PANTERA
Pan European Technology Energy Research Approach

Work Package 5

Workshop and dedicated stakeholders meeting organisation

D5.5

Report on the outcomes of Pan-European and Global Workshops (final)

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Final Approval	Name	Resp. Partner	Date
[Review Executive Board Level]	[Venizelos Efthymiou]	[FOSS]	10.07.2023

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Abbreviations

BG	Bulgaria
COVID-19	Coronavirus disease 2019
CRE	Romanian Energy Center
CSA	Coordination and Support Action
CY	Cyprus
DC	Direct Current
DERlab	European Distributed Energy Resources Laboratories (DERlab) e. V.
DG ENER	Directorate-General for Energy
DSO	Distribution System Operator
EC	European Commission
EERA JP	European Energy Research Alliance Joint Programmes
EIRIE platform	European Interconnection for Research Innovation & Entrepreneurship Platform
ERA-NET	European Research Area Net
ESB	Electricity Supply Board
ESO	Electricity System Operator
ETIP SNET	European Technology & Innovation Platforms Smart Networks for Energy Transition
EU	European Union
EUSEW	EU Sustainable Energy Week
FOSS	Research Centre for Sustainable Energy, University of Cyprus
GR/EL	Greece
HVDC	High-Voltage, Direct Current
ICCS/NTUA	Institute of Communication and Computer Systems/National Technical University of Athens
IE	Ireland
IPE	Institute of Physical Energetics
ISGAN	International Smart Grid Action Network
JRC	Joint Research Centre
LV	Low Voltage
MedPower	Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion
MW	Megawatts
NECP	National energy and climate plans
NECP	National energy and climate plans
NOR	Norway
NUID	University College Cork
OEB	Cyprus Employers & Industrialists Federation
PANTERA	Pan European Technology Energy Research Approach
R&I	Research & Innovation
RIF	Research and Innovation Foundation
RPF	Research Promotion Foundation
RSE	Ricerca sul Sistema Energetico
S3 platform	Smart Specialisation Platform
SET-Plan	European Strategic Energy Technology Plan

SG	Smart Grids
SNSP	System non-synchronous penetration
SWOT	Strengths, Weaknesses, Opportunities and Threats
TSO	Transmission System Operator
TU Sofia/TUS	Technical University of Sofia
UCD	University College Dublin
WP	Work Package

Executive Summary

One of the main objectives of the PANTERA project and specifically WP5, is Organisation of dedicated workshops which facilitate exchanges of experience and building up active participation of members of the R&I community. The participation of stakeholders in the organised workshops in collaboration with already on-going activities is aiming to wider participation, enlightening on policies adapted, strengthen objectives and extent impact of achieved results. Under this prism, the PANTERA consortium is organising these regional and pan-European workshops with a specific focus on the countries which are less active in research and innovation in smart grids, storage and local energy systems.

However, each workshop is centred around a selected theme that is of vital importance to the region that is hosting the workshop aiming to alert policy makers attending the workshop, hear their view; discuss possible solutions and mobilise support from the active stakeholders of the region. Bringing together policy makers with the European dimension on the selected themes and discussing options and solutions with the interested stakeholders was and is central in the proceedings of the organised workshops not only as a day discussion but as an initial step in bringing attention to the selected themes to both policy makers and stakeholders and build the appropriate platform through which interest will continue and be strengthened for lasting solutions.

The final event was opened by Venizelos Efthymiou by welcoming all contributors and participants giving emphasis to the achieved results for bringing closer the targeted stakeholders. To this effect the following were addressed:

Collaboration brings tangible results

Working closely together with:
➢ SUPEERA project and EERA AISBL
➢ ETIP SNET and WG5 "Innovation implementation in the business environment and the 5 WTs that we have formed together
➢ SPRING project
➢ RIS 3 Smart Specialization Platform supported by JRC

Structure of the EIRIE Collaboration Space in Confluence in support of regional work
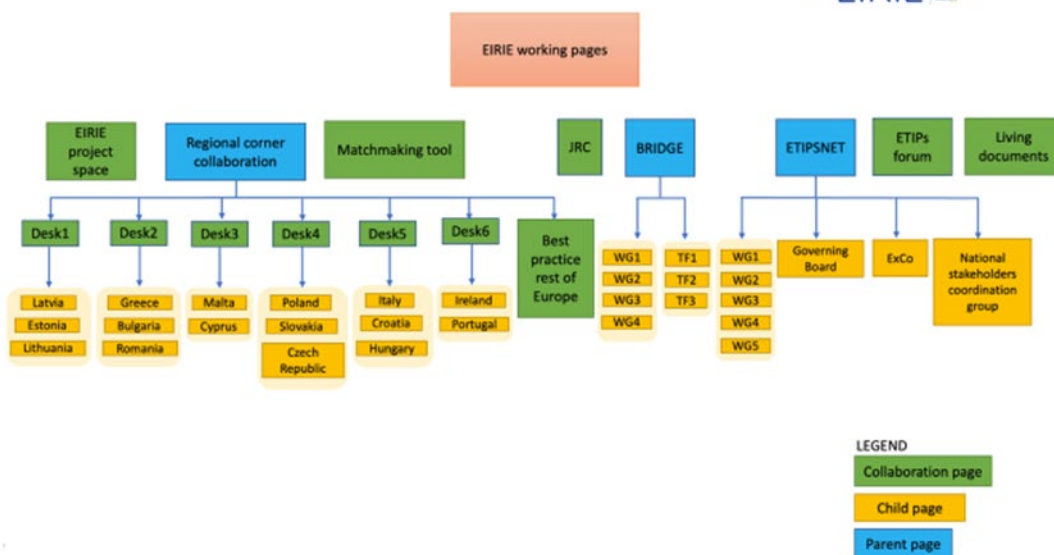
The project officer Szilvia Bozsoki followed, with extensive reference to the policies of EU and the Commission, giving emphasis to the objectives set through the following policy decisions:

- European Green Deal
- Fit for 55
- REpowerEU
- Net-Zero Industry Act
- Digitalisation of Energy Action Plan
- SET Plan revision

Emphasis was given to the targeted policies of digitalization of the energy sector, as enabling technologies fort achieving the strategic objectives of the energy transition:

Tasos Tsitsanis followed to give the winning achievements of the EIRIE platform, managing to deliver much wanted value prepositions to all stakeholders involved in the energy transition process;

R&I practitioners	R&I organisations	Policy makers
- Access to a pan-European data base with analytical and exploitable information on smart grid projects - Information about best practices in R&D sector - First-hand insights into interesting smart grid projects, results, ideas, initiatives - Access to SotA Training Material and Education Programmes	- Cross-promotion opportunities, encouraging synergies with projects and initiatives through information sharing and promotion opportunities through highlighting key achievements as best practices - Making feasible for the low spending, in R&I, countries to be engaged in a more active manner in EU R&I activities	- Define inefficiencies of R&I activities at national, regional and EU level and prioritization of policy actions towards advancing R&I in low-performing thematic - Pooling together different available instruments into one platform, in such a way that it will effectively contribute to the increase of knowledge, coordination of R&I activities and networking

EIRIE hence, achieving a real landmark for the R&I community of EU including steps taken to continue serving their needs.

The next speakers were **Anna Mutule (IPE), Chrysanthos Charalambous (FOSS), and Rad Stanev (TUS).** They collectively introduced the regional corners' activities serving the connected regional stakeholders. They stressed on the EIRIE/Confluence cooperation, which aims on:

- Sharing experience

- Setting and achieving common goals

- Unleashing the potential of collaborative efforts

- Driving research and innovation

- Transforming future

The case studies presented that relate the collaborative work in the 3 selected regions, give evidence of the benefits that stakeholders gain through active participation.

Rad Stanev continued to cover the work done through the Working Team 1 of PANTERA and Working Group 5 of ETIP SNET, in bringing together the repositories of JRC and DERlab on research infrastructure available in Europe for the R&I needs of smart grids with the support of the ERIGrid project. He has given evidence as to why the research infrastructure is so important:

➢ Why Research Infrastructure (RI) is so important for the R&I?

- The key smart grid R&I topics require close to real life practical implementation.

- Component technologies are mature enough- the open issues urge bringing components together in laboratory environment.

➢ PANTERA Working Team 1 was dedicated to research infrastructure. Major outcomes:

- The demanding Research Infrastructure and insufficient knowledge on how to use it is a major hindering factor for the R&I in the low activity countries.

- Low activity countries cannot and do not need to compete with the advanced countries considering the cutting-edge RI.

- Duplicating the same (or similar) rarely used RI do not bring much value and is not economically efficient.

