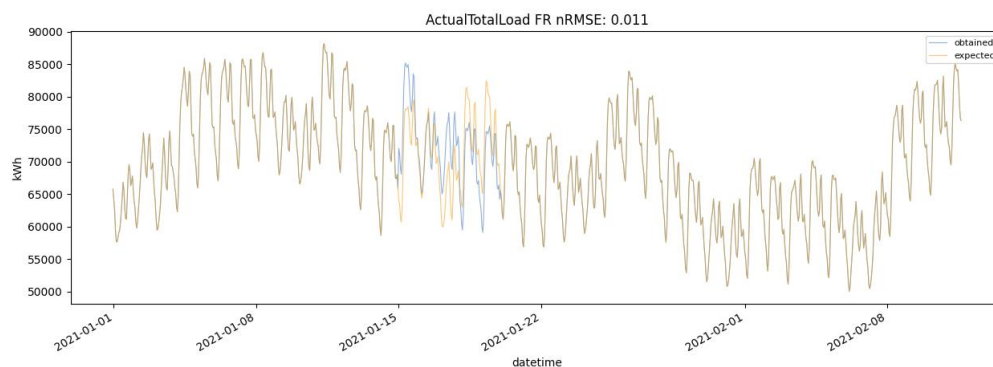
Daily-pattern based



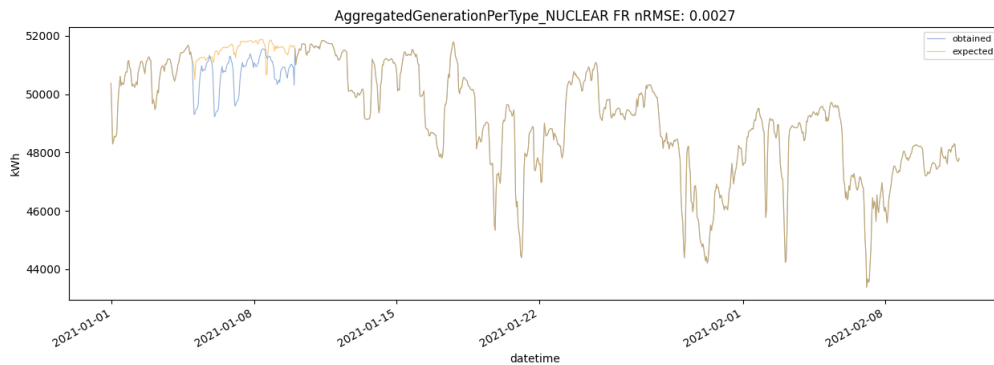
Imputation evaluation results

The results per each kind of time series introduced in the evaluation description are displayed below. The blue time series corresponds to obtained imputation results and the orange time series corresponds to expected imputation results, so the original time series.

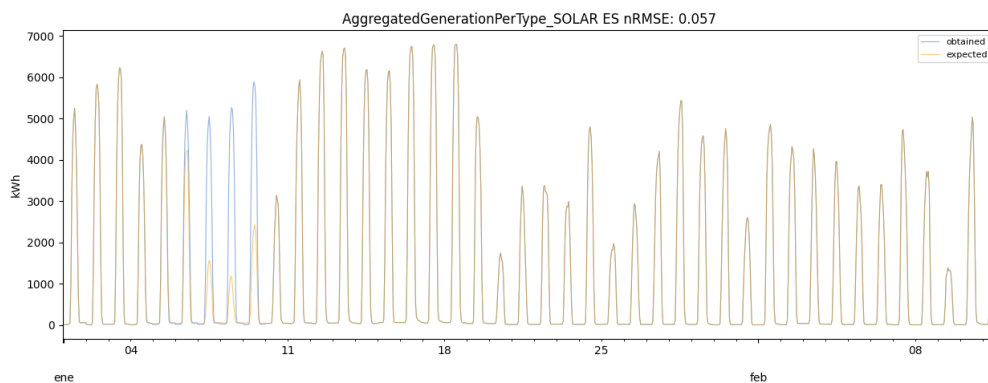
ActualTotalLoad.five_days



AggregatedGenerationPerType_NUCLEAR.five_days



AggregatedGenerationPerType_SOLAR.five_days



8.7.2 Company Description

Beedata Analytics translates smart meters data, customers data, weather and other sources into actionable intelligence for customer engagement. Beedata is doing Home and business Energy Report (BERs) programs powered by AI (artificial intelligence) to help Energy companies providing a more cost-effective way to greater customer engagement, increase program conversions and lasting customer satisfaction.

8.8 ADREE by Artelys



8.8.1 Project Description

8.8.1.1 Challenge

The study of energy systems involves a considerable amount of data intensive tasks, requiring an increasing need for detailed temporal and spatial granularities. European data exchange platforms, such as the Transparency Platform powered by the ENTSO-E, are a key component in giving access to a wide range of power



system data to all actors of the energy system. In addition to facilitating data exchange between actors, those transparency platforms work for the creation of efficient, liquid and competitive wholesale markets. It thus levels the playing field between small and large actors. Intensive data exchanges are meant to increase through various new and innovative data services between actors of the European energy system such as TSOs, DSOs, aggregators, suppliers, consumers, etc. For instance, in France, with the ambition to engage more strongly consumers as a proactive actor on electricity markets, Enedis has designed and deployed the Linky smart meter, enabling consumers to monitor their electricity usage and Enedis to gather a large amount of consumption data at a very detailed level which can then be made available to conduct relevant analysis on electricity consumption. Such an extensive database is unprecedented and can then be aggregated at many different levels to be exchanged with other stakeholders.

However, frequent reviews of the Transparency Platform, for instance commissioned by the European Commission¹ or under the initiative of European researchers² and frequent users of the platform, have hinted at various shortcomings and problems in terms of data quality. The ADREE tool addresses these issues and proposes an innovative solution to leverage the progress of AI into a transparent and easy-to-use web application.

8.8.1.2 Proposed Solution

The ADREE tool has the ambition to significantly improve the accuracy and the quality of the exchanged data between TSO-DSO-consumers, by providing:

- An **efficient** and **robust** solution to get an overview of the quality of the “raw” exchanged data, for many different data sources, leveraging state-of-the art machine learning techniques;
- An “**easy-to-use**” solution to conduct data analysis;
- A **quick** solution to **fix and clean** the “raw” data based on the provided quality diagnoses.
- The overall concept and approach are twofold:
- To implement **state-of-the art** algorithms for **data quality diagnosis** and **data sanitization**, powered by Machine Learning and Artificial Intelligence.
- To embed theses algorithms inside an **innovative and user-friendly web application** composed of:
 - A **workflow engine** to power data pipelines and provide a set of functionalities to follow the treatments (progress, logs, gantt, etc);
 - A **web frontend** to easily access results and KPIs

The ADREE project ambitions to deliver a tool that will provide more transparency and trustworthiness to energy systems studies.

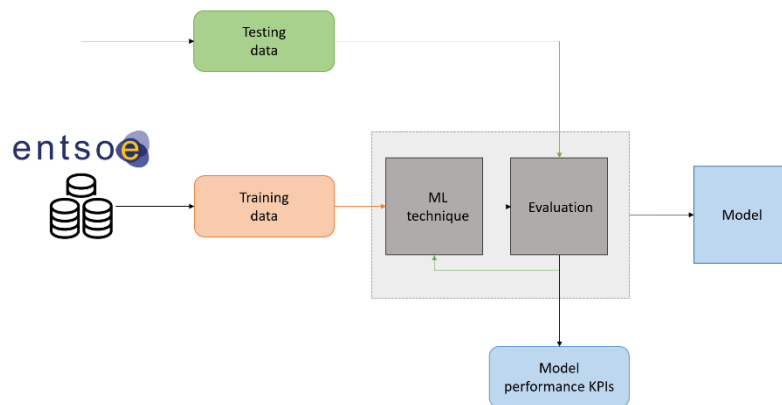


Figure 8.8.1 – Model training workflow scheme

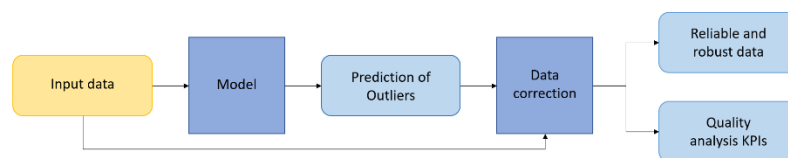


Figure 8.8.2 - Model application workflow

8.8.2 Company Description

Artelys is an independent consulting company of 80 people, specialized in optimization, data science, decision support and modelling thanks to a high-level expertise in advanced quantitative techniques such as statistics, Artificial Intelligence and solutions in optimization. Artelys operates in diversified sectors but is particularly active in the energy sector, acknowledged as a leading performer of energy system modellings. Thus, Artelys often collaborates with major companies and authorities in the energy sector, on a French, European, or international scale.

Artelys offers a comprehensive and modular range of services which relies on its consultants' expertise in:

- Artificial Intelligence, optimization and prediction techniques,
- The modelling and strong understanding of energy systems,
- Project Management.

By combining its understanding of the energy systems with the use of advanced quantitative methods, Artelys delivers high-quality consultancy services with actionable recommendations for its clients. An overview of key projects already undertaken by Artelys, relevant for the given call follows:

- H2020 project REWARDHeat (2019-2023)
- H2020 project ECEMF (2021-2025)
- RTE Projects L2RPN and Chronix2grid (2019)
<https://github.com/rte-france/grid2viz>
- European Commission METIS 3 (2020- 2023)
https://energy.ec.europa.eu/publications-new/metis-scripts-and-data_en
- TenneT Power Flow Simulator (2019)
<https://www.entsoe.eu/data/powerflow-tool/>

8.9 RYNADMTS by Presify Analytic Software Inc.



8.9.1 Project Description

8.9.1.1 Challenge

The scenario aims to encourage the development of tools and services for data quality checks from a general perspective that will be flexible enough to adapt to the different needs of data exchanges among TSOs, DSOs and consumers. More specifically, the developed service will also serve for the Transparency Platform to enhance the quality of the data by highlighting the abnormalities. In particular, the service should be able to detect outliers from timeseries where standard methodologies are not sufficient.

8.9.1.2 Proposed Solution:

The proposed algorithm is a novel method which is based on deep recurrent autoencoder ensembles which Presify expect to generate scientific impact. Deep ensembles are proven to be robust predictors and approximates predictive uncertainty effectively using deep networks as base learners. The algorithm proposed uses the recurrent autoencoder model as the base learner and reconstructs the sequence and hence detects anomaly. Recurrent neural networks are subclass of deep learning models that perform superior in sequential learning problems gained popularity among scholars in anomaly detection. It could capture both long term and short-term dependencies in sequential data and therefore predicts it accurately. Recurrent autoencoders models are models that constructs time series and its embeddings via encoder and decoder structure, where encoder generates embeddings and decoder reconstructs series via encoded embeddings. Thereby, natural behavior of time series could be detected via this autoencoder, and anomalies could be detected as divergence from expected behavior of time series represented by recurrent autoencoder. However, a single autoencoder might not sufficiently capture the nature of time series due to noisiness of time series data. In order to tackle this problem deep ensembles emerges. Power of ensembling methods is due to diversity by initializing randomly

parameters of each neural network in the ensemble or bootstrapping the dataset. Deep ensembles combine N models, which are called base models, generally by simple averaging it exploits the correlations between those models and generate more robust predictor. Moreover, deep ensemble models are capable of approximating distribution of predictions by which anomaly detection could be performed. Using these predictive intervals, anomaly could be detected easily just by calculating the distance of potential anomaly point from upper and lower intervals. Regarding above approach, Presify's solution for Advanced Data Quality Analysis of Data Exchange Platforms could be summarized in flow below (Figure 8.9):

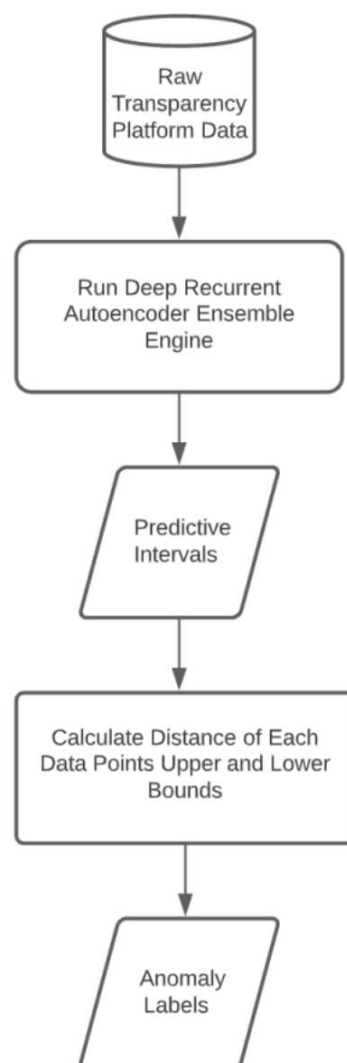


Figure 8.9 – Proposed Model Flowchart

8.9.1.3 Expected Results:

Anomaly detection is important for several reasons for several market participants such as TSOs, generators, energy distribution, and generation companies, and consumers. Day-ahead operations and planning activities require accurate forecasts for market participants to operate efficiently. Thus, data quality is a vital issue. Other than day-ahead planning, market participants should monitor system data in real-time to operate functionally and profitably on their mission critical operations such as dispatching or balancing operations, energy trading, outage repairing. Regarding these economic impacts could be listed as follows: (i) For TSOs, inaccurate forecasts could damage day-ahead planning and intraday operations and because of these poor planning activities outages would happen which directly affect economic actors such as factories, households, etc. (ii) Distribution companies would end up high imbalance costs. Moreover, since distribution companies are required to meet energy demand, they need to buy energy from the intraday market which could be costly. In addition to this, distribution companies could end up losing favorable trading opportunities as well. As distribution companies responsible for outages in their assigned territory, anomaly in outages could affect their operations and could cause damage to their operations. (iii) Energy production and trading companies could miss favorable trading opportunities as well since their trading optimization will rely on accurate demand and production forecast which require data quality. (iv) Smart grids are sensor- rich environments and are expected to grow further. In long term, smart grid data could assist end- users, energy producers, and utility companies in detecting anomalous power consumption and understanding the causes of each anomaly. Moreover, it will aid in better decision-making to reduce wasted energy and promote sustainable and energy-efficient behavior². Avoiding the above problems due to poorly planned day-ahead activities and avoiding missing opportunities in intraday markets would create economic lift and revenues. Presify expect this model to be a robust anomaly detector and publish their findings in scientific journals. Moreover, this research will enhance their knowledge of usefulness of deep neural networks for anomaly detection and could trigger further research.

The expected results could be summarized with two objectives:

Objective1: Minimizing reconstruction error of time series data of transparency platform which will be the base for labeling anomaly.

- KPI: MAPE of test dataset < 5%

Objective2: Detecting anomalies in time series data of transparency platform.

- KPI: F1 score > 80%

8.9.2 Company Description

Presify provides machine learning based predictive analytics tools for demand forecasting, renewable energy generation forecasting, electricity price forecasting; predictive maintenance and anomaly detection tools for wind and solar generation; decision support tool for energy management system and energy trading and plans to develop a complete system for peer-to-peer trading or community grids. Presify provides these solutions in its All-in-One Expert Systems Platform. This platform combines the following sub-products, each of them can be positioned as a separate product: 1) Electricity demand forecasting, 2) Renewable energy analytics (forecasting, anomaly detection), 3) Auto AI for Energy Analytics, 4) Energy Management System, 5) Energy Trading System.

9 Conclusions

This deliverable reports the processes and results of the Open Call until M26 of the project. It presents the Open Call process and the results implemented so far by the Open Call beneficiaries. The Open Call project descriptions are included courtesy of the Open Call beneficiaries and are published with their consent.

Concluding this report, the lessons learned from the Open Call process until now are:

- It is challenging to assure that what is presented as a OneNet requirement is correctly perceived by external parties. For this reason all involved partners had to work hard and reassure that the scenarios are provided in detail, with all the explanations and with clear messages on what is expected by the potential applicants.
- The complexity of the scenarios makes it difficult to attract many applicants. It was difficult -and this is the reason for the multiple communication channels and repeating activities that we used- to trace and invite the appropriate scientists and experts to answer the scenarios that were defined in a way that is meaningful for the OneNet project.
- The timeline of a 3-year project is challenging, as at the time of the preparation of the scenarios the OneNet implementation was not in place and certain technical details were missing for the completion of the scenarios. The timeline and the cascade funding should be initiated a few months later to avoid the aforementioned. At the same time, there are certain occasions such as summer holidays or similar that could delay the process, for this reason the overall timeline should be extended beyond an 11-month period that was initially given.
- It was challenging to decide what can and cannot be disclosed to the external parties regarding the technical and other documentation.

10 Appendix 1: Call Announcement

Project **acronym**: OneNet

Project **grant agreement number**: 957739

Project **full name**: One Network for Europe

The One Network for Europe – OneNet project, co-funded from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 957739, foresees as an eligible activity the provision of financial support to Third Parties, as a means to achieve its own objectives.