- Instead of this building the most important (critical) own infrastructure with a combination of performing own experimental research using some accessible and available collaborative options such as the transnational access provided by the ERIGRID 2.0 project which enables collaborative access to the leading laboratories of Europe is highly supportive and efficient for the R&I stakeholders.

- To perform this a flexible, interoperable, and efficient use of the RI of Europe is needed.

- WT1 focused on enabling the collaborative interlinking of the RI using the EIRIE platform.

eNeuron Horizon 2020 project using EIRIE as the hosting platform for the results of the project, took the floor to give evidence of the possibilities and the reasons they have chosen EIRIE to make visible the results of the project.

Eduardo García from TECNALIA Research & Innovation, represented the eNeuron consortium. The main goal of the project is to develop innovative tools for the optimal design and operation of local energy communities (LECs) integrating distributed energy resources and multiple energy

carriers at different scales. The already published deliverables of the eneuron are also available at EIRIE platform. It is a very remarkable example of the EIRIE platform utilisation, which will evolve as per the research community need, to become a one stop platform of all EU research activities.

The next theme, presented by Chrysanthos Charalambous of FOSS, was on the "Methodology for maturity quantification and evaluation of R&I needs of the smart grid", which is an important function on EIRIE platform developed by the PANTERA team for serving the R&I community and respective policy makers. As the energy system evolves with energy transition, there is a need to quantify the system maturity. The need of maturity index based on these points:

- Power Grids of the future, embracing the integrated approach with high penetration of renewables and emerging technologies with advanced operational functionalities, is of paramount importance for meeting the European Union (EU) targets of sustainability and energy transition.

- An analysis approach for assessing progress in developing major high level use cases of the smart grid is needed to be well established and adopted.

The developed tool can be utilized by the research community in many ways as follows:

- The tool embodies a methodology for quantifying the integrated system readiness level as proposed in the Vision 2050 of ETIP SNET.

- This methodology is a tool offered within EIRIE platform for feeding in the results reported by the R&I projects of the EU.

- The methodology enhances the TRL index tackling all the weaknesses that this index entails.

- Provides a solid process on how the integrated system readiness can be quantified.

- The objective is to provides valuable input to project consortia, to ETIP SNET and policy makers for quantifying maturity achieved through projects, existing gaps and needs for upcoming implementation plans, Roadmaps and work programme.

The JRC perspective of EIRIE was presented by **Marcello Barboni.** He pointed out the need of a collaborative platform as EIRIE:

- According to the JRC Smart Grid Projects outlook and other sources, investment in Research and Development in Energy is not uniform among the EU Member States. Fifteen European countries account for less than 5% of the EU research and innovation funds.

- In order to achieve EU sustainable goals, smart grids investment throughout Europe needs to be boosted and equalized among members.

- Aligns with DG ENER priorities.

The next speaker was Ivan Matejak from EERA, representing the SUPEERA project. In his intervention he pointed out the experience gained from the collaboration between SUPEERA and PANTERA projects in jointly organizing a series of 10 workshop as part of a series of events dedicated to the EU-13 countries.

He identified the working areas of the project SUPEERA and how these are related to the work of the PANTERA project.

Tha final speaker at the event was **Marialaura Trifilleti from ZABALA / SPRING** project who is supporting the work of ETIP SNET and BRIDGE but also taking over from PANTERA consortium the daily operation of the EIRIE platform as from 1st of July 2023. For this reason, Marialaura was

quite clear in her presentation that SPRING is ready to fill the shoes of the PANTERA consortium and make sure that EIRIE continues to serve the R&I community in the days, months and years ahead always with the support of JRC who are hosting it on their servers.

In her short presentation she gave clarity to the following:

- SPRING project and contributing entities and how they serve the activities of ETIP SNET and BRIDGE initiative.

- The importance of working in both initiatives with Working Groups with targeted objectives. The WGs are listed below for both ETIP SNET and BRIDGE and experts are encouraged to express interest to join the WGs since they raise the possibilities of contributing to building knowledge and policies and strengthening collaboration options. This is extremely important for experts coming from widening countries.

- The link between EIRIE and the two initiatives ETIP SNET and BRIDGE is daily and have an important role in promoting the work of projects and the represented R&I community of Europe.

- SPRING and future service contracts will play a critical role in keeping EIRIE operational and constantly growing in the direction that serves best the interests of projects the R&I community of EU.

Finally, the event finished with an open discussion with the participants coordinated by **Venizelos Efthymiou** and **Luciano Martini**. In reality it was stressed that this is t**he epilogue of the project PANTERA, but the starting point of a rich future through EIRIE.**

This open dialogue with the participants touched on the following important points:

- PANTERA has done enough to raise awareness in the widening countries of the importance of R&I in the energy transition. But we know there is a lot of ground to cover still to raise ambitions and effective participation. What can be done?

- Joining forces with SUPEERA has proven highly effective to raise the much-wanted impact. Stakeholders are more active as experts in the working groups of ETIP SNET and BRIDGE. We want them to have an influence on national policies in driving NECPs forward with higher ambition and as experts to collaborate through platforms that are available. JPs of EERA, WGs of associations …. What else?

- EIRIE is with us. The home of projects, knowledge, data and valuable information. But not only: a collaborative platform. How ambitious are we? Can we make EIRIE our home for effective collaboration?

- EIRIE is sustainable through the support of DG ENER and JRC. How can we capitalise on that and raise the ambition and confidence of the widening countries?

The EU project PANTERA and the Joint Programme on Smart Grids of the European Energy Research Alliance (EERA JP SG) jointly organized the final webinar of the PANTERA project on June 28, 2023 from 14 to 15.30 aimed to present the EIRIE multifunctional platform and to discuss with JP SG members about its main functionalities and the synergies that could be created with the JP activities and objectives.

Venizelos Efthymiou (PANTERA project coordinator – FOSS) closed the webinar by thanking all the participants and expressing great satisfaction for the results achieved by the PANTERA project that allows to create and strengthen collaboration opportunities in Europe (with EERA aisbl, SUPEERA, EERA JP on Smart Grids, ETIP-SNET, BRIDGE, JRC, etc.), building a research community made up of people that are strongly contributing to succeed in the energy transition process.

1 Introduction

One of the main objectives of the PANTERA project and specifically WP5, is Organisation of dedicated workshops which facilitate exchanges of experience and building up active participation of members of the R&I community. The participation of stakeholders in the organised workshops in collaboration with already on-going activities is aiming to wider participation, enlightening on policies adapted, strengthen objectives and extent impact of achieved results. Under this prism, the PANTERA consortium is organising these regional and pan-European workshops with a specific focus on the countries which are less active in research and innovation in smart grids, storage and local energy systems.

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1.1 Scope of the Document

This document "Report on the outcomes of Pan-European and Global Workshops (final)" is the extension to the deliverable D5.3, which covers the regional workshops during the period of 2021-2023. The main objective of this document is to describe the work carried out within the task 5.3 "Regional Workshops" (WP5 - Workshop and dedicated stakeholders meeting organisation) and to present the main outcomes of the pan-European workshops that took place during the period of 2021-2023.

1.2 Structure of the Document

This document consists of five sections, and it is structured as follows:
- Section 1 "Introduction" – this section introduces D5.5 "Report on the outcomes of Pan-European and Global Workshops (final)".
- Section 2 Post COVID-19 PANTERA Workshops Strategy – covers the approach of the consortium in managing the difficult times through COVID and how the stakeholders have been approached to build collaboration activities including accessibility to the EIRIE platform.
- Section 3 reports on the planned "**Final event of the PANTERA Project – EIRIE Platform**" looking at the points addressed, and results achieved.
- Section 4 presents the outcome of the "PANTERA and EERA JP Smart Grids Joint Webinar on EIRIE" including contributions from EERA JP for SG, JRC and project SUPEERA.
- Section 5 "Conclusions" – this section presents the conclusions reached with the planned events that concluded the collaboration work with stakeholders.

2 Post COVID-19 PANTERA Workshops Strategy

Initially, the PANTERA consortium planned detailed events throughout Europe in meeting all the stakeholders of the low activity countries. However, due to the restrictions imposed by COVID, the consortium revised all plans to make room for regional activity during the post COVID period that is shorter in allowed time. Along these lines, the consortium has laid out the following approach to maximize possibilities of meeting the stakeholders of the low activity countries:
- The introduction of nano workshops running in parallel with published events gave evidence of bringing together stakeholders with the support of the local organisers, giving accessibility

to countries that are not represented in the consortium of PANTERA.