Financial support will be provided to SMEs and Start-ups, legally established in an EU Member State or in an Associated Country (as stated in Article 7 of the Horizon 2020 Regulation) and possessing a validated Participant Identification Code (PIC).

With this Open Call, OneNet is looking up to 9 Third Parties that will introduce new services for the network operators and the household consumers by adopting the OneNet infrastructure and framework. To achieve the fulfilment of the scenarios below, which aim to enhance the current work of both real demonstration efforts and tools to elevate the OneNet overall framework, OneNet Open Call will distribute up to 550.000 euros among up to 9 Third Parties.

Applicants are asked to submit proposals under one of the following seven topics-scenarios with the initiative to promote the development of new tools, services and activities.

The scenarios that the applications proposals shall address are:

1. Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server) _ Greek Demo
2. Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform
3. DSO-TSO interaction _ Portuguese Demo
4. Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels _ Spanish Demo
5. Flexibility resources to provide flexibility services to the Northern Demonstrator
6. Advanced Data Quality Analysis of Data Exchange Platforms
7. Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers



The OneNet Open Call will open on the 1st of December 2021 and close on the 1st of February 2022 at 17:00h CET (Brussels time).

Deadline: 01 February 2022 at 17:00h CET (Brussels time)

Expected duration of participation: Up to 6 months

Maximum amount of financial support for each third party: 60,000 Euros

Call identifier: OneNet Open Call

Language in which proposal should be submitted: English

Web link for further information: <https://opencall-onenet.cintechsolutions.eu>

Email address for further information: onenet_opencall@cintechsolutions.eu



11 Appendix 2: Guide for Applicants

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Document revision history

Version	Date	Modifications introduced	
		Reason	Page No
V1.10	08/12/2021	Eligibility clarification	11
V1.20	23/01/2022	Typo	19

Definitions

<p>OneNet</p> <p>One Network for Europe - OneNet is a H2020 36-month Research and Innovation action. OneNet project is funded by the European Union and the Horizon 2020 programme, under Grant Agreement</p>
<p>Cascade funding</p> <p>Cascade funding or also known as Financial Support for Third Parties is a European Commission mechanism to distribute public funding in order to assist beneficiaries.</p> <p>This funding method aims at simplifying the administrative procedures, creating a light application scheme, by allowing that some EU-funded projects may issue, in turn, open calls for further funding. This scheme was first introduced by the European Commission in Horizon 2020, the Framework Program for Research and Innovation (2014-2020). European Commission expects from OneNet project to “make use of financial support to third parties for at least 2.5% of the EU contribution to the project for the incorporation of developers (SMEs and start-ups) of innovative energy services (in particular for household consumers).”</p>
<p>Third Parties</p> <p>Other legal entities which participate in Horizon 2020 by carrying out some tasks in an action, but which do not sign the Grant Agreement (including entities linked to the beneficiaries) are considered as "third parties involved in an action" (Article 8 of the General Model GA - multi-beneficiary). They are not bound by the terms and conditions of the Grant Agreement and consequently, the European Union (represented by the Commission or another funding body) has no obligation vis-à-vis third parties. If necessary to implement the action, beneficiaries may use contracts and sub-contracting for the purchase of goods, works or services, in-kind contributions provided by third parties and also linked third parties carrying out tasks under an action.</p>
<p>Cascade funding partner</p> <p>The OneNet partner responsible for the cascade funding grant.</p>
<p>Support team</p> <p>A project body, composed of certain partners that are connected to the Open Call.</p>
<p>Mentoring Team</p> <p>A project body, composed of partners connected to the Scenarios that support selected Third Parties during the development phase.</p>
<p>SMEs</p> <p>Entities having up less than 250 employees and up to an annual turnover of 50 million € or up to a balance sheet total of 43 million €. Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361. (https://ec.europa.eu/growth/smes/sme-definition_en)</p>

Start-up

A startup is an independent, organisation, which is younger than five years and is aimed at creating, improving and expanding a scalable, innovative, technology-enabled product with high and rapid growth. Detailed definition of a start-up is sited on the following link: <https://europeanstartupnetwork.eu/vision/>

Contract Funding Agreement

A legal contract signed between the Cascade funding partner and the Third Parties selected to be funded. The Contract Funding Agreement regulates (i) the conditions of transfer and usage of the cascade funding, (ii) the IPR rules, and (iii) the other collaboration mechanisms. More information can be found in Section 6.5 of this Guide (Contract Funding Agreements process).

GIS

Geographic Information system

Power System simulations and analysis

Spatial query

Spatial query refers to the process of retrieving a data subset from a map layer by working directly with the map features

1. About OneNet Open Call

This document outlines the main aspects of the OneNet Open Call for Third Parties under the OneNet project that will be launched on 01 December 2021 with a deadline of 01 February 2022 at 17:00h CET ([Brussels time](#)).

It provides additional information for the submission of proposals and the evaluation procedure in the framework of the OneNet project. It complements the *Open Call Announcement* and the *Proposal Template* documents and their annexes. This document serves as a helpful guide and does not supersede the *Open Call Announcement* and *Contract Funding Agreement* documents.

One Network for Europe – OneNet is a project funded by the European Union's Horizon 2020 Research and Innovation Programme LC-SC3-ES-5-2018-2020 - TSO – DSO – Consumer: Large-scale demonstrations of innovative grid services through demand response, storage and small-scale (RES) generation under Grant Agreement N° 957739.

OneNet project envisions a European electricity system that provides for the seamless near real time integration of all actors across countries, with a view to create the conditions for a synergistic operation of market and network that optimizes the overall energy management while creating an open and fair market structure and maximizing the consumer capabilities to participate in it.

Involving an unprecedented number of countries in a single project, OneNet aims at creating the conditions for a new generation of grid services able to fully exploit demand response, storage and distributed generation while creating fair, transparent and open conditions for the consumer. As result, while creating One Network for Europe, the project aims to build a customer centric approach to grid operation.

This ambitious view is achieved by proposing new markets, products and services and by creating a unique IT architecture to support innovative mechanisms of platform federation. The project also aims at creating wide consensus on the solution by launching a variety of initiatives including a large-scale forum for discussion within the international energy community. The complete concept is also proven in 4 cluster demos. The OneNet project started on 1st of October 2020 and has a duration of 36 months.

The OneNet Consortium is coordinated by FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V. (Fraunhofer) and composed of 72 project partners from 23 European countries.



With this Open Call, OneNet is looking for applicants that will introduce new services for the network operators and the household consumers by adopting the OneNet infrastructure and framework. To achieve the fulfilment of the scenarios below, which aim to enhance the current work of both real demonstration efforts and tools to elevate the OneNet overall framework, OneNet Open Call will distribute up to 550.000 euros among up to 9 Third Parties.

Applicants are asked to submit proposals under one of the following seven scenarios published though OneNet Open Call with the initiative to promote the development of new tools, services and activities.

The scenarios that the proposals shall address are:

1. Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server) _ Greek Demo
2. Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform
3. DSO-TSO interaction _ Portuguese Demo
4. Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels _ Spanish Demo

5. Flexibility resources to provide flexibility services to the Northern Demonstrator
6. Advanced Data Quality Analysis of Data Exchange Platforms
7. Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers

Selected applicants will be given a 6-month period (maximum) to develop their proposal with the support of the Open Call Mentoring Team.

More information available: <https://opencall-onenet.cintechsolutions.eu>
Open Call Helpdesk: onenet_opencall@cintechsolutions.eu

2. OneNet Technical Description and Scope

One Network for Europe – OneNet project aims at creating a seamless integration of all actors in the electricity network across countries, by proposing mechanisms for TSOs and DSOs to work in a coordinated manner to unlock and enable the establishment of new flexibility markets and mechanisms.

To accomplish this objective, OneNet is developing an open, decentralised, flexible, scalable, and interoperable architecture to transform the actual European electricity system, often country fragmented, into a pan-European one. This architecture will provide the necessary tools and mechanisms for allowing open, technological agnostic, adaptable platform interconnections, ranging from a country level to a European level context. Within this effort, the design of an open architecture, data exchange and interoperability mechanisms, cybersecurity guidelines, and sets of AI and big data tools are being seamlessly aggregated.

Several demonstration activities will participate in the validation of the developed architecture, by defining and undertaking data exchange activities between intra and cross-country entities such as Aggregators, DSOs, TSOs, FSPs and service providers. Detailed information on OneNet project and public deliverables are available on the official OneNet website: <https://onenet-project.eu/>

2.1. Open Call Scenarios

OneNet project makes use of the cascade funding mechanism that offers financial support to Third Parties *for the incorporation of developers (SMEs and start-ups) of innovative energy services (in particular for household consumers)*. To achieve this goal, applicants are asked to address one of the seven scenarios described below.

2.1.1. No 1. : Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server) _ Greek Demo

Services include: Georeferenced deep/vertical grid modeling for TSO, DSO and micro grid voltage levels using the GIS technology and geo server, for the regions of Crete Island and Peloponnese in Greece. GIS (Geo) server installation and deployment. Systems will be modelled to the lowest level entity, DSO MV/LV substation (e.g. 10/0.4 kV) or a commercial/industrial/residential building possessing its own MV/LV substation. Georeferenced model should be further used for power system analysis on the selected region (Crete Island and Peloponnese) including both TSO and DSO grid simulation models that will be available. Power system analysis shall be performed jointly with the Work Package partners using an open source tools that are available. Services should also include

assistance with the development of the geographic visualization of simulation results, exposing results and linking to other services being developed under f-channel via GIS technologies.

Please advise Annex 1 for the complete description of Scenario No 1.

2.1.2. No 2. : Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform

The Cyprus demo of the OneNet project aims to demonstrate an effective collaboration between the different entities of the Cyprus power system namely the TSO, DSO, Market Operator, and prosumer/aggregator. In this context, the integration of an actual consumer in the demonstration framework will have an added value not only to the Cyprus demo but also to the OneNet project results. Thus, the potential applicants for this scenario, must develop a prosumer-level energy management solution with API to facilitate the secure interconnection between the Active Balancing Congestion Management platform (of the distribution grid) that will be developed in the OneNet Cyprus demo and the prosumer. The applicants must have at their disposal a prosumer that will be based on Cyprus, meets the technical specification of the call and is willing to participate in the demonstration of the solutions proposed in the Cyprus demo.

Please advise Annex 2 for the complete description of Scenario No 2.

2.1.3. No 3. : DSO-TSO interaction _ Portuguese Demo

The increase in generation from renewable resources, with its uncertainty, and the increase in the use of electricity (due to EVs for example) means that system operators have to improve their strategies for managing the grid more efficiently in order to avoid unnecessary investments. In this scenario, our strategy is to optimize coordination between DSO and TSO by identifying and sharing the information that enables better operational planning for their networks. In order to share the information, a set of APIs and related services (potential links with existing systems, backend servers and databases) to enable a streamlined automated communication between system operators, namely the Portuguese DSO and TSO, need to be implemented.

For the longterm planning, will be defined the information that needs to be exchanged bidirectionally regarding the expected evolution of the transmission and distribution grids and their associated supply, consumption, production and flexibility services configuration.

Concerning the medium term, the effort will be focused on the definition of the information regarding the capacity and availability for load connection in the EHV/HV substation, as well as the information regarding the load transfers availability between EHV/HV interconnecting points, providing

a better management of the distribution network loops by the DSO. This allows, in case of emergency, the possibility of the DSO to manage the transfer of load between networks.

For the efficient use of the flexibility services and enhancement of the operational planning, the increase of the information exchanged on short-term is key. Once well-defined the observability area of both operators around the TSO-DSO border, the focus will be in the definition of information to exchange about:

- Short-circuit power at the TSO-DSO border
- Scheduled maintenance actions in the observability area
- Aggregated consumption and production forecast by technology (solar, wind, hydro, etc)

Please advise [Annex 3](#) for the complete description of Scenario No 3.

2.1.4. No 4. : Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels _ Spanish Demo

This scenario aims to involve in the Spanish Demo some Flexibility Service Providers that offer different type of flexibility resources in order to test new local markets able to alleviate network congestions at medium and low voltage distribution network level.

A Flexibility Service Provider (FSP) is either an aggregator, providing flexibility services, or the owner or the representative of large-scale or small-scale assets, which are connected to the distribution network and which can provide flexibility services to DSOs.

The FSP will have to develop the appropriate communication and interaction tools with resources and DSO and/or MO specific platforms.

FSPs participating should have resources connected to medium or low voltage levels at DSOs networks participating in Spanish demo in the indicated locations in Madrid and Murcia.

Recipients are requested to demonstrate clearly in their expressions of interest that they are aware of the areas in which their specific services fit best the project goals and the ongoing developments.

Potential aggregators must attach documentation evidencing commitment of resources from the FSPs that they represent.

The minimum required flexibility capacity to participate is 0.1MW.

Please advise Annex 4 for the complete description of Scenario No 4.

2.1.5. No 5. : Flexibility resources to provide flexibility services to the Northern Demonstrator

Northern Cluster (Finland, Estonia, Lithuania, Latvia) is looking for flexibility resources to connect the OneNet demonstration framework and provide new grid services for system operators. Flexibility provider (FP) should develop capabilities to steer distributed energy resources, register the resources in OneNet system, place bids and participate some flexibility market and provide validation data of the performed control actions.

System operators have new needs for flexibility in the future and OneNet project is developing tools to facilitate the needs. SO's are also looking for new type of service providers. For FP this enables new possibilities and business potential for market participation.

Please advise Annex 5 for the complete description of Scenario No 5.

2.1.6. No 6. : Advanced Data Quality Analysis of Data Exchange Platforms

This scenario aims to encourage the development of tools and services for data quality checks from a general perspective that will be flexible enough to adapt to the different needs of data exchanges among TSOs, DSOs and consumers. Considering the rich content of the ENTSO-E Transparency Platform (TP), the applicants are expected to demonstrate developed methodologies utilizing the TP data. The scenario requires expertise in the fields of Big Data Analytics, Machine Learning and advanced AI methodologies to perform data quality measurements in the energy domain. The expected services and tools for data quality measurements will ensure that the exchanged data among players has high quality standards. The applicants will have the chance to be part of the growing collaboration among TSOs-DSOs-Consumers by providing data services. The applicants will also achieve a good knowledge of the developing concepts and infrastructures in that field to better address their services with the growing market needs.

Please advise Annex 6 for the complete description of Scenario No 6.

2.1.7. No 7. : Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers.

In order to effectively conduct a demonstration in the Polish East Cluster demonstrator, in the scope of providing balancing services to the TSO on the existing Balancing Market by resources located in the Medium Voltage and Low Voltage grid, it is necessary to represent such prequalified resources on the Balancing Market by an active Balancing Market Participant.

Successful applicant will become Balancing Market Participant representing prequalified resources on Balancing Market. Balancing Market Participant will submit offers for balancing capacity and / or balancing energy to the existing Balancing Market. If the offer is selected, activated and executed relevant remuneration according to existing rules will be paid. Chosen Balancing Market Participant will have an opportunity to test new solutions and explore the potential of a new customer segment.

Please advise Annex 7 for the complete description of Scenario No 7.

2.2. OneNet Open Call initiative

OneNet Open Call will distribute up to 550.000 EUR among up to 9 Third Parties with the initiative to bring new application experiments which address end users, by taking up and validating the results gained in the first phase of OneNet. The selected Third Parties will contribute to the impact of OneNet project in the energy ecosystem and the generalisation and validation of OneNet framework.

2.3. Third Parties' Benefit from the OneNet Open Call

The selected Third Parties with their participation in this Open Call will have the opportunity to:

- receive technical support and feedback on the proposed solution from the OneNet Consortium and its expert
- get in direct exchange with the responsible system operators, policy makers, market actors and technology providers in order to fulfill the requirements of the specific scenarios
- shape and impact OneNet's results, especially in the field of Business Use Case, consumer engagement and flexibility activation
- be a part of the largest European project in the field of TSO-DSO-Consumer coordination

The maximum amount of financial support is 60 000 EUR per third party.

3. Eligibility Criteria

In order to be considered eligible, applicants will have to abide to the requirements described in this chapter. The proposals that do not comply with the criteria enlisted will be excluded and marked as ineligible. The eligibility criteria will be checked during the whole evaluation process.

3.1. Eligible for Financial Support

Financial support will be provided to SMEs and Start-ups legally established in an EU Member State or in an Associated Country (as stated in Article 7 of the Horizon2020 Regulation). The legal entity is required to possess a validated Participant Identification Code (this code is provided for interested

parties to participate in EU funding programmes and procurements). However, at the moment of submission, the entity can apply with the provisional PIC. Please advise the definitions of SMEs and Start-ups on pp.04 of this document.

Only single legal entities can apply for funding. Consortia are not eligible.

List of countries eligible for receiving H2020 funding grants:
https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-a-countries-rules_en.pdf

Associated to H2020 countries:
http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf

3. 2. English Language

The official language of OneNet Open Call is English. Proposals must be written in English to a full extent. If any part of the proposal is written in any language other than English, the entire proposal will be rejected.

English is the only official language during the whole procedure of OneNet Open Call for Third Parties. Any requested deliverables and/or reports shall be submitted in English, otherwise not accepted.

3. 3. Multiple Submissions

Only one proposal per applicant can be submitted to OneNet Open Call. If more than one proposal per applicant is identified, only the first one submitted in order of time, will be evaluated.

3. 4. Submission Tool

Only proposals submitted through OneNet Open Call portal (<https://opencall-onenet.cintechsolutions.eu/>) within the given deadline will be accepted. Proposals submitted by any other means, will not be considered for funding. All potential applicants should register beforehand to the portal to receive additional material and updates (if any) regarding the process.

Only the documentation included in the *Proposal Template* and the attachments to the above Template will be reviewed by Evaluators. The *Proposal* and its attachments can be only in PDF format. Please note that the information included in attachments will not be scored by Evaluators (as it is only considered as additional information supporting the proposal).

It is Applicant's responsibility to have all necessary information included in the *Proposal Template*. All information provided should be actual, true and complete and therefore allow the assessment of the proposal.

3.4.1. Complaint due to a technical error of the OneNet Online Submission System

If you experience any problem with the application submission system prior the deadline of the Open Call you should send an e-mail to onenet_opencall@cintechsolutions.eu and explain your situation.

If you believe that the submission of your proposal was not entirely successful due to a technical error on the side of the OneNet Open Call online submission system, you may lodge a complaint by emailing to onenet_opencall@cintechsolutions.eu and explain your situation. For the complaint to be admissible it must be sent within 4 calendar days following the day of the call closure. You will receive an acknowledgement of receipt, the same or next working day.

Important notice: You should secure a PDF version of all the documents of your proposal holding a time stamp (file attributes listing the date and time of creation and last modification) that is prior to the call deadline, as well as any proof of the alleged failure (e.g. screen shots) as you may be requested by the OneNet Helpdesk to provide these items.

For your complaint to be upheld, the IT audit trail (application log files and access log files) of OneNet Open Call online submission system must show that there was indeed a technical problem at the OneNet Open Call side which prevented you from submitting your proposal using the electronic submission tool. Applicants will be notified about the outcome of their complaint within the time indicated in the acknowledgment of receipt. If a complaint is upheld, the secured files (provided to the IT helpdesk) for which the investigation has demonstrated that technical problems at the OneNet Open Call side prevented submission will be used as a reference for accepting the proposal for evaluation.

3. 5. Deadline

Only proposals submitted before the deadline will be accepted. Online submission system will automatically block after the deadline. Applicants will be able to resubmit their proposal until the deadline.

The deadline for OneNet Open Call is 01 February 2022 (17:00h CET Brussels time).

Applicants are strongly recommended not to wait until the last minute to submit their proposal. Failure of the proposal to arrive in time for any reason, including extenuating circumstances, will result in rejection of the proposal.

3. 6. Absence of Conflict of Interest

Applicants shall not have any actual and/or potential conflict of interest with OneNet Open Call process, from application to selected proposals' development phase. All cases of conflict of interest will be assessed case by case by the Support Team.

Conflict of interest may occur when there are conditions involving economic interest, political or national affinity, family or emotional ties or any other shared interest that might affect the objective evaluation of the proposal, as defined in the H2020 and EC regulations. Consortium partners, their affiliated entities, employees and permanent collaborators have not the right to participate.

3. 7. Other

Each applicant when submitting the proposal agrees that:

- the proposal submitted is based on original work and in advance any expected developments are free from Third Party rights, otherwise they are clearly stated.
- the proposal is not excluded under the provisions of article 19 of Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 (ethical principles).
- He/she understands and will sign all statements embodied in the Declaration of Honor document in case the proposal is selected. The Declaration of Honor document is available here: <https://opencall-onenet.cintechsolutions.eu/?wpdmdl=1175>
- he/she is not “undertaking in difficulty” according to the COMMISSION REGULATION (EU) No 651/2014 (Article 2.18)
- he/she is not excluded from the possibility of obtaining EU funding under the provisions of EU rules and regulations and/or national law.
- he/she has received knowledge of the Terms of Service and Privacy Policy of the Open Call portal (<https://opencall-onenet.cintechsolutions.eu/terms-of-service-and-privacy-policy/>).

4. Financial Support and Payment Conditions

4.1. Origin of Funds

In the H2020 Framework programme and according to the H2020 Rules for Participation Regulation No 1290/2013 (Article 23.7) “an action may involve financial support to third parties under the conditions defined in the Financial Regulation and the Rules for Application. The maximum amount of financial support is 60 000 EUR per Third Party.”

(complete document is available on the following link:
https://www.ffg.at/sites/default/files/downloads/page/h2020guidancenote_financialsupport2thirdparties.pdf)

Accordingly, OneNet launches OneNet Open Call to attract, select and provide financial support to Third Parties in order to adopt the OneNet infrastructure and framework and develop new innovative tools, services and activities. OneNet Open Call Services will be published on OneNet website and channels.

Selected Third Parties for funding will sign a Contract Funding Agreement with OneNet Consortium. The funds provided in the framework of OneNet project are funds owned by the European Union, whose management has been led to OneNet partners via the Grant Agreement Number 957739. OneNet is a mere holder and manager of the funds.

The relationship between selected applicants (legal entities with projects selected for funding by OneNet Open Call) and the OneNet Consortium, as well as selected applicants' obligations to both the OneNet Consortium and the European Commission, will be detailed in the Contract Funding Agreement. It is the responsibility of selected applicants to fulfil these obligations, and of OneNet Consortium to inform selected applicants about them.

4.2. Costs covered by Cascade Funding

The total funding provided by OneNet Open Call to each Third Party cannot exceed 60,000 €. Up to 20% of the budget can be reserved for equipment and consumables needed to implement the proposal, according to European Commission rules.

Only costs generated during the lifetime of the development of the proposal can be eligible. Please note that costs must be actually incurred (actual costs) and used for the lone purpose of achieving the objectives of the proposal and its expected results, in line with the principles of economy, efficiency and effectiveness.

4.3. Financial Support Criteria and Rules

The financial support follows the EU funding scheme (70% funding for for-profit organizations and 100% for-non-profit organizations). Selected Third Parties will receive a pre-financing of up to 25% of their respective total cascade fund. Further payments will be delivered after successful completion of milestones and/or deliverables.

The Cascade funding partner (responsible for the funding payments) will be authorized by the Project Coordinator to proceed with the payments when all necessary justifications (deliverables,

reports and financial documents) - in fulfillment of the Contract Funding Agreement- are submitted by the Third Parties and accepted.

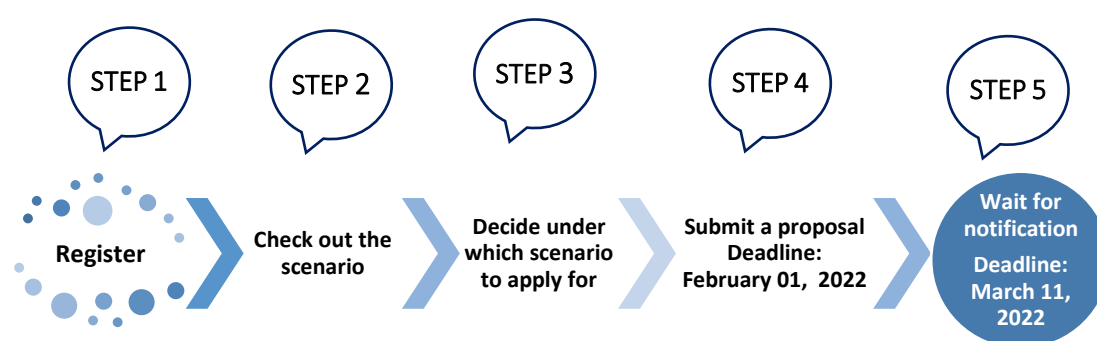
The Cascade funding partner can proceed with a payment only if all the conditions described in the Contract Funding Agreement are satisfied or if a sufficient evidence document is provided by selected Third Parties and accepted by the Mentoring team that is monitoring the action and subsequently by the Project Coordinator.

5. Proposal Submission

OneNet Open Call key dates:

- December 01, 2021 – Submission opening
- February 01, 2022, 17:00 CET – Submission deadline
- By March 11, 2022 – Results Announcement
- 5 business days after results notification – Objections
- April – Contracting Period
- May – Development phase begins

APPLICATION STEP



Proposals have to be submitted through OneNet Open Call portal. Applications submitted by any other means will not be considered for funding. All potential applicants should register beforehand to the portal to receive additional material, such as proposal template, declaration of honor, etc. and updates (if any) regarding the process.

The proposals – submitted only through the online tool – will include the following sections:

- Legal and Contact Information
- Proposal Description
 - (Scored) IMPACT

- (Scored) TECHNICAL QUALITY
- (Scored) QUALITY OF THE WORK PLAN
- Intellectual Property and Ethical Issues
- Third Party description

As noted above (Section 3.5), additional material/data, not specifically required in the *Proposal Template*, will not be assessed. The OneNet Consortium makes its best effort to keep all provided data confidential. However, for the avoidance of doubt, the applicant is the lone responsible to indicate its confidential information as such.

Applicant is the sole responsible for the verification of the *Proposal Template* completeness. Information not included in the *Proposal Template* will not be taken into account for assessment disregarding the reason for not being included.

Important notice: Applicants are strongly recommended not to wait for a last minute proposal submission. Failure for the proposal to arrive in time whatever reason, including extenuating conditions, will result in the rejection of the proposal.

PROPOSAL CONTENT

Only proposals with a clearly identified partner can be submitted. Content and structure should be based on the *Proposal Template* and address the issues detailed in this *Guide for Applicants*.

PROPOSAL LENGTH

The cover page and administrative data like proposal name and participant details cannot exceed two pages. The maximum length of the main proposal is 10 pages. Please read carefully the instructions included in the *Proposal Template* document available on the following link: <https://opencall-onenet.cintechsolutions.eu/?wpdmdl=1173> .

SUBMISSION FORMAT

Single PDF file with less than 50MB in size.

6. Summary of evaluation process

The call and the selection of the Third Parties to be funded shall follow the same principles which govern European Commission calls as described in the *Guide for Applicants*:

Excellence. The proposal(s) selected for funding must demonstrate a high quality in the context of the topics and criteria set out in the call;

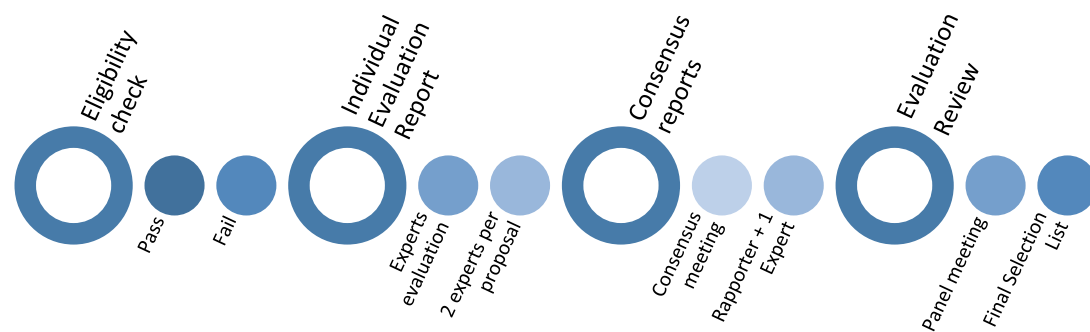
Transparency. Funding decisions must be based on clearly described rules and procedures, and all applicants should receive adequate feedback on the outcome of the evaluation of their proposals;

Fairness and impartiality. All proposals submitted to a call are treated equally. They are evaluated impartially on their merits, irrespective of their origin or the identity of the applicants;

Confidentiality. All proposals and related data, knowledge and documents are treated in confidence;

Efficiency and speed. Evaluation, award and grant preparation should be as rapid as possible, commensurate with maintaining the quality of the evaluation, and respecting the legal framework.

The evaluation workflow is described on the following chart:



6.1. Eligibility check

The Cascade funding partner performs a first check of admissibility and eligibility of submitted proposals according to the provisions and criteria set in Section 3 of the current document. However, a proposal can be declared ineligible at any phase of the evaluation procedure. As a result, the ‘Eligible Proposals List’ will be set out. The applicants will be informed by email whether they have passed the first Eligibility check or not.

6.2. Expert evaluation

Each eligible proposal is allocated by the OneNet partner responsible for the Open Call (CINTECH) to two Experts Evaluators from OneNet Consortium according to their field of technical expertise. The

two Experts Evaluators assess independently the eligible proposal and prepare an Individual Evaluation Report (IER).

Each evaluator will rank the proposal assigning a score¹ from 0 to 5 for each awarded criterion IMPACT, TECHNICAL QUALITY, QUALITY OF WORK PLAN and conduct an Individual Evaluation Report (IER). The default threshold for each criterion is 3 out of 5. The default overall threshold is 10 out of 15.

The proposals shall address the following awarded criteria:

1. Expected IMPACT aiming at strengthening the use of the OneNet open reference architecture to provide innovative services to energy grid stakeholders (mainly focusing on household consumers):

- Is there a measurable enhancement in the management of energy (produced and consumed by households) if applicable for the scenario?
- To what extent has the proposal the potential to address future / wider applications in the field?
- Does the proposed service/tool/activity to be developed add a new approach to the improvement of the energy system operation, and specifically on the facilitation of Flexibility market access, and/or on TSO-DSO cooperation, and/or uptake of OneNet proposed products and services?

2. TECHNICAL QUALITY:

- To what extent does the proposal addresses the scenario's initiative/ requirements under, which it is submitted to?
- Are the use cases and the technical approach for the adaptation/integration of the addressed scenario following the current state-of-art?

3. QUALITY OF WORK PLAN:

¹ The scores range from 0 to 5.

0 – Fails The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information;

1 – Poor The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses;

2 – Fair While the proposal broadly addresses the criterion, there are significant weaknesses;

3 – Good The proposal addresses the criterion well, although improvements would be necessary;

4 – Very good The proposal addresses the criterion very well, although certain improvements are still possible;

5 – Excellent The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

- Is the work plan coherent and effective and appropriate regarding the allocation of tasks and resources?
- Is the work plan coherent and effective and appropriate regarding the justification of resources?
- To what extent does the application identify the implementation risks (technical, commercial and other) and how the work plan foresee to mitigate these risks?

6.3. Consensus meeting

Following the Individual Evaluations phase, a Consensus meeting will be realized between the two Evaluators to exchange views on the basis of the individual evaluations. The initiative is for the two Evaluators to come to an agreement on the comments provided for each criterion and reach to a consensus report (CR). The outcome of all CRs will be an 'Initial Ranking List' of the eligible proposals based on the individual scores assigned to each proposal.

6.4. Evaluation Panel Meeting

The Evaluation Panel (Support Team and all Evaluators) will identify the most promising candidates through an Evaluation Panel Meeting. The scope of the Panel Meeting is to perform an additional quality check to the reports, to prioritise ex-aequo cases and to approve the 'Final Ranked List' of proposals.

The OneNet Consortium wishes to cover all the offered scenarios as these are indicated in Section 2.1 to ensure a balanced portfolio, therefore the following exception applies:

Open Call grants will be awarded to applications not only in order of ranking but at least also to those that are the highest ranked within set scenarios, provided that the applications attain all thresholds.

Following this exception and should two or more proposals are above threshold ranked with the same score, the prioritisation will be as follows:

- Proposals will be prioritised according to the scores for the criterion Impact.
- When these scores are equal, priority will be based on the scores for the criterion Technical Quality.
- When these scores are equal, any further prioritisation will be based on the criterion of the Gender Equality.

As an outcome of the Panel Meeting, one 'Final Ranked List' (up to 9 Third Parties) will be produced. The exact number of proposals selected will be decided based on the overall quality of the proposals.

A 'Reserve List' will also be produced with the next ranked proposals in case a selected Third Party fails to sign the Contract Funding Agreement for any reason.

Evaluation Summary Reports (ESRs) with the results of the evaluation process will be communicated to the applicants by email within 30 business days from the submission closure.

7. Contract Funding Agreements process

Selected Third Parties will be checked against the fulfilment of the legal requirements in order to proceed with the signature of the Contract Funding Agreement with OneNet Consortium. Third Parties included in the 'Final Ranked List' will have to provide all necessary documentation required to prove their compliance with the Eligibility Criteria described in Section 3.