- Collaborating with the SUPEERA project that is targeting all the 13 widening countries that are primarily the countries targeted by PANTERA as well. The objectives of the SUPEERA project were also highly relevant since the aim was to raise interest in the SET Plan process in support of the energy transition. Hence, the targeted stakeholders were close to the interests of PANTERA as well.
- Build the collaboration options through EIRIE and CONFLUENCE giving more versatile options for attracting stakeholders to share knowledge and build R&I objectives that fit best to the specificities of the region that they are working in. This called closer working environment with JRC services, that attracted more interest from the side of the stakeholders.
- Apply for a sixth month extension to the project duration, to offer more useful time for organising physical events hence, closer collaboration with local stakeholders. Extension was eventually approved and adapted plans brought more options for working with the targeted stakeholders.
- Reduce the targeted pan-European events to the minimum so as to have adequate time for organising physical events with the targeted stakeholders coming from the low activity countries.

The revised strategy for physical events proved to be instrumental in achieving the targeted objective, allowing the physical organisation of more than 14 events in years 2022 to 2023. These added to the 3 already achieved during the first year of operation ahead of the COVID restrictions, the achieved events were altogether 17 plus the final event in Brussels, which is more than the targeted total of 16 throughout the whole duration of the project. These are only the physical events, and to these we should add all the virtual events that were organised that added more meaningful collaboration with the targeted stakeholders including the ones coming from the low activity countries.

The list of the achieved events in 2022 to 2023 is given in table 2 below with responsibility on the shoulders of the 6 regional desks that were fully operational during the full duration of the PANTERA project. The six regional desks are listed in Table 1 below.

Table 1: Regional desks and the responsible partners

Regional Desk No.	Countries	Responsible partner
Regional desk 1	Latvia – Lithuania - Estonia	Institute of Physical Energetics (IPE)
Regional desk 2	Bulgaria – Romania – Greece	Technical University of Sofia (TU Sofia)
Regional desk 3	Cyprus – Malta	Research Centre for Sustainable Energy, University of Cyprus (FOSS)
Regional desk 4	Poland – Slovakia - Czech Republic	European Distributed Energy Resources Laboratories (DERlab)
Regional desk 5	Italy – Hungary – Croatia	Ricerca sul Sistema Energetico (RSE)
Regional desk 6	Ireland – Portugal	University College Dublin (UCD) & University College Cork (NUID)

The workshop agenda is organised for each workshop based on the regional challenges, needs and gaps, so that the workshop tackles those topics and try to present best practice from the region or other regions that faces the same challenges (e.g., the workshop organised in Greece focused on Green Islands and its challenges).

Within the period of two years, 2021-2023, the PANTERA consortium managed to organise 14

physical workshops/ nano workshop and one virtual workshop. These PANTERA workshops are presented in Table 2.

Table 2: The PANTERA regional / nano workshops that took place during 2021-2023

	Title	Location	Date
1.	PANTERA Nano-workshop, Ireland: Smart Grid Research Data - how to share research data, ensure GDPR compliance, reduce the risk of divulging potential innovation insights, and related issues	Dublin (IE)	22 February 2021
2.	PANTERA regional nano-workshop, Cretan Energy Conferences, Greece: "The key role of the R&I unified approach across EU for boosting smart grids investments, Greece: The EIRIE platform"	Crete (GR)	9 July 2021
3.	Nano Workshop, Bulgaria: Regional Research and Innovation activities for Smart Grids, Energy Storage and Local Energy Systems	Varna (BG)	3 August 2021
4.	SUPEERA & PANTERA joint Croatia workshop: "Boosting the R&I activity on Smart Grid Technologies"	Split (HR)	10 September 2021
5.	PANTERA & SUPEERA joint Riga workshop: International research collaboration opportunities fostering EU Clean Energy transition in Baltic States	Riga (LV)	27 April 2022
6.	SUPEERA & PANTERA joint Bulgaria workshop: International research collaboration opportunities fostering EU Clean Energy transition in Bulgaria	Sofia (BG)	25 May 2022
7.	SUPEERA & PANTERA joint Cyprus workshop: "International research collaboration opportunities fostering EU Clean Energy transition in Cyprus"	Nicosia (CY)	1 June 2022
8.	IEEE MELECON 2022 conference, Italy: "The EIRIE platform enabling R&I activities and investment in smart grids"	Palermo (IT)	14 June 2022
9.	SUPEERA & PANTERA joint Czech Republic workshop: "Capacity building on R&I in Smart Grids, Storage and Local Energy Systems"	Kouty nad Desnou (CZ)	8 June 2022
10.	PANTERA Cyprus Workshop: "Boosting the R&I activity on Smart Grid Technologies Empowering Energy Citizens and Communities towards the Decarbonisation of "Energy Island""	Paphos (CY)	27 September 2022
11.	SUPEERA & PANTERA Budapest joint workshop: "International research collaboration opportunities: fostering EU Clean Energy transition in Hungary"	Budapest (HU)	26 October 2022
12.	MEDPOWER 2022, Malta: "Boosting the R&I of Smart Grids, Storage and Energy communities"	Valletta (MT)	8 November 2022
13.	CANDO EPE IEEE conference, Hungary: "Boosting the R&I activity on Smart Grid Technologies"	Budapest (HU)	21 November 2022
14.	SUPEERA & PANTERA joint Romania workshop: "International research collaboration opportunities fostering EU Clean Energy transition in Romania"	Bucharest (RO)	23 March 2023
15.	SUPEERA & PANTERA joint Lithuania workshop: "International research collaboration Opportunities - fostering EU Clean Energy transition in Lithuania"	Vilnius (LT)	27 April 2023

3 Final event of the PANTERA Project – EIRIE Platform

3.1 Introduction

Date: 19th of June 2023
Time: 13:00 – 20:00 CEST
Title: "Strengthening research collaboration opportunities Fostering EU Clean Energy transition"

PAN European Technology Energy Research Approach (PANTERA) is an EU H2020 project aimed at setting up a European forum composed of R&I stakeholders active in the fields of smart grids, storage and local energy systems, including policy makers, industrial stakeholders, standardisation bodies and experts in both research and academia, representing the EU energy system (*https://pantera-platform.eu/*). The long- term objective of PANTERA is to strengthen EU clean energy R&I activities with special focus on the countries that appear to be less involved.

To reach these goals, PANTERA launched an interactive multi-functional collaborative platform EIRIE that stands for European Interconnection for Research Innovation & Entrepreneurship (*https://ses.jrc.ec.europa.eu/eirie/en*). EIRIE's vision is to become a reference operational point to unify European activity, incentivise further investments in smart grids, storage and local energy systems, support access to exploitable results that can spark further cooperation and bridge the existing gaps.

As we have experienced over the last 4.5 years, alignment and collaborative work are essential to create the pan-European modus operandi envisioned within PANTERA. The feedback and continuing support of relevant national and international stakeholders, EU platforms and initiatives, national and international projects, will enable EIRIE to fulfil its goals.
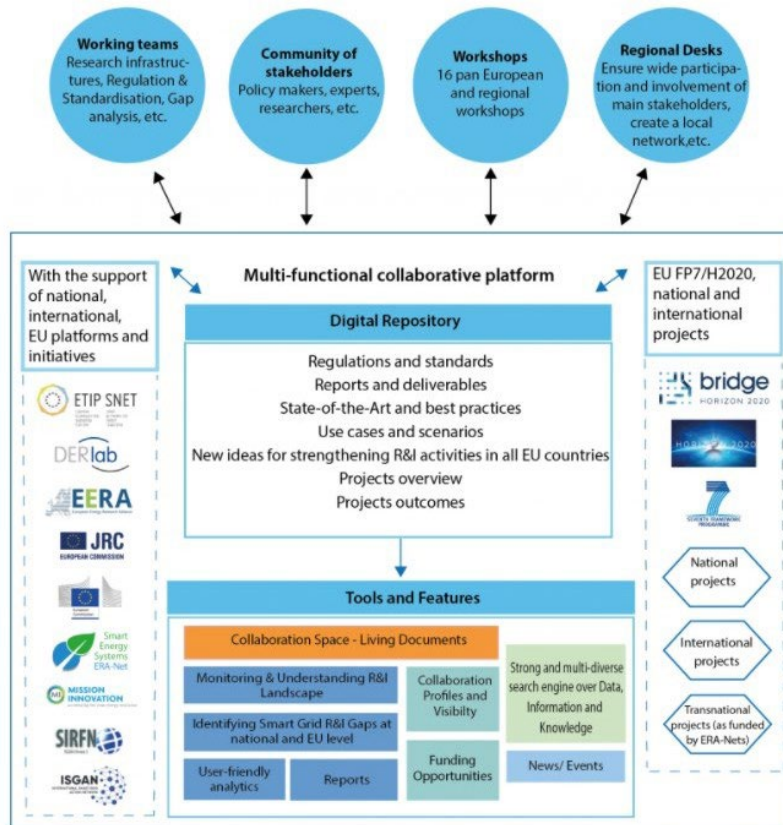