Specifically, selected Third Parties will have to provide the following documentation:

- **Legal existence.** An original of the Legal Entity Form together with copies of supporting documents such as Company Register, Official Gazette or other official document per country are required. These documents shall show the name of the organisation, the legal address and registration number and, if applicable, a copy of a document proving VAT registration (in case the VAT number does not show on the registration extract or its equivalent) needs to be provided.
- Recent certificates issued by the appropriate national competent authorities that provides **evidence covering all taxes and social security contributions** for which the third party is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions are required.
- A recent **extract from the judicial record** is required or, failing that, an equivalent certificate recently issued by a judicial or administrative authority in the country of establishment of the person proving that the above requirements are satisfied.
- An **original of declaration of honor** signed by the (legal) representative.
- **Bank account details:** The account where the funds will be transferred will be indicated through a bank identification form signed by the Third Party. The form has to be signed by the bank, otherwise a recent bank statement clearly showing the account holder, the bank name and the bank account (IBAN and BIC) is needed.
- **Signature of the Contract Funding Agreement.**

The above documentation will have to be provided within deadline communicated selected Third Parties (during or after objections period). If the requested documentation is not

provided in time, this will directly end the Contract Funding Agreement process and Third Parties enlisted in the 'Reserve List' will substitute the above ones in order of ranking.

8. Applicants communication

8.1. General communication procedure

Applicants will receive communications after the Eligibility Check evaluation phase indicating if they passed or failed the eligible criteria. Following the Evaluation Panel Meeting, applicants will receive by email the Evaluation Summary Reports with justifications for their proposals' success or exclusion within 30 business days from the submission closure.

8.2. Objections

If an applicant considers that a mistake has been made or that Evaluators have failed to comply with the rules and conditions of OneNet Open Call for Third Parties or acted unfairly and that her/his interests have been prejudiced as a result, can send his/her objections for review 5 business days after receiving the Evaluation Summary Report to the following email address: onenet_opencall@cintechsolutions.eu

The objection shall be written in English and include the following information:

- Contact details (including postal and e-mail address).
- The subject of the objection.
- Information and evidence of the stated objections.

Anonymous emails will not be considered.

Please note that as a general rule, the OneNet Support Team will investigate the complaints with a view to arriving at a decision to issue a formal notice or to close the case within no more than five business days from the date of reception of the complaint, given that all the required information has been submitted by the complainant. Whenever this time limit is exceeded, the OneNet Support Team will inform the complainant by email of the reasons for the unforeseen delay and the subsequent steps.

9. Obligations of the selected Third Parties

Third Parties selected for funding must ensure that they comply with specific obligations originally detailed under the Grant Agreement between the OneNet Project and the European Commission. These obligations are clearly stated in the Contract Funding Agreements signed between OneNet Cascade funding partner and selected Third Parties.

When signing the Contract Funding Agreements with OneNet Cascade funding partner and thus accepting to receive funding grants owned by the European Commission, Third Parties apply a relation between themselves and the European Commission through OneNet Project that carries a set of obligations to the Third Parties with the European Commission.

All selected Third Parties shall comply with the following obligations:

- Avoidance of conflicts of interest
- Confidentiality
- Dissemination of the action and visibility to the EU funding
- Liability for damages

Selected Third Parties must accept the right of control of the European Commission, OLAF and the Court of Auditors and the right for the European Commission to make an evaluation of the impact of the action. In order to be able to fulfil these obligations, the contractual arrangements on the Third Parties will be included in the Contract Funding Agreements (including control measures and/or reducing the financial support).

10. Service Development

Following the signing process of the Contract Funding Agreements, the selected Third Parties will develop the proposed services as described in their submitted proposals and in respect to the conditions detailed in their Contract Funding Agreement.

The Contract Funding Agreements enter into force on the date of the signature of the last signatory. The expected start date of the service's development phase is the date stated and agreed in the Contract Funding Agreements. The development phase will be a single-phase process, with pre-defined deliverables and milestones to be achieved.

10.1 Service Execution

Selected Third Parties need to expand upon and validate their service from a business and a technical perspective. All funding proposals will receive support from the OneNet Open Call Mentoring Team to help them understand the technical requirements of the scenario they are addressing, including: online resources and documentation, webinars to provide information on OneNet and scenarios' scope and demands. Expectations from the tasks, deliverables and/or reports of its proposal will be discussed through individual meetings between Third Party and its Mentoring Team.

A number of deliverables are required minimum:

1. **Mid-term report:** A description of the methodology (solution design, methodological approach, technical / business design, expected results, etc.)
2. **Final report:** Final solution technical / business design, results, tests, assessment, conclusions)

All required documentation and services are expected to be submitted before the defined deadline. If a Third Party fails to have its service ready or to submit its documentation on schedule, they will not receive the cascade fund. The overall duration of the development phase is up to 6 months with the possibility to extend two weeks for the quality improvement of the deliverables.

OneNet pursues an open, public and transparent workflow. Unless it goes against the legitimate interests of the Third Party the above mention reports should be published on the OneNet website. Publishing a shorten version of the mentioned report to protect the legitimate interests of the Third Party may also be an option.

10.2 Payment breakdown

The amount of the cascade fund cannot exceed 60,000 euros per Third Party. The breakdown and the different percentages are explained in the table below.

Payment Portion	Stage
25%	Pre-financing for project work commencing
45%	Following the successful submission of the mid-term report
30%	Following the successful submission of the final report

11. Other considerations

11.1. Legal framework

Applicants must acknowledge that all data and documents provided through the OneNet Open Call process will be used by the OneNet Consortium, European Commission and other entities involved

in this call from submission to selection and funding and development procedures. According to H2020 rules and guidelines, OneNet partners have the right and will keep internal records including:

- A list of submitted proposals, identifying the name and address of applicants.
- Communications with applicants before proposals' submission deadline and during the evaluation process.
- Names and affiliations of the members of the Steering Committee.
- A copy of the submitted Proposal Templates assessed during the evaluation process.
- A record of all incidents occurred during the evaluation process and any deviation from the standard procedure.
- Copy of requests for payment and attached documentation.

Any data, knowledge and information communicated as confidential in the framework of an action shall be kept confidential, taking due account of European Union law regarding the protection and access to classified information. Selected Third Parties shall comply with national legislation, regulations and ethical rules in the countries where the service will be carried out.

11.2. Privacy

Personal data shall be collected, processed and published in accordance with Regulation (EU) 2016/679, also known as GDPR (General Data Protection Regulation). Regarding the processing of personal data, please refer to OneNet Open Call portal's Privacy Policy on the following link: <https://opencall-onenet.cintechsolutions.eu/terms-of-service-and-privacy-policy/>

11.3. Ethical Issues

Research activities in Horizon 2020, and specifically OneNet, should respect fundamental ethical principles, particularly those outlined in "The European Code of Conduct for Research Integrity" that is available on the following link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf

12. Available documents

All OneNet Open Call documents and templates can be downloaded from the Open Call portal on the following link: <https://opencall-onenet.cintechsolutions.eu/important-documents/>

This Open Call supporting documentation includes:

- Open call announcement

- Open call Guide of Applicants
- Open call Proposal Template
- Open call Declaration of Honor

13. Applicants' Support

For more information and/or details about the OneNet Open Call, please advise the *Frequently Asked Questions (FAQs)* subpage available here: <https://opencall-onenet.cintechsolutions.eu/frequently-asked-questions/>

For additional information on the Open Call, any queries concerning eligibility criteria, data to be provided in the *Proposal Template*, or for questions about the submission process or any portal issues, please contact the OneNet Open Call Helpdesk by email: onenet_opencall@cintechsolutions.eu.

Please include the following data in your email message:

- username, telephone number and email address
- details of the specific problem (error messages, bugs descriptions, etc.)
- screenshots of the problem you encounter

Annex 1

Scenario No 1. : Deep power system analysis through GIS server application (Georeferenced power system modeling and analysis utilizing the geo-server)

Cluster / demo area

Southern cluster/Greek demo.

Type of service: Detailed power system analysis with Geographic Information system (GIS) implementation.

Power system analysis on the selected region (Crete island and Peloponnese) including both TSO and DSO grid simulation models that will be available,

Geographic visualization of simulation results. Exposing results and linking to other services being developed under f-channel via GIS technologies.

Entities:



household with potential PV production and consumption weather depended



solar PV panel



wind generator unit

Consumption area



Low and mid voltage level (micro grid or power plant level)

solar park



TSO boundary

High voltage levels (TSO)

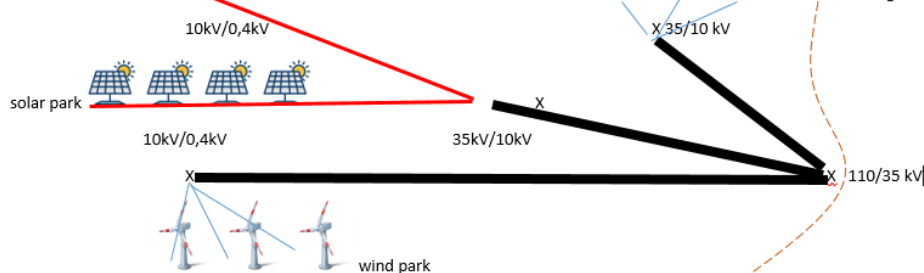


Figure 1 High resolution deep network modeling beyond the current TSO/DSO scope

Service can be used in any use case which is related to displaying and querying geographical data and power system simulations.

Technical details: GIS technology integrates common database operations such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps. These abilities distinguish GIS from other information systems and make it valuable to a wide range of public and private enterprises for explaining events, predicting outcomes, and planning strategies. Spatial query is implemented for purpose of easier calculation and better User Experience.

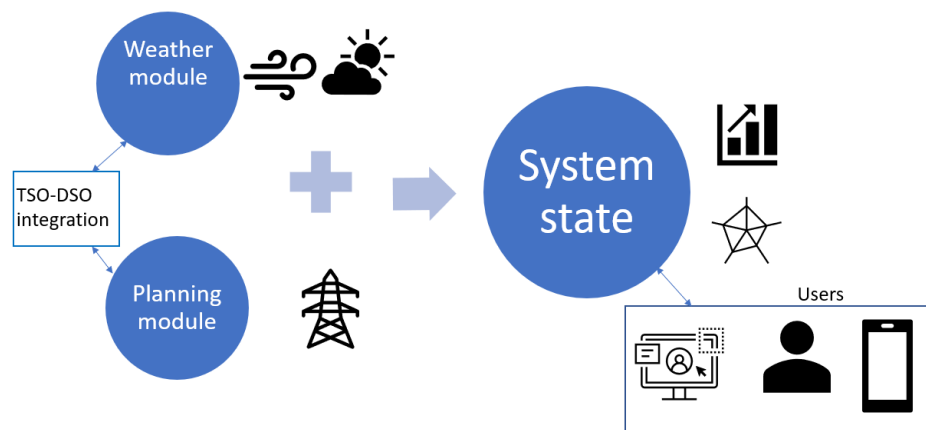


Figure 2 – Proposed system layout for the F-channel

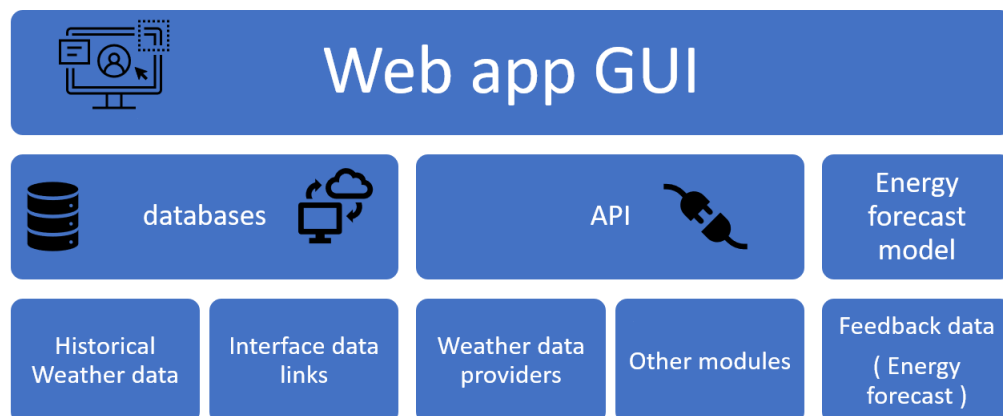


Figure 3 – F-channel foreseen system architecture

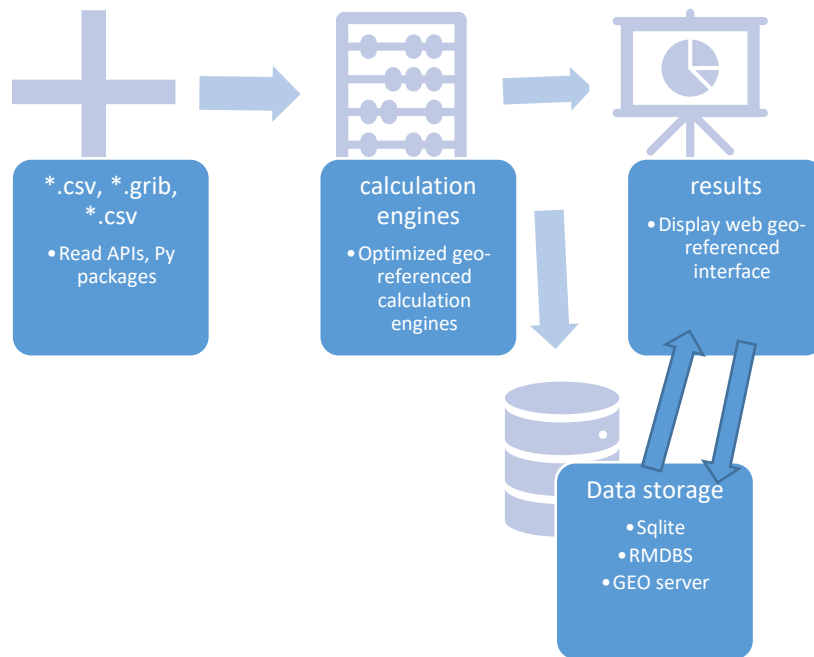


Figure 4 – System architecture with integrated georeferenced calculation engines and web results display

Georeferenced deep/vertical grid modeling: In order to allow for deep grid analysis, it is necessary to model the system to the lowest level entity, DSO MV/LV substation (e.g. 10/0.4 kV) or a commercial/industrial/residential building possessing its own MV/LV substation. Entity's model depends on the entity demand behavior (depending on the weather forecast and historical data) and the total power generated by the distributed energy resources (DERs) connected to it (again highly dependent on the weather and historical data). The latter is affected by: the type of each DER, weather forecast data, geographical data (GPS coordinates of DERs), DER network topology data, their availability data, etc. Task will be to develop a model of the network starting from these lower level entities for the predefined set of Points of Interest and then to provide different levels of aggregation for the higher level users DSO, TSOs, and/or RSCs.

All information collected on all mentioned modelled levels is intended for TSO's and DSO's better operational planning through congestion management and balancing reserves need and availability forecasting.

Our approach which we would like to develop and test is based on "intra" oriented mechanisms, offering an adding value to other ongoing approaches related to congestion management and energy balance issues, dealing with "inter" oriented mechanisms: inter aerial, inter TSOs or even inter regional Pan-European mechanisms. These inter oriented approaches are obviously necessary and they result in better utilization of the available energy reserves, but they neglect additional resources of energy reserves and congestion relief measures that origins in the lower voltage levels (in DSOs and further, deeper in the system, on the node level).

Figure 5 contains a topology connection graph showing directions of both aggregation and information flow which should be developed. It is obvious that the proposed model that should be developed possesses a higher resolution than the existing ones, enabling improved operational planning especially on TSO and RSC levels and offering congestion management engine for both grids, DSO and TSO operated. The same model can be applied for any type of a micro grid, being in parallel or in an island operation with the rest of the system.

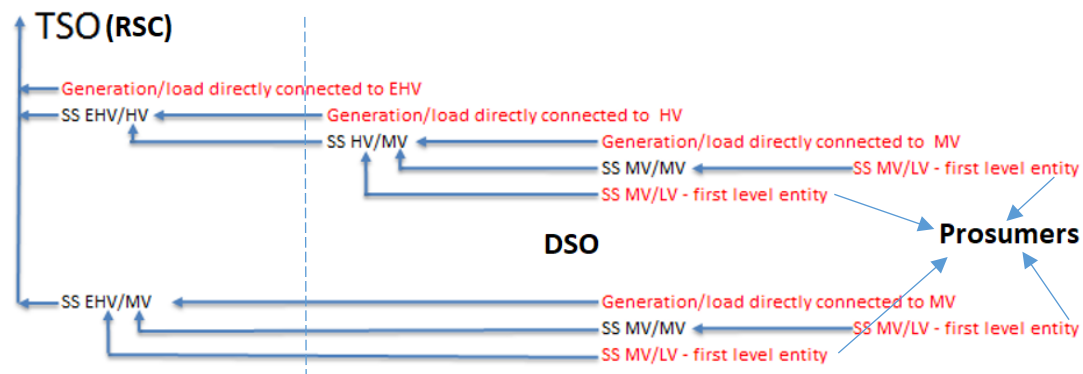


Figure 5

Addressed to:

Potential applicants are ICT and Energy consultancy companies with relevant expertise in field of GIS implementation and power system analysis and simulations. Experience in Spatial database implementing is also mandatory.

Description of the scenario

Initiative:

Exact Workflow GIS software and hardware are to be implemented on EIG existing infrastructure. Relevant data to be presented to user are grouped in layers which are presented to Third party for

purpose of service development. During development several checkpoints/milestones are to be identified and verified.

Expected outcome: Fully functional GIS server incorporated with the comprehensive power system analysis toolbox on EIG infrastructure with possibilities for further development and maintenance by EIG.

Important information for applicants:

<https://www.esri.com/en-us/arcgis/open-vision/initiatives/standards-specifications>

Third Parties benefit from getting involved in the scenario:

Gaining experience in energy sector. Possible further cooperation.

Incorporation of Third Parties for network operators and household consumers:

Easier and faster implementation of demo. By using specialised third parties, more resources can be focused on development of network/weather models which are core functionality of flexibility channel.

Added value on OneNet project:

If shown applicable, service can easily be upscaled to other services since involved both DSO and TSO.

Annex 2

Scenario No 2. : Active participation of an actual prosumer to the Cyprus demo and its coordination by the ABCM-D platform

Cluster / Demo area

Southern cluster / Cyprus demonstration.

Technical details: The applicants must develop a prosumer-level energy management solution with API framework to facilitate the secure interconnection between the ABCM-D platform and the prosumer. It should be noted that the ABCM-D platform will be used in the Cyprus demonstration of the OneNet project for providing the capabilities to the DSOs to: (1) monitor in real time the operating condition of the distribution grid through SCADA and smart meters measurements, (2) prequalify any products and services procured to the market by the FSPs located at the distribution level in order to ensure the safe operation of the distribution grid, (3) coordinate the flexibility services provided by the FSPs in the distribution grid, (4) evaluate online the response of the FSPs during and after the provision of services for frequency balancing and congestion management. In addition, the prosumer-level energy management solution (of the third party) should be able to exchange information with the ABCM-D platform related to: (a) fast reporting consumption and generation measurements from the prosumer and (b) coordination signals sent by the DSO for provision of ancillary services by the prosumer.

The applicants must have at their disposal a prosumer that will be equipped with a three phase interconnected PV system with at least 5 kwp installed capacity, battery energy storage system, fast reporting smart meter (with at least 400 ms reporting rate) and be able to provide active and reactive power regulation services within a range of 5 seconds. The prosumer must be located in Cyprus in order to have identical environmental and operating condition with the digital twin of the Cyprus power system. The prosumer will contribute to the voltage and congestion management services that are directly linked with the two BUCs of the demo. The interface between the prosumer and the ABCM-D platform should be able to send measurements regarding the operating conditions at the prosumer level (through smart meter, PV inverter) and receive coordination signal provided by the ABCM-D platform to regulate the operation of the flexible resources. The communication should be secured either by encrypted communication protocol over the internet or through secure VPN channel.

Addressed to:

SME that can provide a flexible energy management solution and will enable the interconnection of the prosumer with the ABCM-D platform. The expertise field of the potential applicants should include,

control and management of energy storage and PV systems, monitoring of prosumer operation status, API development.

Description of the scenario

Initiative: Enable the participation of an actual prosumer in the Cyprus demonstration

Exact Workflow: The energy management system at the prosumer level will send smart meter measurement to the ABCM-D platform (located at the UCY (DSO control center emulator)). The prosumer will be emulated in the digital twin of the distribution grid (using the field measurements). Based on the operating condition of the distribution grid, the ABCM-D platform will define and send the coordination signals to the flexible resources of the distribution and to the actual prosumer. The energy management system at the prosumer level will receive the coordination signals and will manage its own resources to satisfy the DSO requests.

Expected outcome: Validate the control of the prosumer by the ABCM-D platform in real environment and demonstrate the impact on the distribution grid operation by the active coordination of end-users.

Important information for applicants:

Brief information with the power system testbed where the energy management solution of the applicant should be interconnected: <https://www.kios.ucy.ac.cy/index.php/research/research-infrastructures/power-systems-testbed.html>

More information will follow as the demo is implemented.

Third Parties benefit from getting involved in the scenario:

Participation in a prestigious EU project that will allow the applicants to showcase their solutions in a realistic environment for active distribution grid.

Incorporation of Third Parties for network operators and household consumers:

The third party will involve an active household consumer that will be coordinated by the rules defined at the Cyprus demonstration. The network operator will be able to receive fast reporting measurements from the prosumer and will coordinate its operation for the provision of ancillary services to the active distribution grid. The incorporation of an actual prosumer to the Cyprus demo of OneNet and the ability of the operator to actively coordinate its operation will demonstrate the benefits of the active distribution grid.

Added value on OneNet project:

The interconnection of an actual prosumer to the Cyprus demonstration system and its coordination through the ABCM-D platform will be showcased in a real-life demonstration. The scenario will highlight the impact on the distribution grid operation by real time coordinating of the end-users. Furthermore, through this scenario the importance of enabling the synergies between the DSO and the prosumer will be emerged. The third-party involvement to the OneNet project with the incorporation of an actual prosumer will facilitate the acquisition of fast reporting data (from the prosumer side) and the exchange of information between the prosumer and the operator. This information exchange can be either enabled by direct communication between the ABCM-D platform and the prosumer energy management platform or through the OneNet system.

Annex 3

Scenario No 3. : DSO-TSO interaction

Cluster / Demo area

Western cluster / Portuguese Demonstration

Type of service: Set of APIs and related services (potential links with existing systems, backend servers and databases) to enable a streamlined automated communication between system operators, namely the Portuguese DSO and TSO. These services will allow the exchange of operational planning information to facilitate the definition of necessary actions in order to avoid grid constraints and ensure as secure and reliable grid operation.

This service is related to our Business Use Case (WECL-PT-03)², where we will exchange information in several timeframes in order to improve DSO and TSO operational planning.

Addressed to:

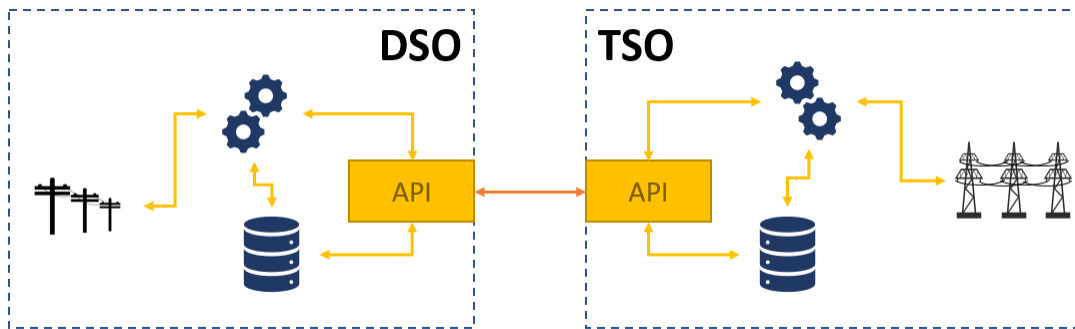
Software Development expertise with experience in the energy sector.

Description of the scenario

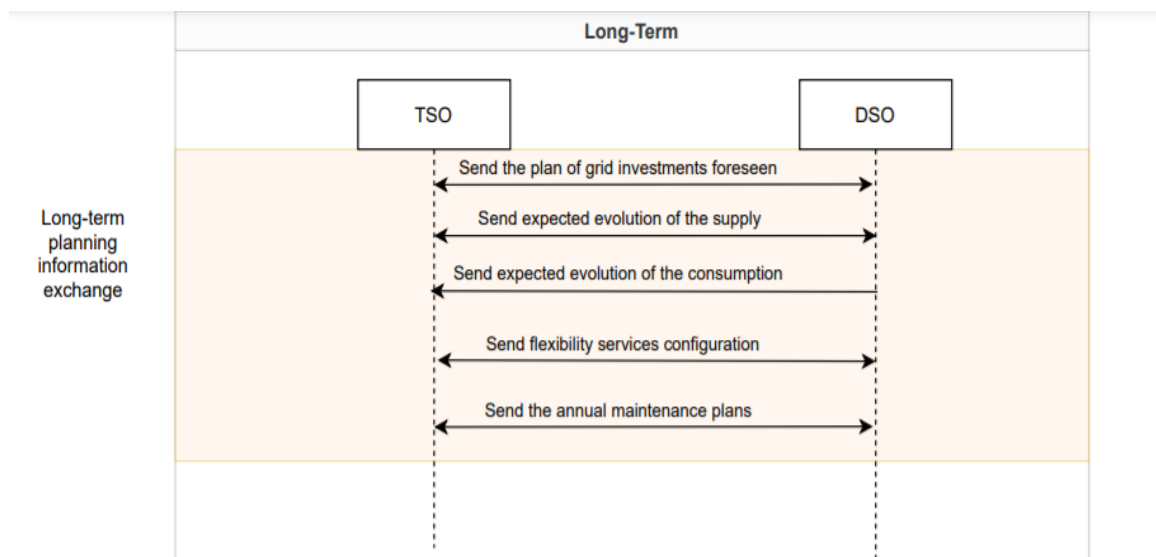
Initiative: The set of APIs and related services will be implemented in order to exchange the following information:

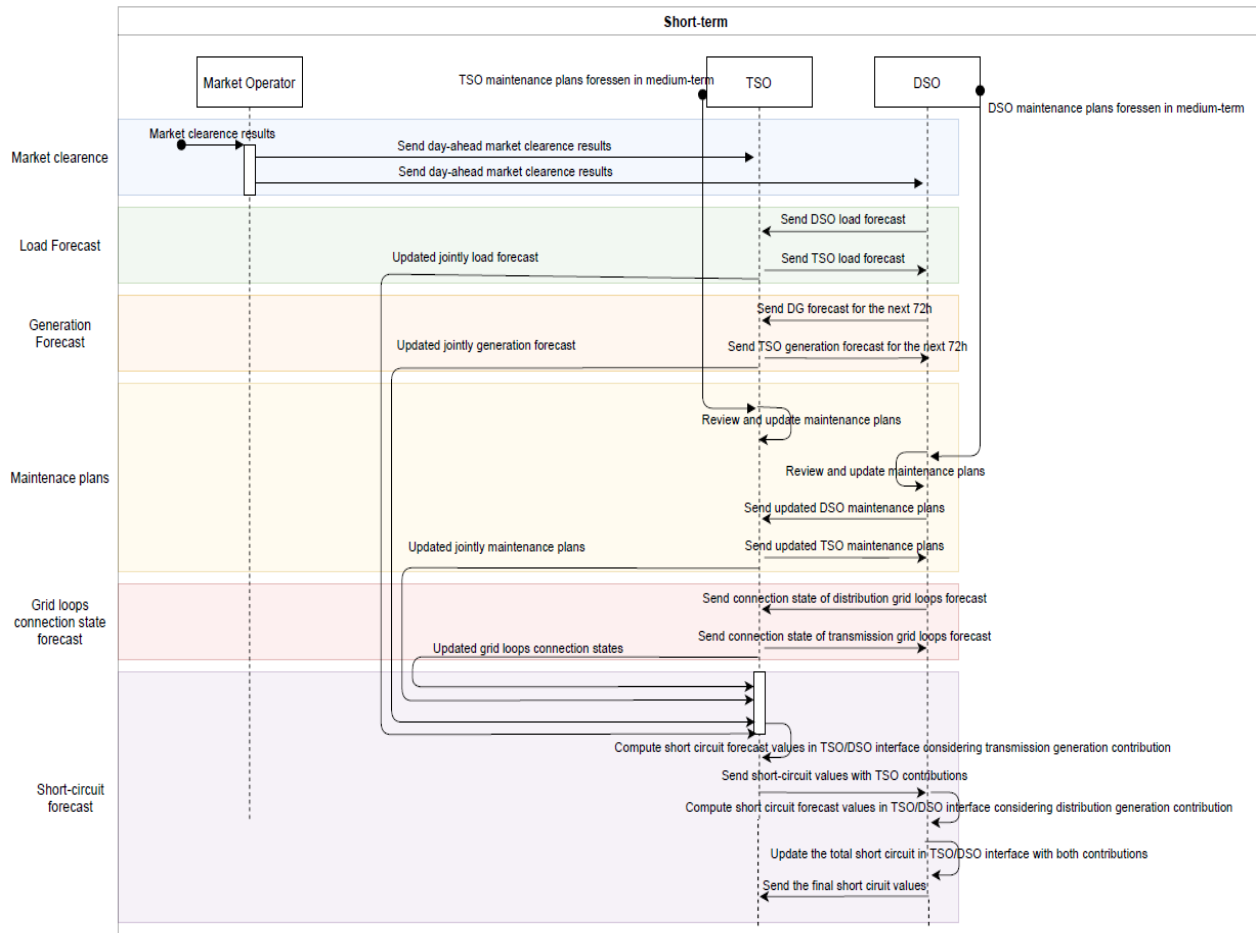
- Plan of grid investments foreseen
- Expected evolution of the supply
- Expected evolution of the consumption
- Annual maintenance plans
- Generation forecast

² Please consult the page 22 of the following [document](#).



Exact Workflow:





Third Parties benefit from getting involved in the scenario:

The companies that collaborate in this project will be developing their capacities and applying their skills within the energy area. It may also be an opportunity for them to grow as companies since the experience gained in this project will allow them to work in future projects involving system operators either in Portugal or in another European country.

Added value on OneNet project:

The solution we intend to implement meets the scope of the OneNet project, since based on these information exchanges it will increase the accuracy of the amount of flexibility required by both system operators. Furthermore, our goal is to develop a solution that can later be replicated by all European system operators.

Annex 4

Scenario No 4. : Flexibility Provider engagement to test local markets able to alleviate network congestions at medium and low voltage network levels

Cluster / Demo area

Western cluster / Spanish Demo

The Spanish Demo has the commitment to test a system that enables flexibility services providers (FSPs) to provide services to DSOs to manage congestion problems. For this scope the demonstration needs to engage customers and make available for the market their flexibility services developing the appropriate communication and interaction tools.

Flexibility can serve as an alternative to network reinforcement when it is more cost-efficient than traditional reinforcement of the network.

Specific service:

Flexibility Service Providers that offer different type of flexibility resources to test new local markets able to alleviate network congestions at medium and low voltage level. A Flexibility Service Provider (FSP) is either an aggregator, providing flexibility services, or the owner or the representative of large-scale or small-scale assets, which are connected to the distribution network and which can provide flexibility services to DSOs.

FSP will be able to communicate with DSO and MO and is expected to provide the flexibility upon the DSO's call. The communications will be done through DSO and/or MO specific platforms.

The FSP must specify the kind of resource/s and the volume of available flexibility.

Addressed to:

Any entity able to provide flexibility services for DSO, as an owner, individual distributed energy resource, or aggregator, and develop the necessary tools for communications and interactions to be involved in the demos.

FSPs participating should have resources connected to medium or low voltage levels at DSOs networks participating in Spanish demo, with at least 0.1MW of capacity for flexibility.

The resources have to be connected to medium voltage or low voltage level in some of the following areas:

- Murcia:
 - o North of Murcia, close to Espinardo neighborhood
- Madrid:

Prioritary:

- o Cantoblanco, in the north of Madrid
- o Alcalá de Henares

Secondary:

- o Torres de la Alameda, or
- o Downtown Madrid

Recipients are requested to demonstrate clearly in their expressions of interest that they are very aware of the areas in which their specific services fit best the project goals and the ongoing developments.

Description of the scenario

The FSP will be able to participate in local markets to alleviate network congestions as flexibility service provider role, being involved in the following scenarios:

- Prepare/Pre-qualification: process to ensure that a particular FSP can deliver a given product
- Market phase: FSP is expected to provide the flexibility upon DSO's call to procure availability or availability and activation. Markets are cleared and FSPs are nominated to deliver the product.
- Monitoring and activation: The DSO will monitor the conditions of the grid in real time and send the activation signals to the FSPs committed in the market phase, in accordance to the type of procured product.
- Measurement phase: the MO and/or DSO will verify if the FSP flexibility was provided in accordance to the product procured in the market phase.

Important information for applicants:

FSPs participating should have resources connected to medium or low voltage levels at participant DSOs networks in some of the areas indicated above.

Potential aggregators must attach documentation evidencing commitment of resources from the FSPs that they represent.

Minimum required flexibility capacity of 0,1MW

The FSP will be evaluated considering the following aspects:

- Type of resources commitment
- Geographical location
- Availability and capacity for resources activation
- Price for availability and activation
- Agree to communication and cooperation activities
- Viability of technical solution for monitoring and receiving set points
- Innovation degree

Third Parties benefit from getting involved in the scenario:

Third parties involved will learn from the Project how to join flexibility markets and identify potential benefits and issues to overcome.

They could develop and test new tools and technologies to be ready to participate in the future markets.

Incorporation of Third Parties for network operators and household consumers:

The participation of flexibility providers would demonstrate the capacity of the pilot to open the market to external actors (household consumers) to collaborate to manage network problems.