Figure 1: The concept and vision of the PANTERA project

3.2 Agenda

Time (CEST)	Topics	Description	Presenter
13:00 13:30		**Welcome coffee**	
13:30 13:50	The PANTERA project	Opening the final event, walking through the agenda of the day and the milestones achieved through the project.	Dr. Venizelos Efthymiou (FOSS)
13:50 14:10	Policy objectives of DG Energy	The strategy of EU in achieving the energy transition objectives.	Szilvia BOZSOKI (DG ENER)
14:10 14:35	The importance of delivering EIRIE	EIRIE a landmark for the R&I community of EU & steps taken to continue serving their needs	Tasos Tsitsanis (SUITE5)
14:35 15:00	The Regional Corner	Why the Regional Corner and how planned activities serve connected stakeholders	Dr Anna Mutule (IPE) Chrysanthos Charalambous (FOSS) Dr Rad Stanev (TUS)
15:00 15:20	Research infrastructure common repository	Services offered to the R&I community of EU with particular care to constantly update evidence of available R&I infrastructure to assist their work	Dr Rad Stanev (TUS)
15:20 15:40	eNeuron data repository	Services offered to project consortia through EIRIE in promoting results achieved including valuable data	Eduardo Garcia Quincoces (eNeuron pro)
15:40 16:10		**Coffee Break**	
16:10 16:35	Maturity index tool	EIRIE offering tools at the service of the R&I community: Maturity index tool for R&I gaps & needs	Chrysanthos Charalambous (FOSS)
16:35 16:55	The voice of the Stakeholders	EIRIE: The strong voice of the stakeholders guided the evolution of the EIRIE platform	Dr Marcello Barboni (JRC)
16:55 17:20	The SUPEERA project	The objectives of the project, SUPEERA & how utilizing commonalities has enriched the achieved objectives	Dr Ivan Matejak (EERA)
17:20 17:30	The SPRING project	SPRING: Taking over the operation, development, and promotion of the EIRIE platform serving the R&I community	Maria Laura Trifiletti (ZABALA)
17:20 18:00	The epilogue	The epilogue of the project PANTERA, but the starting point of a rich future through EIRIE – Dialogue with the participants	Dr Venizelos Efthymiou (FOSS) Dr Luciano Martini (RSE)
18:00 20:00		**Time for Networking: All are welcome**	

3.3 Outcomes from the workshop

3.3.1 Opening the final event

Venizelos Efthymiou, project coordinator, opened the final event of the PANTERA project welcoming the project officer, **Szilvia Bozsoki**, the PANTERA consortium members, speakers of the day, and all other connected participants. He first mentioned about the successful workshops/ nano-workshops organized in the EU member states under the framework of PNTERA, mentioned in Section 2.

Some of the workshops organized:

- July 2019 – workshop in **Sofia**
- December 2019 –workshop in **Dublin**
- February 2020 – workshop in **Athens**
- June 2020 – Virtual meeting at **EUSEW**
- November 2020 – **Cyprus** virtual workshop
- July 2021 – workshop in **Crete**
- August 2021 – workshop in **Varna**
- September 2021 – workshop in **Croatia** at the SpliTech conference
- November 2021 – booth at **ENLIT** conference – Milano
- May 2022 – workshop Sofia Bulgaria with SUPEERA
- June 2022 – workshop Nicosia Cyprus with SUPEERA
- June 2022 – workshop in **Italy** at MELECON 2022
- June 2022 – Workshop in Check, EPE 2022
- November 2022 – workshop in Budapest Hungary, CANDO EPE

Discussion with stakeholders:

- November 2022, Valletta Malta, MEDPOWER
- November 2022 – Booth at ENLIT conference at Frankfurt
- March 2023 – workshop Bucharest, Romania with SUPEERA
- April 2023 – workshop Vilnius Lithuania with SUPEERA

Figure 2: Going closer to the stakeholders through well planned workshops

He then explained about the *EIRIE* platform, which is the outcome of the project, developed with the support of JRC.

He also explained about the structure of the "EIRIE Collaboration Space" in Confluence in support of regional work, also mentioned in deliverable 5.3.
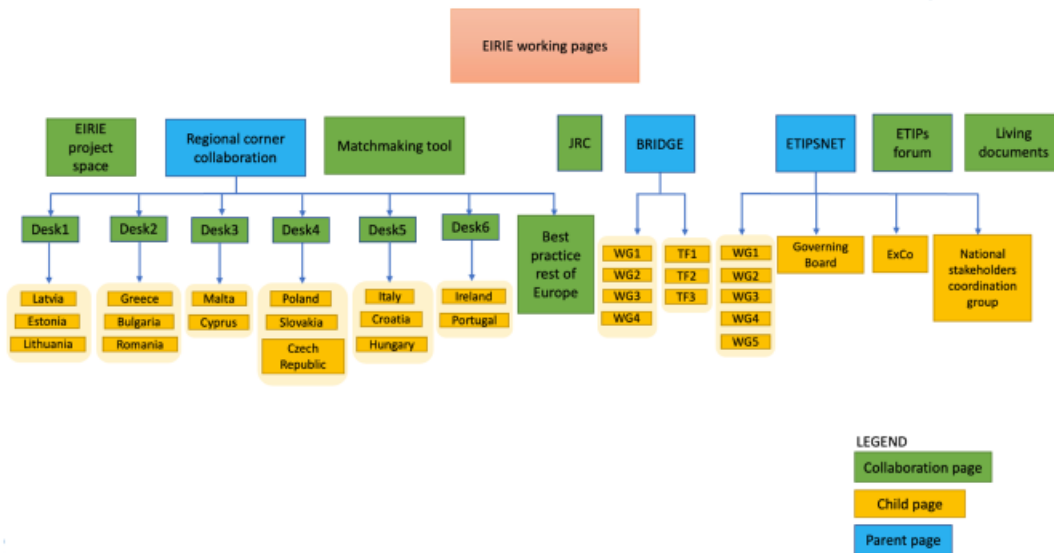

Figure 3: Architecture of the collaboration space within CONFLUENCE

He then highlighted the PANTERA collaboration with:

- SUPEERA project and EERA AISBL
- ETIP SNET and WG5 "Innovation implementation in the business environment and the 5 WTs that we have formed together
- SPRING project
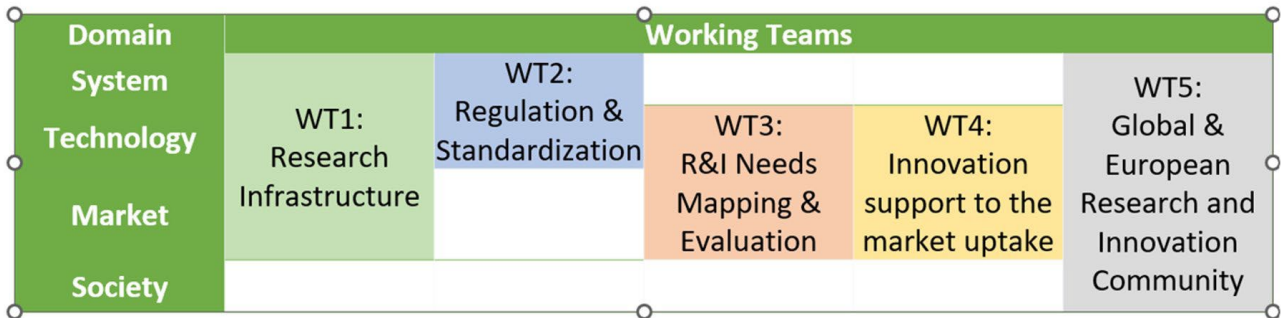- RIS 3 Smart Specialization Platform supported by JRC

Figure 4Collaboration work with relevant stakeholders and projects

Figure 5: Venizelos Efthymiou during the opening of the event

He also identified the 5 working teams' strategy behind the development of the EIRIE platform. PANTERA project experts supported the operation of the 5 working teams and worked with wider experts to feed in the needs of the R&I community and populate useful tools embedded on the EIRIE

platform. The working teams were always open to the experts from all countries in the EU since the wealth generated is targeting the needs of the R&I family in the broader fields of the energy transition.