Added value on OneNet project:

The third parties involved will help the Project to:

- Demonstrate the provision of flexibility services and analyse the behaviour of different type of flexibility resources.
- Improve innovation capacity of the project supporting preparation and project implementation.
- Increase the amount and value of the collected market results information to be sent from the Local Market Platform to the OneNet system.
- Strengthen the OneNet community.

Annex 5

Scenario No 5. : Flexibility resources to provide flexibility services to the Northern Demonstrator

Cluster/ Demo areas

Northern Cluster (Finland, Estonia, Lithuania, Latvia)

Type of service: The applicant should develop steerability of electric loads/generation/storage and integration of the steerability to the OneNet market framework. In various markets there are different positions available in the chain from the load until the market.

In the Finnish market the OneNet -project has a flexibility service operator that it's possible to collaborate with to access the markets. In the other Northern demonstrator market areas the applicant will have to cover the flexibility service provider's market operation role.

The demonstrated flexibility products range from long-term flexibility products (months to years ahead) to near-real-time flexibility products (15 minutes), including active and reactive power. Products are described in OneNet deliverable D2.2 chapter 6.1. The applicant should describe in the application which flexibility product the applicant is capable and interested to provide.

The applicant will be part of the Northern Cluster Business Use Case described preliminary in OneNet deliverable D2.3. Business Use Cases for the OneNet, in chapter 9.2.1 in the role of FSP.

Technical details:

Flexibility provider, either in a role of FSP or co-operating with FSP

A company that can provide a technical solution for steering of appliances e.g heat pumps, electrical car chargers, boilers etc. in order to give the project a larger base of resources to steer. This could enable a commercial demonstration.

- The Flexibility Provider can provide their own aggregation platform
- The Flexibility Provider should describe the general attributes of their own platform. Steering signals can be provided directly by Flexibility Provider or via some other project partner acting in the FSP role.

- The Flexibility Provider should provide a technical solution for steering of electrical equipment and appliances from distributed resources and have the possibility to steer the electrical load of their end-customer resources.
- Depending on the Flexibility Provider capabilities some requirements for reporting back to the FSP.
- The Flexibility Provider should specify the type and volume of resources available for flexibility.
- The Flexibility Provider should provide an incentive to end-consumers for participation on the flexibility markets.

Addressed to:

Any party who has the possibility to steer electrical appliances or would develop a system to steer distributed resources and develop required flexibility provision. The Flexibility Provider should have resources available for steering. Flexibility Provider could be Flexibility Service Providers/electricity companies acting in Finnish, Estonian, Latvian or Lithuanian markets.

Description of the scenario

Initiative: Controlled steering of the flexibility resource loads or/and acting as Flexibility Service Provider in the market demonstration. The markets address the flexibility needs of the system operators

Exact Workflow: (including the party that this toolbox will be accommodated in and/or where assessment/validation will take place within a realistic setup)

The party has resources that they can control through an integration to a steering platform. FSP has a contract with the end-customer about flexibility service provision and registers the flexibility resources in the flexibility register, this includes also location of the individual resource (metering point identification). OneNet systems will perform resource and grid qualification. After qualification FSP offers the flexibility to the relevant market.

If the flexibility is called-off on the market a steering signal regarding the activation is entered into FP's –aggregation and steering platform. The Flexibility Provider (desired Party) will then, upon the given signal, steer the right resources accordingly. The activation/steering needs to be metered and validated. Metering data will be delivered to flexibility register.

Connections between the applicant and Northern Cluster OneNet system will be handled via REST API.

Preferred minimum bid size of the flexibility resource in total is 100 kW but the applicant can justify also other sizes if the resources seem relevant for the future flexibility service provision.

Expected outcome: Steering of an electricity resource in accordance with the market regulations and demand.

Important information for applicants:

- The vendor should provide a technical solution for steering of electrical equipment and appliances from distributed resources and have the possibility to steer the electrical load of their end-customer resources.
- Depending on the vendor's capabilities some requirements for reporting back to the FSP.

Third Parties benefit from getting involved in the scenario:

The applicant can develop and test technologies for steering electrical consumption/distributed production/ storage and aggregation. The applicant will gain experience for new market framework and integration to aggregation and steering platform.

Providing flexibility services can be a new revenue stream and new business models can be developed. Companies providing e.g. renovation services for transferring heating from fossil fuels to a electricity -based solution are greatly dependent on the price of electricity vs. fossil fuels. The market for charging of electric vehicles (EV) and other flexible assets is expanding and is a potential source for flexibility on the electricity market. Adding the possibility to participate to flexibility markets can lower the electricity cost and even a small change in the cost of electricity can turn a negative business case into a positive one.

Early experience from the evolving markets helps companies to design their steering systems to suit the market requirements regarding e.g. speed, reliability, and accountability.

As FSP you will have the opportunity to grow your product portfolio. You will get closer to your customers, and gain knowledge and understanding of their needs and restraints. Participating in the pilot will increase the understanding of new flexibility markets and the new technologies for steering.

Incorporation of Third Parties for network operators and household consumers:

The applicant could target household consumers (or any other distributed flexibility resources). The demonstration enables more customer participation in the project and on the flexibility market and can provide advanced solutions to be deployed outside the project in the future.

Added value on OneNet project:

1. Additional flexibility service provision.
2. Additional flexibility resources to steer. Better understanding of how to involve end-customers and how to aggregate small, distributed resources. Different type of resources provide additional information on how the resources are capable of providing flexibility products for various system operator needs.
3. More diverse validation of the demonstration results.

Annex 6

Scenario No 6. : Advanced Data Quality Analysis of Data

Exchange Platforms

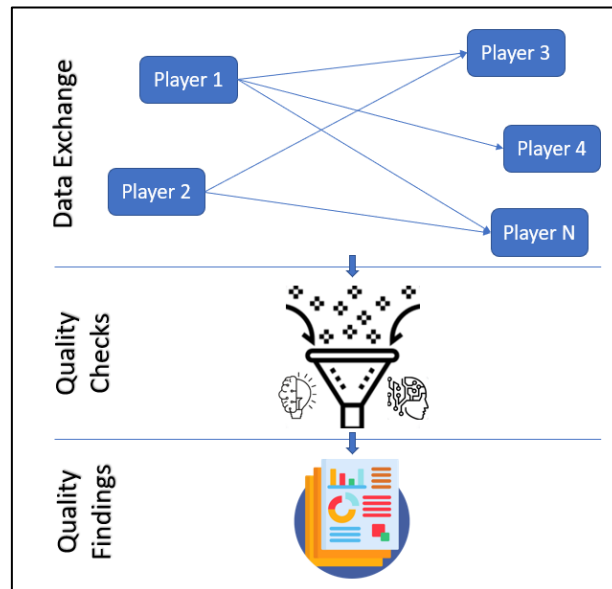
The scenario aims to encourage the development of tools and services for data quality checks from a general perspective that will be flexible enough to adapt to the different needs of data exchanges among TSOs, DSOs and consumers. The developed tool is expected to be part of project's middleware to measure the quality of exchanged data based on proposed methodologies. Considering the rich content of the ENTSO-E Transparency Platform (TP), the applicants are encouraged to demonstrate developed methodologies utilizing the TP data to test the performance of the developed tool in addition to identifying data quality issues on the TP.

Specific service

The service is to apply advanced machine learning algorithms on the data exchanged between different players in the TSO-DSO-Consumer value chain. The developed service will also serve for the Transparency Platform to enhance the quality of the data by highlighting the abnormalities. In particular, the service should be able to detect outliers from timeseries where standard methodologies are not sufficient.

The service will have a link with the T5.4 related to AI and big data. It will also be generally beneficial for the overall OneNet architecture to enhance the quality of the data with large amount of data coming from distributed sources.

For the tool's development purposes data from the Transparency Platform can be used as an input. The output will be the result of the data quality analysis.



Addressed to:

The development of the expected tool under this scenario requires expertise in the fields of Big Data Analytics, Machine Learning and advanced AI methodologies to perform data quality measurements in the energy domain. Start-ups, SMEs from the field of data service provision and aiming to be part of TSO-DSO-Consumer value chain are welcome to apply.

Description of the scenario

The service provider downloads the data from the Transparency Platform (starting with one data item).

The service provider develops an algorithm that enable to apply machine learning on timeseries. The algorithm is trained on historical data from the Transparency Platform and enables to predict the outliers or wrong data in the new published data as well as on the Transparency Platform historical data. The proven service will also serve for the data quality measurements for the exchanged data in OneNet demos. After completion of OneNet project, the developed tool under this call shall be accessible to the beneficiaries of the project on royalty-free basis.

Important information for applicants

The applicants are expected to use data exchanged in OneNet demos as well as the the ENTSO-E Transparency Platform data to develop tools and services to perform data quality checks and asses the data quality on the platform with the proposed methodologies. As the Transparency Platform offers a wide variety of data, the applicants can focus on a smaller subset of data items under the scope of this scenario.

The following parts of this section will provide a general overview of the Transparency Platform data and data download options from the platform.

Available Data on the Transparency Platform

In accordance with Regulation 543/2013, the ENTSO-E Transparency Platform was launched on 5 January 2015. Following the launch of the new platform, the www.entsoe.net website, on which TSOs had voluntarily published some market data since 2011, was de-commissioned in March 2015. The historical data from 2011-2014, which was previously published on entsoe.net, is available to download from the Transparency Platform > [Data Pre-5.1.15](#) section.

Currently, data on Transparency Platform is published under 7 different domains.

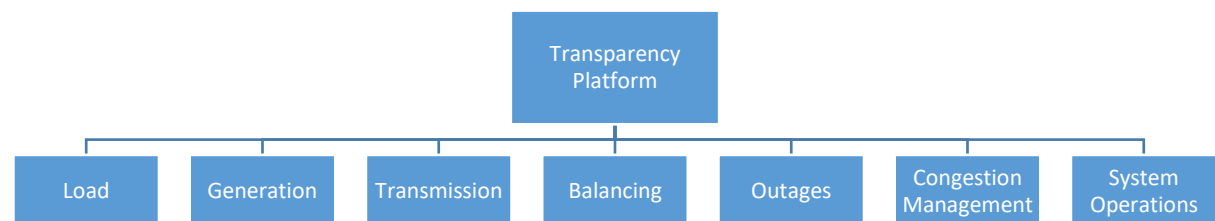


Figure 3. Data Domains on Transparency Platform

Load: Within this domain, actual total load for and load forecast data with various horizon (day, week, month, year) is presented.

Generation: Data regarding installed capacities, generation and generation forecast is presented.

Transmission: Data about cross border power transfers and forecasted capacities is revealed.

Balancing: Under this domain, data regarding to keep the electricity grid balanced is published. This includes bids data, accepted offers and activated reserve information including prices besides balancing state of the areas.

Outages: Within this domain, data regarding planned maintenances and forced outages in the grid is published.

Congestion Management: Data about actions taken to relieve overloaded parts of the transmission grid is published.

System Operations: Data about operational agreements and frequency quality is published.

Data Download Options from Transparency Platform

TP offers various ways of data export alternatives. In order to meet the different user needs, followings options are available:

- Web GUI – [Transparency Platform](#)
- SFTP – [User Guide](#)
- Restful API – [User Guide](#)
- Data Repository Solution – [User Guide](#)
- Subscription Service – [User Guide](#)

Users who are interested in limited amount of data can directly use GUI export option. On the other hand, SFTP is suitable for bulk data downloads but data available on SFTP refresh once every hour. On the contrary, Restful API can serve for the ones who are interested in the most recent updates on data. But there are also some limitations apply to API requests in terms of the number of requests per minute, the number of files to be downloaded per request and the time window allowed for queries depending on the data item of interest. The last option, Data Repository Solution allows download up to 50 MB. Requests are processed in the background, asynchronously, without imposing a load on the platform through a preferred channel for communication (Web service or ECP). Finally, the platform allows users to subscribe for a data feed in which the platform pushes updates to the user's endpoint through a web service or ECP channel.

Table 2. Overview of Download Options

Download Option	File Type	Data Updates
Web GUI	xml, csv, xlsx	Almost real time
SFTP	csv	Every hour
Restful API	xml	Almost real time
Data Repository	xml (zipped)	Almost real time
Subscriptions	xml	Almost real time

Conditions for Use of Transparency Platform Data

Conditions for use of TP data is defined by the [Terms and Conditions](#) within a dedicated section as follows:

“In accordance with the applicable legislation, the Data User shall, when using of the Transparency Platform Data for any purpose whatsoever:

- Use the Transparency Platform Data in good faith and always comply with good business practices regarding the re-use of publicly available data;

- Mention the ENTSO-E Transparency Platform as the source of publication of the data, in accordance with good industry practices and comply with all reasonable requests from ENTSO-E regarding the visibility of the ENTSO-E Transparency Platform origin of the re-used Transparency Platform Data;
- Be only allowed to make reference to the ENTSO-E Transparency Platform as the source of publication of the re-used data. It is therefore expressly prohibited to use the ENTSO-E Transparency Platform name or the ENTSO-E name in any manner that is likely to cause confusion regarding the possible existence of any kind of sponsorship or of endorsement of any use of the Transparency Platform Data by the Data User;
- Not cause prejudice to the copyright or related right on a Transparency Platform Data, which may be owned by the concerned Primary Owner of Data. In case of a risk to cause prejudice to said right, the Data User shall seek the prior agreement of the holder of the copyright or related right. Notwithstanding this requirement, as a facilitation for the Data User, ENTSO-E publishes on the Transparency Platform and regularly updates the list of the Transparency Platform Data which can be freely re-used with no need to seek for the prior agreement of the respective Primary Owner of Data. The Data User has responsibility to check this list before each re-use of the Transparency Platform Data.”

Already developed methodology to detect outliers

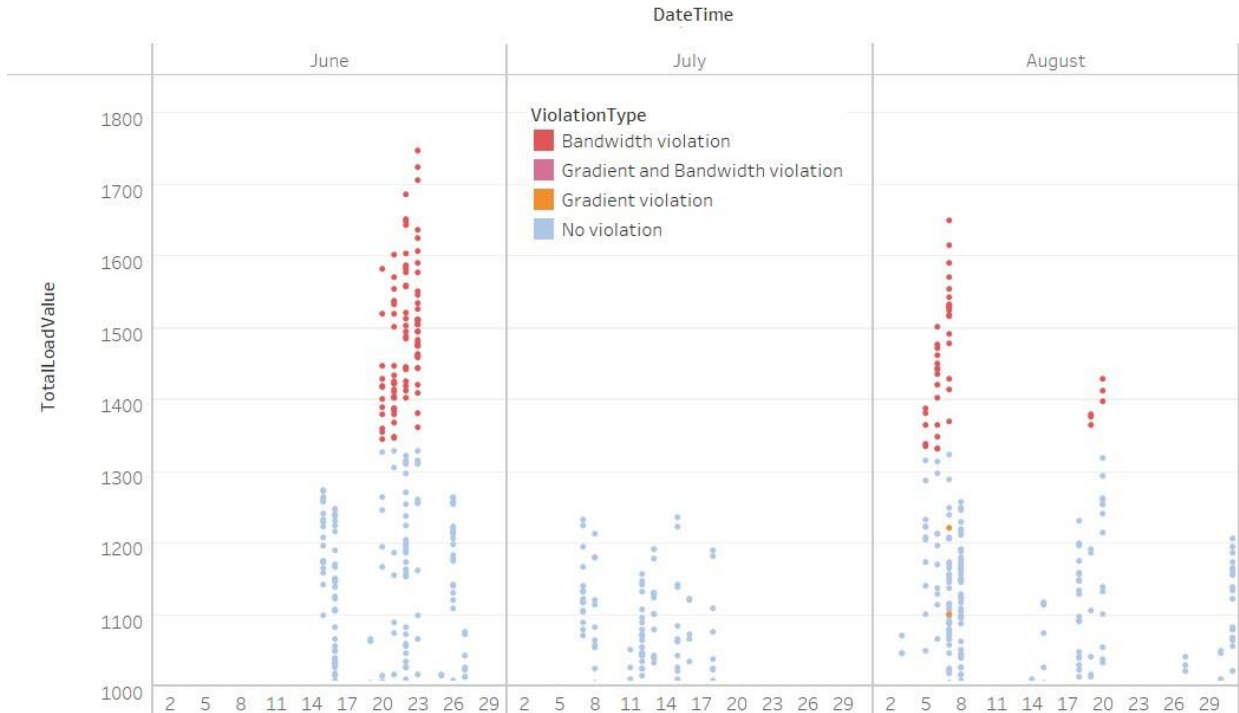
In 2018, ENTSO-E members entered into a Memorandum of Understanding (MoU) that establishes requirements for the quality of the data provided by TSOs

The initial proof of concept (PoC) done for Actual Total Load [6.1.A] Data Item has resulted in acceptable quality analysis results based on the Median Absolute Deviation(MAD) technique (https://www.academia.edu/5324493/Detecting_outliers_Do_not_use_standard_deviation_around_the_mean_use_absolute_deviation_around_the_median). However, the further PoC extension for other Data Items has shown that the nature of their data is not always suitable for MAD analysis, an opportunity to apply new techniques (e.g. machine learning) arise.

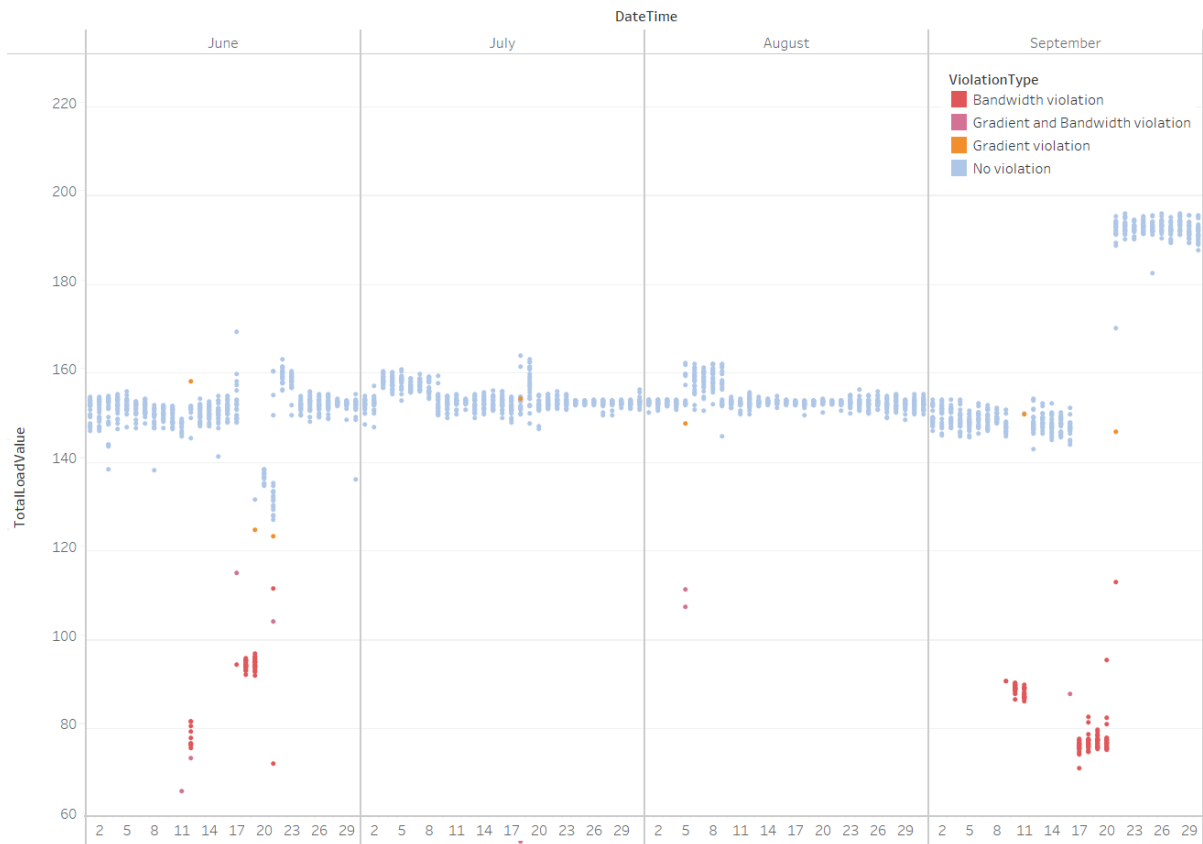
Some more concrete examples where MAD technique didn't show promising results:

Detected anomalies (mostly false positives) are marked in red:

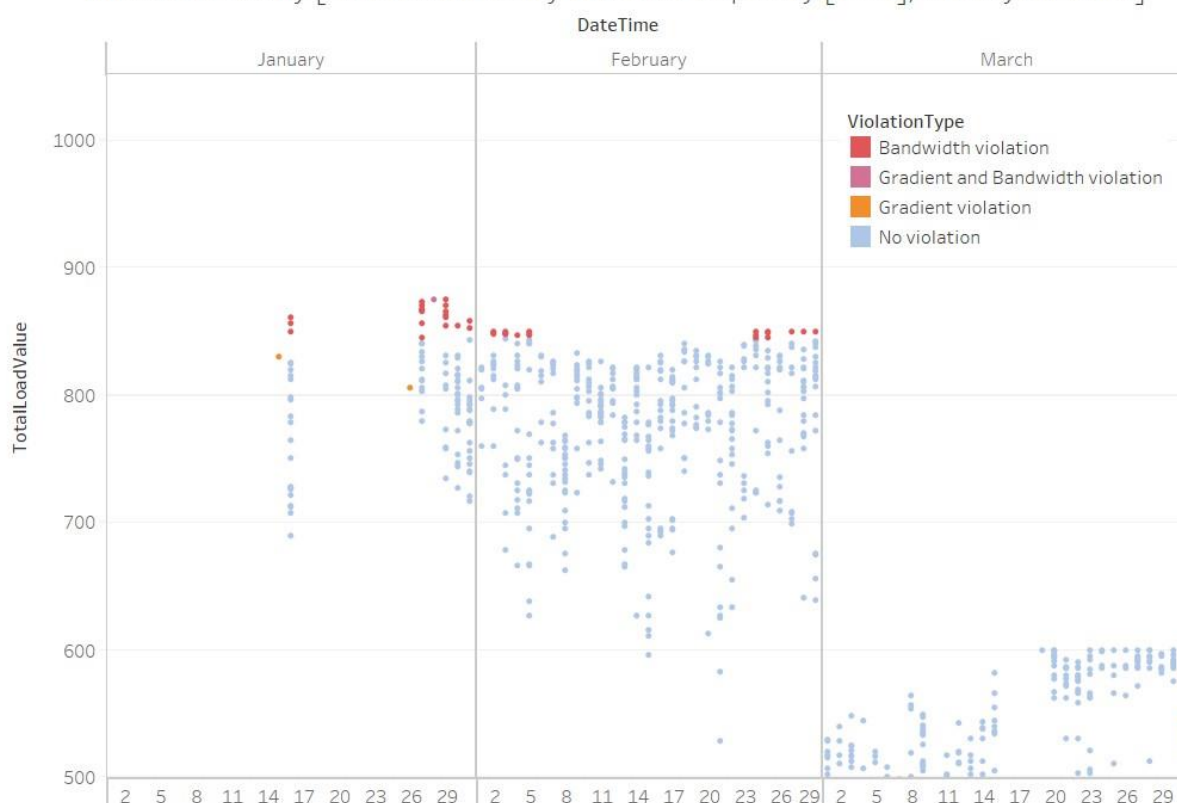
Timeseries daily [Physical Flows [12.1.G], 2020 year data]



Timeseries daily [Physical Flows [12.1.G], 2020 year data]



Timeseries daily [Offered Intraday Transfer Capacity [11.1], 2020 year data]



Third Parties benefit from getting involved in the scenario

The applicants will have the chance to be part of the growing collaboration among TSOs-DSOs-Consumers by providing data services. The applicants will also achieve a good knowledge of the developing concepts and infrastructures in that field to better address their services with the growing market needs.

Incorporation of Third Parties for network operators and household consumers

The expected services and tools for data quality measurements will ensure that the exchanged data among players has high quality standards. It is very important for network operators to have a precise information before taking any data driven actions. The developed services and tools can help eliminating that risk. Moreover, also from the household consumers' perspective, data quality checks will help avoiding any negative financial outcomes resulting from the non-realistic commitments due to unintended exchange of incorrect data.

Added value on OneNet project

As the energy markets evolves and develops, we are having more and more different types of players in the grid. The number of players and the frequency of interaction among them increase very sharply with the growing share of distributed energy systems. These developments also challenge the grid operators from the operational point of view. Therefore, it is very crucial to have an effective communication among the increasing number of stakeholders. The services and tools to be developed under this scenario aims to address the need of data quality measurements to maintain high data quality standards among the players in order to eliminate any misleading information. Quality measurements will be performed regularly at the desired frequency in order to identify the suspicious exchanges and corresponding parties will be informed.

Annex 7

Scenario No 7. : Third Party providing access to the Polish Balancing Market for prequalified Flexibility Service Providers

Cluster/ Demo area

Eastern Cluster/ Polish demonstration area

Type of service:

This scenario is for Third Parties, which:

- 1) have an agreement with TSO, have the status of an active Balancing Market Participant and have an appropriate Scheduling Unit in which resources located in the distribution network can be mapped, offering balancing services for TSO (balancing capacity and / or balancing energy) via the Flexibility Platform, and:
- 2) have an agreement with TSO, have the status of an active Balancing Market Participant and have an appropriate Balancing Unit in which resources located in the distribution network can be mapped, offering balancing services for TSO (balancing capacity and / or balancing energy) via the Flexibility Platform.

Explanation:

In order to effectively conduct a demonstration in the Polish East Cluster demonstrator, in the scope of providing balancing services to TSO on the Balancing Market in Poland by resources located in the distribution network (in the DSO's grid), it is necessary to represent these resources on the Balancing Market by an active Balancing Market Participant. These resources may be represented within the existing or newly created Scheduling Unit. The Balancing Market Participant will submit offers for balancing capacity and / or balancing energy to the Balancing Market, as well as submit work schedules for these resources and provide settlements with TSO and Flexibility Service Providers. Additionally, for such a Scheduling Unit it is necessary to ensure balancing by an active Balancing Market Participant within the Balancing Unit corresponding to the Scheduling Unit.

Representation of flexibility resources connected to the DSO network on the Balancing Market by a Balancing Market Participant requires an active contract with TSO and compliance with a number of formal requirements including, for example, set up a financial guarantee for the proper performance of the contract in the field of settlements (currently in the amount not lower than PLN 500,000.00), and undergo an appropriate qualification test process as well as incurring expenses for the creation or appropriate adjustment of the appropriate Scheduling Unit and the Balancing Unit, and incurring the costs of its maintenance.

Such a Balancing Market Participant - the Balancing Service Provider takes full responsibility for submitting offers for balancing services (capacity and/or energy) and reporting work schedules made for such resources under a given Scheduling Unit to TSO, in particular is obliged to make appropriate settlements with TSO, including penalties for non-performance or improper performance of the contract for a given scheduling unit. The Balancing Market Participant is also responsible for any possible imbalance of such a Scheduling Unit, therefore it should ensure its balancing within the corresponding Balancing Unit.

Concluding, a contract with TSO and obtaining the status of a Balancing Market Participant by every FSP located in the DSO network, which intends to provide balancing services to TSO is too expensive and time-consuming and would lead to an unjustified increase in the number of Market Participants.

“Terms and Conditions related to Balancing” in Poland and unbundling rules make it impossible for DSO to play such a role of intermediation, and even more so by TSO, it is therefore necessary for the demonstration to acquire a Third Party, which is currently a Balancing Market Participant.

It is reasonable to select an entity, preferably one that already has the status of a Balancing Market Participant, who would be responsible for submitting balancing service offers (in terms of balancing power and energy) for appropriate remuneration under the existing or newly created Scheduling Unit on the Balancing Market, submitting work schedules for resources located in the DSO network and ensuring the balancing of such a Scheduling Unit within the corresponding Balancing Unit.

Since participation in the Balancing Market in Poland is associated with the need to use dedicated IT systems specified by TSO, a large part of the Balancing Market Participants use the services of Scheduling Agent who maintain appropriate systems for communication with TSO and on behalf of the Balancing Market Participants send notifications and schedules on the Balancing Market. Therefore, if a Balancing Market Participant who undertakes to submit to the Balancing Market offers of flexibility service providers (FSPs) located in the distribution network or for balancing a Scheduling Unit, in which the above-mentioned suppliers, will not have the appropriate ICT infrastructure, such Balancing Market Participant will have to have an appropriate contract with the Scheduling Agent, and any possible costs of using the services of the Scheduling Agent will be covered in the remuneration.

Therefore, in order to enable the actual submission of offers for balancing services (balancing capacity and/or balancing energy) to the Balancing Market in Poland, it is necessary to obtain the following types of services through the resources located in the distribution network:

- 1) services for the submission of offers for balancing services and balancing energy and submission of work schedules for resources located in the DSO network within a given Scheduling Unit, as well as conducting settlements on this account by an active Balancing Market Participant (Balancing Service Provider) with an active contract for the provision of services transfer from TSO and

2) balancing services of the Scheduling Unit referred to in point 1) above by an active Balancing Market Participant (Balancing Responsibility Party) with an active contract with TSO.

The purchase of the services described in point **above** is required to demonstrate the possibility of providing balancing services to TSO by prequalified FSP located in the DSO network, described in BUC Balancing (EACL-PL-02).

Explanation:

The above results from the specificity of the Balancing Market in Poland, in particular from the need to meet a number of formal and technical requirements by the entities submitting offers for balancing services used by TSO under the rules described in the Terms and Conditions related to Balancing.

The above rules require intermediation in the transfer of the original Flexibility Service Providers' offers for balancing services to the Balancing Market. There are two possible solutions:

- 1) *each FSP prequalified for balancing services selects its Balancing Market Participant, which has a concluded and active relevant agreement (contract) with TSO and is equipped with an appropriate IT system for communication with the TSO or uses the services of an appropriate Scheduling Agent,*
- 2) *for all FSPs prequalified for balancing services and submitting offers for balancing services through the Flexibility Platform, one Balancing Market Participant is selected, which has a concluded and active relevant agreement (contract) with TSO and is equipped an appropriate IT system for communication with the TSO or uses the services of appropriate Scheduling Agent.*

Technical details:

The FSPs prequalified for balancing services will submit their bids on the Flexibility Platform.

After the verification and optimization of the offers, the Flexibility Platform will forward the offers to the Balancing Market Participant (or Participants) in the form of a flat file in a predefined format (e.g. csv). The Balancing Market Participant will provide (independently or through a cooperating Scheduling Agent) data for a dedicated Scheduling Unit / Balancing Unit using dedicated TSO systems.

Data will be exchanged also between the FSPs prequalified for balancing services and the Balancing Market Participant outside the Flexibility Platform (on the set-points and appropriate instructions in the event of using the balancing services by TSO).

Addressed to:

The scenario is for parties being Balancing Market Participants active on the Balancing Market in Poland, who are able to handle additional balancing services offers from prequalified FSPs (submitted via the flexibility platform), including taking financial responsibility for settlements in this respect.

Therefore, these entities should have appropriate competences, experience and financial strength to be able to handle additional balancing services offers from prequalified FSPs located in the DSO network.

Explanation:

The answer to the Call for the provision of services described above may theoretically be submitted by any entity that is able to obtain the status of an active Balancing Market Participant by the date of the beginning of the demonstration period, create an appropriate Scheduling Unit and Balancing Unit and set up IT systems allowing for the submission of offers and work schedules on Balancing Market or conclude a service contract with the relevant Scheduling Agent.

However, due to the quite demanding process of obtaining the status of a Balancing Market Participant, including in particular: the need to have an appropriate license issued by the NRA, the need to conclude a contract with TSO for the provision of balancing services, including the need to establish a financial guarantee for the proper performance of the contract, the necessity to incur the costs of establishing the appropriate Scheduling and Balancing Units, and the need to set up IT systems necessary for their proper operation, it is advisable that potential contractors who respond to this scenario are already active Balancing Market Participants.

Description of the scenario

Initiative:

The potential service provider (Balancing Market Participant) will undertake to submit, on his behalf and under his own responsibility for balancing offers and work schedules for individual prequalified FSPs represented in a proper Scheduling unit and to make settlements on this account with TSO and individual FSPs as well as for balancing any possible imbalances on such Unit in the corresponding Balancing Unit.

Workflow:

- FSPs being prequalified balancing service providers whose resources are located in the DSO network will be able to submit their offers to the Flexibility Platform,
- on the Flexibility Platform, the offers of balancing services will be verified in terms of their technical feasibility and optimized,
- bids that are not rejected will be forwarded to the selected Balancing Market Participant which, as a part of the Scheduling Unit served, will submit them to the Balancing Market, taking full responsibility for them towards TSO,
- if Balancing Market Participant does not have appropriate IT systems, the offers will be forwarded to Scheduling Agent (chosen and paid by Balancing Market Participant), which will submit them to the Balancing Market on its behalf,

- the selection of offers will be made on the Balancing Market according to the rules described in the *Terms and Conditions related to Balancing*,
- if the offer of a given FSP, submitted via the Balancing Market Participant, is selected on the Balancing Market, there will be settlements between TSO and a given Balancing Market Participant according to the rules specified in the *Terms and Conditions related to Balancing*,
- the settlements between TSO and Balancing Market Participant will imply settlements between Balancing Market Participant and a given FSP, whose offer made via the Flexibility Platform and Balancing Market Participant was selected on Balancing Market.