Domain	Working Teams				
System	WT1: Research Infrastructure	WT2: Regulation & Standardization	WT3: R&I Needs Mapping & Evaluation	WT4: Innovation support to the market uptake	WT5: Global & European Research and Innovation Community
Technology					
Market					
Society					

Venizelos also gave importance to the support of the advisory board members during the PANTERA journey. As evidence for this support, he read the following extract from the contribution of **Dr Christina Papadimitriou**, being an advisory board member, and when asked, shared her view on the capabilities of the EIRIE platform.

"EIRIE's capability to serve as a single point reference for knowledge in energy systems is highly valuable. It means that users can access a comprehensive and centralized source of information, making it easier to gather insights, perform research, and make informed decisions related to energy systems. The agile nature of EIRIE's architecture implies that it can quickly adapt to changing requirements, emerging technologies, and evolving knowledge in the energy field. This agility can be crucial in keeping the system up to date and relevant as new advancements occur, ensuring that users have access to the latest information."

### 3.3.2 The strategy of EU in achieving the energy transition objectives

The second speaker was **Szilvia Bozsoki**, project officer from DG ENER. She started her speech explaining the EU strategy for the clean energy transition. She explained extensively about the:

*Figure 6: Project officer, **Szilvia Bozsoki,** during her speech*

- European Green Deal
- Fit for 55
- REpowerEU
- Net-Zero Industry Act
- Digitalisation of Energy Action Plan
- SET Plan revision

Green Deal
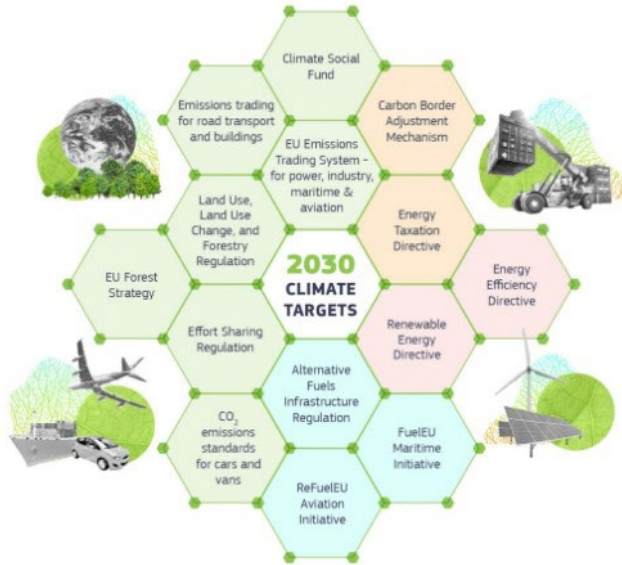
The **European Green Deal** (2019) is the EU's long-term, whole-of-the-economy plan to make **Europe climate neutral by 2050** .

The **European Climate Law** (2021) made climate-neutrality a legally binding target for the block, along with **reducing greenhouse gas (GHG) emissions by at least 55% by 2030**, compared to 1990 levels.

The '**Fit for 55'** legislative package (2021) is outlining policy measures to reduce GHG emissions by 55% by 2030.

It includes the revision of the renewable energy directive, **increasing the targeted share of renewable energy in the EU mix to "at least 40%" by 2030,** from the initial target value of 32%.

Figure 7: The Green Deal

She also informed about the "Electricity Market Design Reform", adopted on 14 March & aiming at:

Net-Zero Industry Act
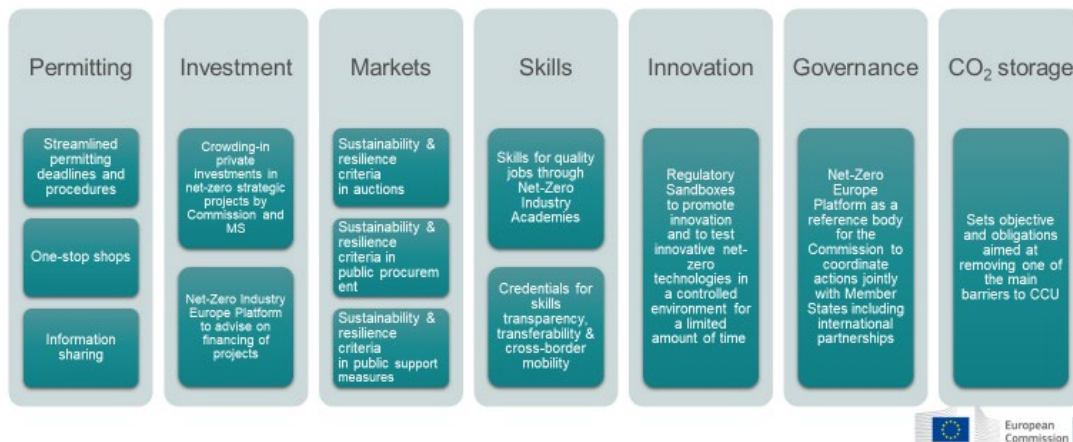
Figure 8: Net Zero Industry Act

- fostering a higher level of renewable generation
- helping empower and protect consumers
- Making energy bills less dependent on the short-term volatility in prices

Finally she briefed the meeting about the digitalisation of energy action plan, which is so vital in achieving the smartness and observability required.

3.3.3 EIRIE a landmark for the R&I community of EU & steps taken to continue serving their needs

The third speaker was **Tasos Tsitsanis**, from Suite5. He explained about the potential of the EIRIE platform for R&I community.

Figure 9: Tasos Tsitsanis speaking on ERIE potential

He underlined that the aim/mission of EIRIE is to become a reference platform and one-stop shop

for information sharing, collaboration and knowledge creation aiming at evidently supporting the advancement of R&I activities in Smart Grids at national, regional and pan-European level and, subsequently, facilitating the Energy Transition.

He gave emphasis to the EIRIE value propositions for R&I practitioners, R&I organisations, and policy makers.

| R&I practitioners	R&I organisations	Policy makers
• Access to a pan-European data base with analytical and exploitable information on smart grid projects • Information about best practices in R&D sector • First-hand insights into interesting smart grid projects, results, ideas, initiatives • Access to SotA Training Material and Education Programmes	• Cross-promotion opportunities, encouraging synergies with projects and initiatives through information sharing and promotion opportunities through highlighting key achievements as best practices • Making feasible for the low spending, in R&I, countries to be engaged in a more active manner in EU R&I activities	• Define inefficiencies of R&I activities at national, regional and EU level and prioritization of policy actions towards advancing R&I in low-performing thematic • Pooling together different available instruments into one platform, in such a way that it will effectively contribute to the increase of knowledge, coordination of R&I activities and networking
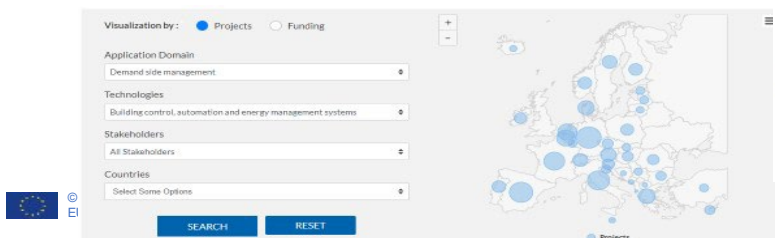
Figure 10: EIRIE value preposition to Policy Makers

3.3.4 Regional Corner: Planned activities to serve connected stakeholders

The next speakers were **Anna Mutule (IPE), Chrysanthos Charalambous (FOSS), and Rad Stanev (TUS).** They collectively introduced the regional corners' activities serving the connected regional stakeholders. They stressed on the EIRIE/Confluence cooperation, which aims on:

- Sharing experience
- Setting and achieving common goals
- Unleashing the potential of collaborative efforts
- Driving research and innovation
- Transforming future

Figure 11: Anna Mutule explaining the Desk 1 activities

Anna Mutule shared the desk activities if Desk 1 (Estonia, Latvia, and Lithuania) and shared her experiences with the Baltic stakeholders. The desk activities were focused on the R&I needs of the EU members states having less participation in EU initiatives. The detailed report of desk activities mentioned in Deliverable 6.5. Moreover, she gave details of the case study conducted to attract interest from local stakeholders to collaborate through EIRIE / CONFLUENCE environment:

Case Study
Regional Cooperation

➢ **Challenges in project proposal preparation– a case study of Baltic Research Programme financed under the European Economic Area (EEA) financial mechanism**
- Programme objective: research-based knowledge development in the Baltic States through research cooperation with Norway, Iceland and Liechtenstein (Donor States).
- Three calls: coordinated by Estonia (2018), Lithuania (2020) and Latvia (2020)
- 27 projects selected for funding, total budget 23 million EUR

➢ **Observations:**
- significant level of competition;
- broad definition of the evaluation criteria and challenges associated with the calls;
- limited number of unique consortia combinations;
- high evaluation score thresholds;
- multi-stage evaluation process, last decision made by Programme Committee;
- lots of paper work.

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Stakeholder interaction was vital in the event and evidence presented is indication of the work done in building the much-wanted collaboration:

Stakeholder Interaction Latvia

Diana Žalostība Associate Professor at Riga Technical University

"It would be beneficial to establish a **single entity** responsible for overseeing regional projects, rather than organizing them separately in each country. This centralized approach, led by a body like Nordic Energy Research or the Commission, would ensure **consistent principles, structures, and requirements** across the region. This would promote efficiency, coordination, and collaboration, leading to improved outcomes and greater impact in regional projects. A single entity overseeing the regional project organization **streamlines administrative procedures** and reduces bureaucratic hurdles, that is particularly important for Latvia as highlighted in the PANTERA case study."

"The significant **differences in payment rates** between donor countries and participating countries have a substantial impact on the allocation of the project budget, affecting the **distribution of resources and funding** within the project. This lead to **challenging negotiation and coordination** among the partners."

- Latvia is among least successful countries, it received only 0.17% of the overall Horizon 2020 funding (budget share rank is 26 out of 28, budget share rank per inhabitant is 20 out if 28).
- Emerging Innovator
- R&D intensity 0.69 % of GDP

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Final Event: EIRIE Platform   09/07/2023   6

Stakeholder Interaction Estonia

Tarmo Korõtko Senior Researcher at Tallinn University of Technology

"In my opinion, there is **a need for research programs** that promote collaboration among the Baltic countries in the energy sector. The energy sectors in the Baltic countries share numerous similarities and common characteristics, resulting in **regional challenges** that are largely alike. This presents a considerable range of research topics that are of **mutual interest** to researchers from different Baltic States. Furthermore, given the relatively limited size of the research community in the Baltics, having **a larger pool of available researchers** can **enhance the scale and significance** of research projects. Additionally, EU-level research programs commonly require a diverse representation between consortium members, making it difficult to establish collaboration specifically among the Baltic countries within these programmes."

- Estonia is among successful countries in terms of the Horizon 2020 funding contribution normalised per inhabitant (budget share rank per inhabitant is 10 out of 28).
- Moderate Innovator
- R&D intensity 1.75 % of GDP

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Stakeholder Interaction Lithuania

"The level of cooperation among state institutions, industry, and academia varies, often resulting in a situation where they are not "**walking in the same shoes.**" It is clear that there is room for **improvement**."

"It is often surprising to observe that the **priorities** in joint calls can **differ** among neighbouring countries. However, **understanding** the underlying **reasons** behind these variations is crucial for fostering effective collaboration. By comprehending the factors that shape countries' specific focus areas, we can better align our efforts, address shared concerns, and work together towards mutual growth and development. This understanding supports the formulation of **common strategies** that leverage the strengths and expertise of each country, leading to more impactful results in joint initiatives."

Aistija Vaisnoriene Deputy Head of Electricity Department, Advisor of Electricity Division at NCC, Kaunas University of Technology

- Lithuania is among least successful countries, it received only 0.14% of the overall Horizon2020 funding (budget share rank is 27 out of 28, budget share rank per inhabitant is 23 out if 28)
- Moderate Innovator
- R&D intensity 1.11 % of GDP

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Desk 3(Cyprus and Malta) activities were presented by **Chrysanthos Charalambous (FOSS)** that stressed the importance of Regional desk approach through EIRIE / CONFLUENCE. He gave the following details about Desk 3:

- ➢ PANTERA Desk 3 includes Cyprus and Malta islands to be supported by activities guided by PANTERA coordinator University of Cyprus/FOSS.
- ➢ Objective

  - To build collaborative R&I activities that have the potential to be sustainable and beneficial to both countries.

- ➢ Main activities

  - Identify possible entities that have the interest to collaborate.
  - Organise common activities.
  - Target common research objectives.
  - Enhance the planned collaboration work through the functionalities offered by EIRIE / CONFLUENCE to strengthen working relations and offer possibilities for enriching participation options.

He stressed that work proved to be highly successful, leading to the conclusions that:

- ➢ Collaboration is fundamental in the existence of the EIRIE platform for team building in related activities knowledge creation where needed.
- ➢ Three partners from Desk 3 worked together to build the activities of Desk 3 and delivered valuable results for the benefit of the 3 partners and the region:

  - **FOSS Research Centre of University of Cyprus**
  - **ANEL Nicosia Development Agency (*https://anel.com.cy*)**
  - **MCAST , Malta College of Arts, Sciecne and Technology (*https://mcast.edu.mt*)**

> The table gives an indication of the valuable work done; all shared through the collaborative space dedicated for the region in the working space of EIRIE in CONFLUENCE.

As indicated in the summary table important work of the collaborating partners resulted in valuable results for the benefit of all partners but most importantly for the stakeholders involved.

Apart from discussing current important issues in the energy transition process, what was equally valuable, were the results achieved through the scientific work conducted that lead to successful submission to the EIRIGRID project for testing the outcome of much needed work for Malta and Cyprus.

- Cyprus
- Malta
- Stakeholders
- NEEMO project
  - E-mobility details of Malta
  - Publishable activities
  - Work Package 1
  - Workshop Cyprus
    - Agenda
    - Presentations
- Conferences
  - MEDPOWER22 Conference in Valetta Malta
    - Planning the conference and workshop
    - PANTERA MEDPOWER2022 Report
- Research
  - GRIDPV100_Proposal - Application - Evaluation
  - GRIDPV100_Simulation tests at AIT
  - GRIDPV100_Results - Reporting - Publications
- Support for VirtualKES

EIRIE / CONFLUENCE hosting Pantera workshops

> *IEEE Smart Cities Conference 2022– 27th of September 2022 hosted in Paphos, Cyprus*

> **The 13th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion** *8th of November 2022 hosted in Valletta Malta*

Collaborating through CONFLUENCE proved highly beneficial since work is shareable and readily available to all contributing for optimal results. The collaborating experts can easily and readily grow without losing any of the material and readily available for newcomers to be easily briefed and start contributing from day one.
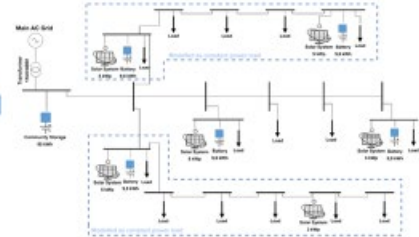
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Rad Stanev (TUS).introduced Desk 2 (Romania, Bulgaria, and Greece) giving valuable input on their activities that have given the presented results:
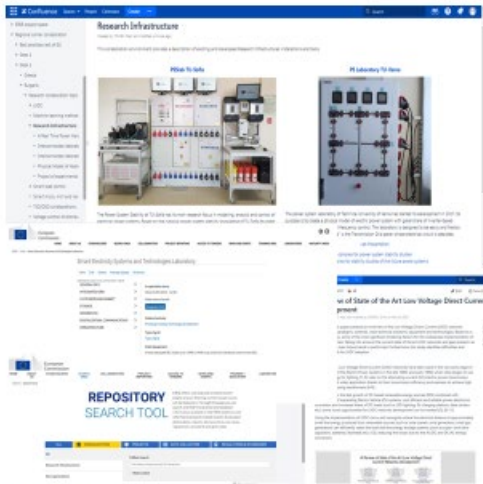

Figure 12: Rad Stanev explaining the Desk 2 activities

Rad stressed that Successful collaboration was based on:

- Work in small groups
- Dialogue
- Respecting local specificities with individual approach
- Post event EIRIE collaboration

Desk 2: EL, BG, RO
EIRIE regional research collaboration

Research collaboration topics
- Research Infrastructures + ERIGRID 2.0 lab access
- TSO/DSO collaborations- grid codes, standardization and regulations
- Low Voltage DC networks
- Voltage control of distribution networks with DER
- Machine learning methods for PS forecasting and modeling
- Smart load control
- Smart micro, mini and nanogrids

Generating knowledge based on
- Presenting research infrastructure and results on EIRIE (collaborating with JRC, DERlab and ERIGrid 2.0)
- Finding the right research partners
- Sharing research infrastructure and know how
- Performing R&I together
- Publishing and disseminating the outcomes

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3.3.5 Services offered to the R&I community of available R&I infrastructure

Rad Stanev continued on the next item on the agenda to cover the work done through the Working Team 1 of PANTERA and Working Group 5 of ETIP SNET, in bringing together the repositories of JRC and DERlab on research infrastructure available in Europe for the R&I needs of smart grids with the support of the ERIGrid project. He has given evidence as to why the research infrastructure is so important:

➢ Why Research Infrastructure (RI) is so important for the R&I?