Expected outcome:

Offers for balancing services, submitted by prequalified FSPs participating in the Polish Demo / East cluster through the Flexibility Platform, after their verification and optimization on the Flexibility Platform, will be effectively transferred by the Balancing Market Participant (directly or through the cooperating Scheduling Agent) to the Balancing Market, where they can be selected for implementation on the terms specified in the *Terms and Conditions related to Balancing*.

Any imbalance on the Scheduling Unit, in which flexibility resources will be reflected, will be balanced within the corresponding Balancing Unit operated by the same or by a cooperating Balancing Market Participant.

Important information for applicants

Potential contractors should in particular:

- 1) hold a relevant license issued by the PL NRA,
- 2) have a contract concluded with PL TSO and have the status of an active Polish Balancing Market Participant,
- 3) have appropriate technical resources,
- 4) have financial resources to handle notifications,
- 5) be aware of the risk of additional settlements with TSO for non-performance of services by FSP and/or any imbalance on the Scheduling Unit,
- 6) register on Flexibility Platform (after being selected) and should proceed according to BUCs EACL-PL-02 and EACL-PL-04.
- 7) represent all prequalified FSP submitting offers for balancing services via the Flexibility Platform
- 8) offer the services for at least 6 months within the Polish demonstration period.

Third Parties benefit from getting involved in the scenario

Third Parties (Balancing Market Participants) will be entitled to remuneration for the provision their services.

The remuneration due to Balancing Market Participant should cover all costs related to the submission of offers to the Balancing Market (including costs, if any, Scheduling Agent, covering imbalance, etc.).

The Balancing Market Participant will have an opportunity to test new solutions and explore the potential of a new customer segment for which it may become a frontier on the Balancing Market.

Incorporation of Third Parties for network operators and household consumers

The involvement of a third party Balancing Market Participant in the OneNet project may create an opportunity to test a new segment of activity for this type of entities.

Ultimately, a Balancing Market Participants may attract a significant number of new users, such as service providers, aggregators including SMEs and Start-ups, etc., which is in line with the call expectations. For this purpose, a cascading funding mechanism is used, which reduces the barriers to participate in EU projects.

Testing such solutions may attract other Balancing Market Participants to searching for FSPs and / or their aggregators and including them in the operated Scheduling Unit for offering balancing services (balancing capacity and balancing energy). That may cause expansion the Balancing Market area.

Added value on OneNet project

Without the participation of Balancing Market Participant it will not be possible to extend a demonstration under the East Cluster regarding the provision of balancing services by prequalified FSP to Balancing Market (under the *Terms and Conditions related to Balancing*).

12 Appendix 3: Proposal Template

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General Instructions on completing the Proposal Template

This template must be used for the OneNet call submission process. The structure of this template must be followed while preparing your proposal. It has been conducted to ensure that the important aspects of your work are presented in such a way that evaluators will be able to make an effective assessment against the evaluation criteria described in the Guide for Applicants.

Proposals will be evaluated as submitted and not on their potential if certain changes were to be made. Only proposals that successfully address all the required aspects will have an opportunity to be funded. There will be no possibility for significant changes to content, budget and team composition during contract preparation.

Total page limit: Sections 1, 2 and 3, together, should be no longer than 10 pages.

Tables, figures, references and any other element pertaining to these sections must be included as an integral part of these sections and are thus counted against this page limit. Do not forget to **remove this instruction page** before submitting.

Excess pages (in over-long proposals) will not be taken into consideration by the evaluators. The proposal is a self-contained document. Evaluators will be guided to ignore hyperlinks to information that is specifically designed to expand the proposal, therefore circumventing the page limit. Please, do not consider the page limit as a target! It is in your interest to keep your text as concise as possible. Evaluators rarely view unnecessarily long proposals in a positive way.

The following formatting conditions apply: The reference font for the body text is Times New Roman. The minimum font size allowed is 11 points. The use of a different font for the body text is not advised and is subject to the cumulative conditions that the font is legible and that its use does not significantly shorten the representation of the proposal in number of pages compared to using the reference font (for example with a view to bypass the page limit).

Standard character spacing and a minimum of single line spacing is to be used. Text elements other than the body text, such as headers, foot/end notes, captions, formula's may deviate, but must be legible.

The page size is A4 and all margins (top, bottom, left, right) should be at least 15 mm.

Delete the guidance text in blue in each section.

Cover Page

Please include here information regarding proposing organisation

- The name of your proposal
- Acronym
- Name, email address and organisation (contact person)

PROPOSAL ACRONYM

Proposal Full Name

Please complete the scenario number your proposal addresses. The scenarios' definitions can be found in following link: <https://opencall-onenet.cintechsolutions.eu/scenarios> .

Scenario

Participant

Organization name			
Key person			
Address		City	
ZIP Code		Country	
Phone Number			
E-Mail			
Website			
PIC (1)			

(1) Participant Identification Code (PIC) is a 9 digit code you need for participating in European projects. If you already have one please insert the code. If you have not yet please insert your provisional PIC code.

Abstract (limit: 1 page)

Please write here a short summary of your proposal. This summary should include a statement on the developed technology indicating how you address the selected scenario, the proactive planning of the state of the art, the starting point and the impact.

Free Keywords: (separated by commas)

1. Impact

1.1. Expected impact and results

Please describe the impact generated by your results (e.g. long-term effects on the energy community, the market structure, and economic prospects). The impact should be realistic, transparent and measurable. Please individually explain the scientific impact, technological impact and the economic impact that you expect. Please state the indicators (such as the creation of new products, revenue, competitive edge, the creation of new jobs) by which you would like the impact to be measured.

1.2. Exploitation plan of project results

Please describe all possible exploitations of the outcome, highlighting any know-how and technology transfer between academia and industry e.g. new product generation, founding new companies, patent application etc. Describe in detail what is the target market and the needs that this innovation is covered, as well as the potential for replication of the solution/service/tools, beyond the selected project.

2. Technical Quality

Your proposal has to address one of the scenarios defined by the OneNet Open Call portal (<https://opencall-onenet.cintechsolutions.eu>) and it must propose innovative services and technologies to solve it. Your service must have the potential to deliver tangible results. Please describe the technical approaches in detail and justify the technical feasibility of your services.

2.1. Alignment

Please describe the general vision highlighting the concepts underpinning the alignment with one or more of the supported activity categories.

2.2. Objectives

Please describe the specific objectives and success indicators (KPIs) of your proposal. Objectives should be aligned and consistent with the general objectives of the scenario under which the proposal is submitted and

in line with the OneNet scope. KPIs must be clear, measurable, realistic and achievable within the duration of the project (maximum 6 months).

2.3. Concept and approach

Please elaborate the overall concept underpinning your proposal. Please describe the main ideas, models or assumptions involved.

2.4. Ambition

Please describe what advance your proposal would provide beyond the state-of-the-art, the current and envisioned status of OneNet project and services and to what extent the proposed work is ambitious. Please elaborate the innovation potential that the proposal foresees.

3. Quality of Work plan

Applicants need to provide credible evidence that the project team has the necessary skills and management experience to deliver the project in the timelines and budget specified.

Please define the deliverables aligned with the objectives of the open call and the specific scenario to which the proposal relates.

Please include a clear budget, detailing the overall project cost and costs categories, the amount of funding requested and how it will be spent. This budget need to represent good value for money from evaluators' point of view. Due to the scope and scale of proposals, management structure and cost should be kept at minimum.

3.1. Work plan

Please provide a description of the scientific and technological approach and/or methodology to follow your objectives. Describe the milestones for your technology development and explain processes you will follow to address them. Please make sure that you have concrete results at the end of each phase. Elaborate the outcome of each phase clearly and measurably and explain them.

Describe the overall work plan as follows in the following subsections:

Task list (use the table in Section 3.3.1);

Description of individual tasks (use the table in Section 3.3.2);

List of deliverables (use the Table in Section 3.3.3);

List of milestones (use the Table in Section 3.3.4)

Show the duration of the different tasks and their components

Describe any significant risks and associated contingency plans.

3.1.1. Task list

Please provide a list of tasks with the requested details (title, start month and end month)

Table 3.1.1: Task List

Task No	Task Title	Start month	End month
T1			
T2			

(Please add another row if you have more tasks.)

3.1.2. Description of individual tasks

Please provide the details of each task which explain the complexity of the work and the overall value of the proposed service.

Task 1: [name and duration, from month to month, Person- month]

Objectives:

Description of work and contribution of individual participants:

Task 2: [name and duration, from month to month, Person- month]

Objectives:

Description of work and contribution of individual participants:

(Please add tables for each task that you want to include)

3.1.3. List of deliverables

Please explain the deliverables that you will submit during the development period. This allows your experts mentors to concur together with you whether your project is on track and take corrective actions if necessary.

A minimum number of deliverables are required:

Mid-term report: Provide a description of the methodology (solution design, methodological approach, technical / business design, expected results, etc.)

Final report: Final solution technical / business design, results, tests, assessment, conclusions)

Please provide the list of deliverables that you will submit during the development phase.

Deliverable No	Deliverable Name	Task No	Nature ³	Dissemination level ⁴	Delivery date ⁵
Dx.y					
Dx.y					
Dx.y					

3.1.4. List of milestones

Milestones are control points where the decisions are needed with regard to the next phase of the service development. A milestone should be defined when a major result has been achieved if its successful attainment

³ Please indicate the nature of the deliverable using one of the following codes: R=Report, P=Prototype, D=Demonstrator, O=other.

⁴ Please indicate the dissemination level using the following codes: PU: Public, PP=Restricted to other program participants (including Commission Services), RE=Restricted to a specified group by the consortium (including the Commission Services), CO: Confidential, only for members of the consortium (including the Commission Services).

⁵ Measured in months from the Project start date (M1)

is required for the next phase of work or it might be a point when the project team must decide which of several services to adapt for further development. A minimum of three milestones is required.

Milestone No	Milestone Name	Tasks involved	Expected date	Means of verification
M1				
M2				
M3				

3.1.5. Technological Risks

Please identify the key risks and uncertainties, including any technical, commercial, managerial and environmental risks. Highlight the most significant ones. Provide details of how you plan to manage these risks and overcome them effectively.

3.2. Service resources – costs

Please detail the budget that you need, describe the travel expenses and other major cost items. Include costs for travel, including to joint events such as workshops, and for dissemination and exploitation events during the runtime of the service development.

Example

Selected Third Parties are committed to mobilise the resources needed to guarantee the achievement of the results. The total budget is of xxx €. The total requested funding is of xxx €.

Breakdown of costs (please, provide the costs for the implementation phase):

Personnel: The involvement of the x participants in the xx months will amount to xxx €

Travel expenses: Attendance to periodical technical meetings and the presence at the challenge host will amount to xxx €

Other direct costs: they will amount to xxx € (provide a brief description)

Participant short name	ESTIMATED ELIGIBLE COSTS*							
	Effort (PM)	Personnel Costs (€)	Travel (€)	Other direct costs	Indirect costs (€)	Total subcontracting	Total costs (€)	Requested funding (€)

				(€)		costs		
						(€)		

In column 'Effort (PM)', insert the required person months for the work involved.

In column 'Personnel Costs (€)', insert your personnel costs for the work involved.

In column 'Other direct costs (€)', insert any other direct costs, for example material costs. Only the eligible part of the equipment full cost (with taxes) for the project's duration can be considered; this may depend on local or national rules on depreciation.

In column 'Indirect costs (€)', insert your indirect (overhead) costs; 25 % of all your direct costs.

In column "Total subcontracting costs", insert any costs related to a subcontract you would enter into. Subcontracting costs should be exceptional, well justified and will require the prior written consent of the Cascade funding partner. Please note that you will have to ensure that the subcontractor will comply with all obligations, especially coming from the contract that you will sign with the Cascade funding partner, if successful. Please provide here sufficient justification on what and why you need to subcontract some of your tasks.

In column 'Total costs (€)', calculate the sum of all your indicated costs.

In column 'Requested funding (€)', insert your requested EC contribution. You may request up to the total amount allowed by the related open call.

4. Intellectual Property and Ethical Issues (limit: 1 page)

Please explain your plans addressing IP issues to protect the technology rights. Describe whether there are any ethical issues to be considered in your proposal. Do you see any other ethical/controversial issue which might impact negatively on the societal adoption of the project? If yes, how do you plan to tackle this issue during the development of the project? Finally, please state that there is no active engagement with the OneNet Consortium Partners nor the scenario provider of the specific scenario you are addressing.

5. Third party description (limit: 1 page)

Write a brief description of the legal entity, the main tasks they have been attributed, and the previous experience relevant to those tasks. Provide details of the individuals who will be undertaking the work, their job titles and mini CVs.

Please note that if the team suffers any change after the submission of the proposal, this change should be communicated and duly justified via email to onenet_opencall@cintechsolutions.eu for approval, as this section will be evaluated according to the specific people proposed.

13 Appendix 4: Results Press Release

Press release

October 2022

Horizon 2020 project OneNet Open Call Results

Exciting news!

OneNet is funding 9 projects to enhance the current work of both real demonstration efforts and tools to elevate the OneNet overall framework.

The 9 Third parties that will develop their innovative services, enabled by the Horizon 2020 project OneNet, are selected!

OneNet - One Network for Europe is one of the largest and most ambitious H2020 projects aiming at the integration of energy markets across Europe with a focus on the TSO - DSO - Consumer value chain. To accomplish this, the OneNet project is working on new standardized products and services, including a suitable market structure and reference architecture with a focus on flexibility, which will be evaluated in the four international demonstration clusters.

In order to further evaluate and refine the results and implementation of the OneNet project, the 9 selected Third Parties will bring new services and solutions for the network operators and the household consumers by adopting the OneNet infrastructure and framework under 6 different scenarios, which are covering the major domains in which the project members operate.

OneNet project aims at creating a seamless integration of all actors in the electricity network across countries, by proposing mechanisms for TSOs and DSOs to work in a coordinated manner to unlock and enable the establishment of new flexibility markets and mechanisms.

To accomplish this objective, OneNet is developing an open, decentralised, flexible, scalable, and interoperable architecture to transform the actual European electricity system, often country fragmented, into a pan-European one. This architecture will provide the necessary tools and mechanisms for allowing open, technological agnostic, adaptable platform interconnections, ranging from a country level to a European level context. Within this effort, the design of an open architecture, data exchange and interoperability mechanisms, cybersecurity guidelines, and sets of AI and big data tools are being seamlessly aggregated.



The OneNet Open Call projects will contribute with their innovative solutions to the impact of OneNet project in the energy ecosystem.

19 OneNet Consortium experts/evaluators selected the 9 more promising ideas among 18 submitted proposals.

The story before the results

OneNet Open Call was launched on the 1st of December 2021. The Call was open for a period of three months, looking for proposals that would fulfill OneNet Open Call's objectives.

The selected proposals for the OneNet Open Call are listed below, described by Organisation, Acronym; Title, Country and the Scenario they address.

The total amount funded in the OneNet Open Call is 474.635 EUR.



OneNet Open Call Beneficiaries

Ranking	Organisation	Proposal Acronym: Title	Country	Scenario No
Winner List				
1	Odin Solutions SL (ODINS)	FLEXUM: Flexibility services provision by University of Murcia premises	Spain	4
2	Beedata Analytics SL	ODINA-TS Proposal: Outliers Detection and Imputation: New Approaches for Time Series Energy	Spain	6
3	SOFTWARE COMPANY EOOD	GEOGRID	Bulgaria	1
4	Stemy Energy	FLAGS	Spain	4
5	H. Wise Wire Energy Solutions Limited (WiseWire)	OneNet – ActiveProsumer	Cyprus	2
6	Watt-IS S.A.	WISeGrid - Electrical Grid Web-based optimization services	Portugal	3
7	Northeast Flow Oy	Decentralized digital heating as a flexibility provider	Finland	5
8	ARTELYS	ADREE :Advanced Data Reliability analysis for European Energy systems	Paris	6
9	Presify Analytic Software Inc.	RUNADMTS: Robust Unsupervised Anomaly Detection Model for Time Series Data	Turkey	6

What's next for the selected projects?



OneNet Consortium partners will support the selected Third Parties through a 6-months programme, granting each participant up to €60k (equity-free funding), free coaching and free access to high-end infrastructure.

During this period the selected Third Parties will elaborate their proposals and develop services and tools to be integrated into the OneNet ecosystem.

Background:

The project “OneNet” (One Network for Europe) is funded through the EU’s eighth Framework Programme Horizon 2020 titled “TSO – DSO Consumer: Large-scale demonstrations of innovative grid services through demand response, storage and small-scale (RES) generation” and responds to the call “Building a low-carbon, climate-resilient future (LC)”. The consortium consists of over 70 members from 23 European countries, including transmission and distribution system operators, research institutes and universities, technology providers, market operators and ESCOs. OneNet envisions a European electricity system that provides for the seamless near real time integration of all actors across countries, with a view to create the conditions for a synergistic operation of market and network that optimizes the overall energy management while creating an open and fair market structure and maximizing the consumer capabilities to participate in it. The complete concept of OneNet is proven in 4 cluster demos involving 15 European countries. OneNet is a 36-month long project started in October 2020.