- The key smart grid R&I topics require close to real life practical implementation.
- Component technologies are mature enough- the open issues urge bringing components together in laboratory environment.

➢ PANTERA Working Team 1 was dedicated to research infrastructure. Major outcomes:

- The demanding Research Infrastructure and insufficient knowledge on how to use it is a major hindering factor for the R&I in the low activity countries.
- Low activity countries cannot and do not need to compete with the advanced countries considering the cutting-edge RI.
- Duplicating the same (or similar) rarely used RI do not bring much value and is not economically efficient.
- Instead of this building the most important (critical) own infrastructure with a combination of performing own experimental research using some accessible and available collaborative options such as the transnational access provided by the ERIGRID 2.0 project which enables collaborative access to the leading laboratories of Europe is highly supportive and efficient for the R&I stakeholders.
- To perform this a flexible, interoperable, and efficient use of the RI of Europe is needed.
- WT1 focused on enabling the collaborative interlinking of the RI using the EIRIE platform.

Rad indicated that PANTERA process bringing existing RI databases together in EIRIE is of prime importance to unify accessibility options that helps the work of the R&I community in Europe. To achieve this the following were clarified:

- Following detailed investigation by PANTERA WT1, it was found out that common work between DERlab, JRC, ERIGrid and PANTERA can develop a common repository on EIRIE that can serve all the interests of the R&I community with multiple benefits!
- The collaboration between the entities led to the agreement of the structure and content of the EIRIE repository.
- The partners have agreed on a common taxonomy in detail.
- Following agreement, the common repository has been formed and all details have successfully been transferred and currently they offer the planned services to all stakeholders in Europe.
- Future work of the stakeholders will involve constant update of provided infrastructure by the entities involved directly through the services offered by EIRIE.

3.3.6 Services offered to project consortia through EIRIE

Figure 13: The final event: eNeuron presenting the experience with EIRIE

eNeuron Horizon 2020 project using EIRIE as the hosting platform for the results of the project, hence participating in this final event to give evidence of the possibilities and for the reasons they have chosen EIRIE to make visible the results of the project.
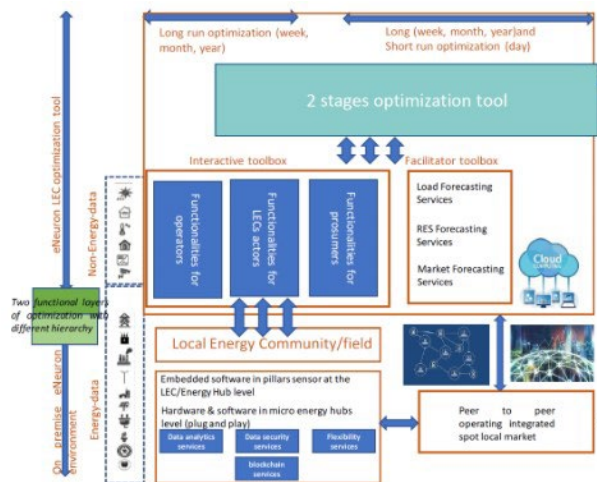
Hence, eNeuron took the floor to present their research outputs. **Eduardo García** from **TECNALIA Research & Innovation,** represented the eNeuron consortium. The main goal of the project is to develop innovative tools for the optimal design and operation of local energy communities (LECs) integrating distributed energy resources and multiple energy carriers at different scales. The already published deliverables of the eneuron are also available at EIRIE platform. It is a very remarkable example of the EIRIE platform utilisation, which will evolve as per the research community need, to become a one stop platform of all EU research activities.

The main features of the eNeuron project are the following:

- The main goal: To develop innovative tools for the **optimal design and operation** of local energy communities (LECs) integrating **distributed energy resources** and **multiple energy carriers** at different scales
- Develop an **integrated toolbox** for:

    o the **long-term design optimisation of multi-carrier local energy systems**, aiming at identifying the optimal architecture of such systems, in terms of optimised configuration alternatives through a **multi-objective approach** to account for both technical, economic and the environmental priorities / objectives
    o **the optimal daily operation of the integrated systems** through a stochastic approach and day-ahead scheduling through auxiliary forecasting tools
    o **the simulation of peer-to-peer energy trading** to investigate the feasibility and convenience of the optimised scheduling strategies from the prosumers point of view in a local real time market

- **Offering a set of functionalities for ILEC** (e.g. minimizing CAPEX through optimal investments on RES and other assets), **operators** (e.g. local congestion management) and **prosumers** (e.g. activate demand response and energy sharing)

Toolbox main structure

- Three temporally distinct scopes of optimization
- Three phases of energy community optimization
    - Years-ahead system planning
    - Operation analysis of a given system
    - Real-time operation
- Dependencies between the different phases

The demo cases of eNeuron that will be featured through the EIRIE platform:
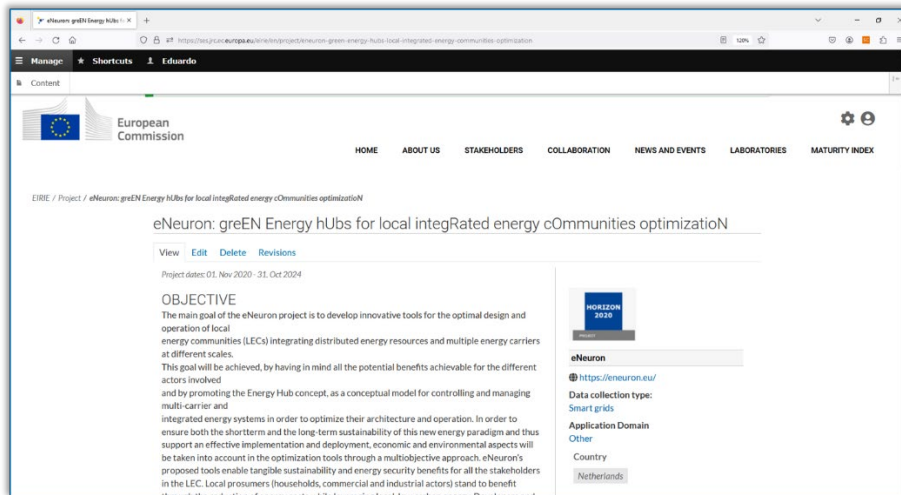

Figure 14: eNeuron on EIRIE platform

The eNeuron expert stressed the experience gained till now and planned next steps in being deployed through EIRIE using to the full the functionalities offered:

- Adaptation to the dispersed structure of the EIRIE data types.
- Several EIRIE data types fit well the more relevant project-related data (deliverables, time series, models, UCs…)
- Some interesting EIRIE data type without project field → Project reference to be included in the data.
- Some time series are not open (UNIVPM: 052, 053, 054, 055, 056, 057, 064, 066
- Not always available a specific field for complementary information that could be interesting for the eNeuron ODB audience (author, conditions of use, evolution…).
- Adaptation to some fields size limitations (e.g. authors of a deliverable expressing only the partners).
- Some thematic categorization (technology domains, technologies…) can facilitate the surfing

across the content
- Difficult to search some of the data with project criteria.
- Informing the Research Community about new content in the ODB (eNeuron web site, specific newsletter…). EIRIE Newsletter is an option to be considered.
- eNeuron experience could be useful for the future evolution of EIRIE

3.3.7 Maturity index tool for R&I gaps & needs

The next presentation presented by Chrysanthos Charalambous of FOSS, was on the "Methodology for maturity quantification and evaluation of R&I needs of the smart grid", which is an important function on EIRIE platform developed by the PANTERA team for serving the R&I community and respective policy makers. As the energy system evolves with energy transition, there is a need to quantify the system maturity. The need of maturity index based on these points:

- Power Grids of the future, embracing the integrated approach with high penetration of renewables and emerging technologies with advanced operational functionalities, is of paramount importance for meeting the European Union (EU) targets of sustainability and energy transition.
- An analysis approach for assessing progress in developing major high level use cases of the smart grid is needed to be well established and adopted.

It is clear that today, R&I community and policy makers, are in need for system readiness level for the following reasons:

- The need for having a way of assessing, in a quantified manner, the maturity of emerging technologies under development within the funded projects of EU is well established.
- So, Technology Readiness Levels (TRL) have been adopted for measuring the progress of solutions employed by a single project. But current TRL scale does not address how well the developed technology integrated into the architecture and system structure.
- This is an integral part of the systems engineering job and critical to the success of the technology transition. Currently, an analysis approach that will build on Technologies and will unite them under a broader scope such as the high-level use cases and operations of the smart grid is missing.
- By introducing a methodological approach for evaluating the maturity and thus the readiness of the smart grids as a whole, EC and the RD&I community will have an eye bird's view of the system and the progress made.

The tool also evaluates the system readiness level based on the three-matrix approach.

- Three metrics are used to evaluate the smart grid system readiness throughout SRL development.
- The first metric, TRL, is assigned using inputs from subject matter experts providing feedback for their project.
- The second metric IRL is assigned using standard tables/matrixes developed by ETIP_SNET experts of the smart grid regime.
- The remaining metric, SRL, is computed by applying the designed evaluation method taking under consideration both TRL and IRL.

TRL- is now a nine-level metric and a concept that is used widely across NASA initially to measure the maturity of a technology.

IRL-is a nine-level systematic measurement of the interfacing of compatible interactions for various technologies and the consistent comparison of the maturity between integration points i.e. TRLs.

SRL- is a normalized matrix of pair-wise comparisons of TRL and IRL. Therefore, the SRL can be understood as an index of maturity from 0 to 1 applied at the system-level

The methodology makes full use of the PANTERA process which embodies the vision, ten year plan, implementation plan of ETIP SNET in relation to the High Level Use Cases defined in the strategy.
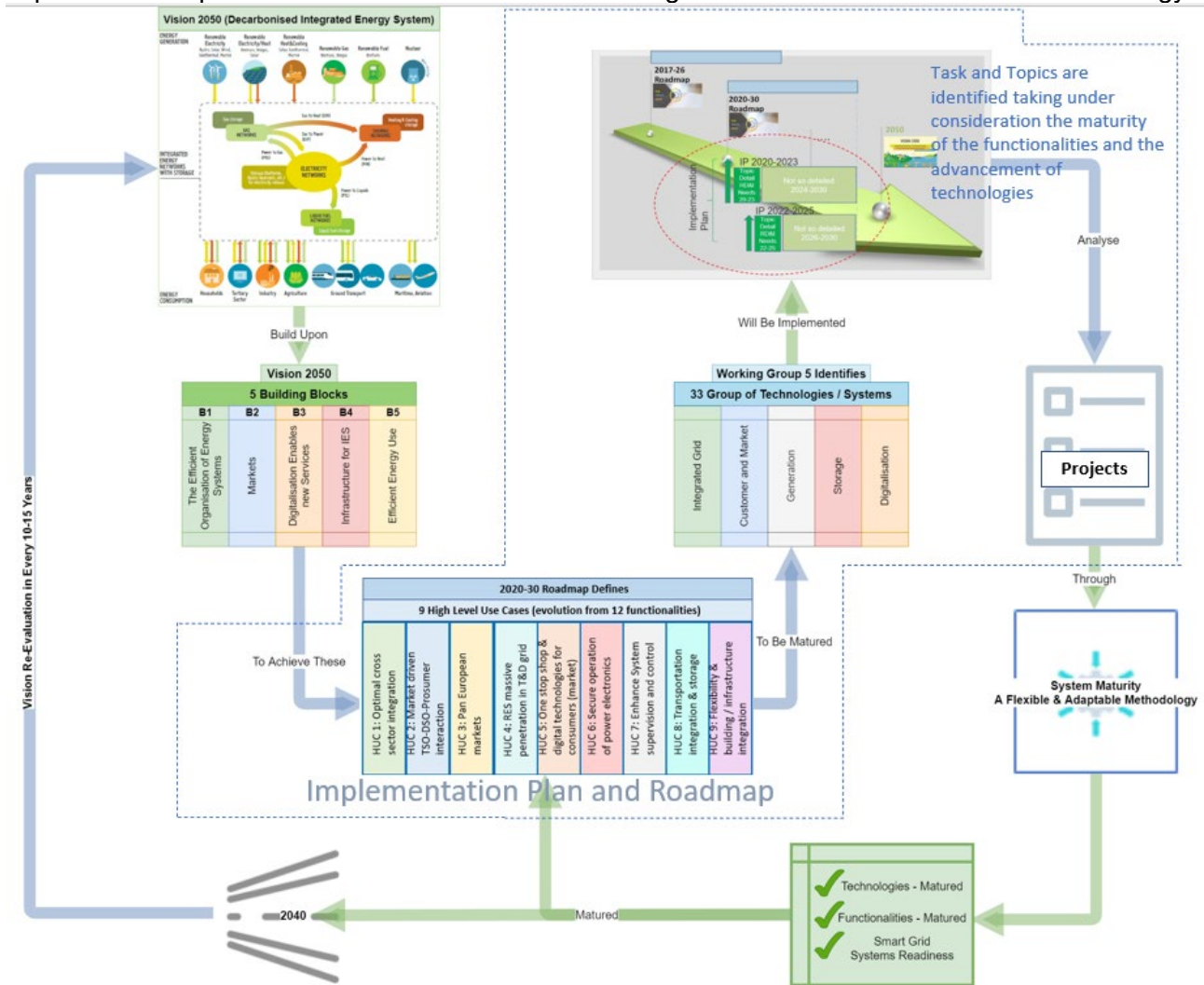

Figure 15: The PANTERA process supporting the Maturity Index valuation

Fundamental ingredient in the build up process is the developed taxonomy of system growth based on identified technologies that constitute the system:

Figure 16: The list of technologies forming the taxonomy of grouping projects

The developed tool can be utilized by the research community in many ways as follows:

- The tool embodies a methodology for quantifying the integrated system readiness level as proposed in the Vision 2050 of ETIP SNET.
- This methodology is a tool offered within EIRIE platform for feeding in the results reported by the R&I projects of the EU.
- The methodology enhances the TRL index tackling all the weaknesses that this index entails.
- Provides a solid process on how the integrated system readiness can be quantified.
- The objective is to provides valuable input to project consortia, to ETIP SNET and policy makers for quantifying maturity achieved through projects, existing gaps and needs for upcoming implementation plans, Roadmaps and work programme.

3.3.8 The strong voice of the stakeholders guided the evolution of EIRIE

The JRC perspective of EIRIE was presented by **Marcello Barboni.** He pointed out the need of a collaborative platform as EIRIE:

- According to the JRC Smart Grid Projects outlook and other sources, investment in Research and Development in Energy is not uniform among the EU Member States. Fifteen European countries account for less than 5% of the EU research and innovation funds.
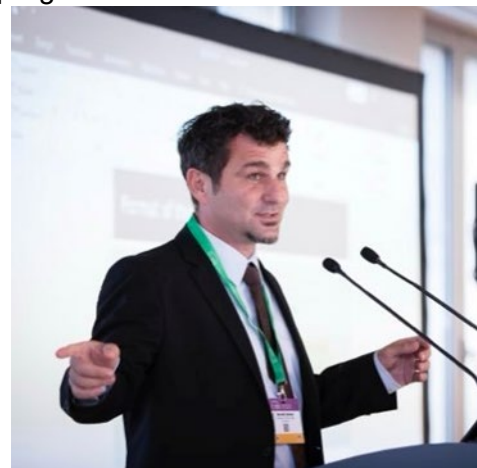
- In order to achieve EU sustainable goals, smart grids investment throughout Europe needs to be boosted and equalized among members.
- Aligns with DG ENER priorities.

He gave evidence of who is JRC and how is organized to deliver.

JRC – Facts and figures

About **EUR 380 million** annual budget plus about **EUR 80 million** earned

2.800 staff

> 50 large scale research facilities

110 on line databases
> 100 economic, bio-physical and nuclear models

European Commission

He has given his strong opinion as to why EIRIE is a must in the environment that we are living and working to achieve the energy transition:
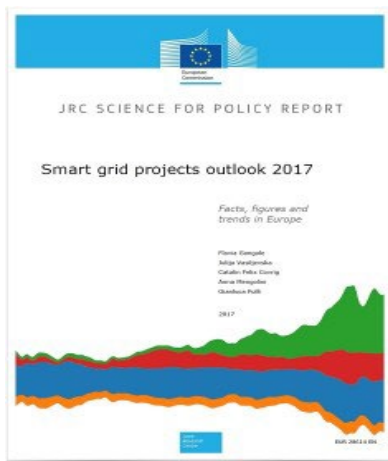
THE EUROPEAN GREEN DEAL

- CLIMATE PACT AND CLIMATE LAW
- INVESTING IN SMARTER, MORE SUSTAINABLE TRANSPORT
- STRIVING FOR GREENER INDUSTRY
- ELIMINATING POLLUTION
- ENSURING A JUST TRANSITION FOR ALL
- FINANCING GREEN PROJECTS
- MAKING HOMES ENERGY EFFICIENT
- LEADING THE GREEN CHANGE GLOBALLY
- FROM FARM TO FORK
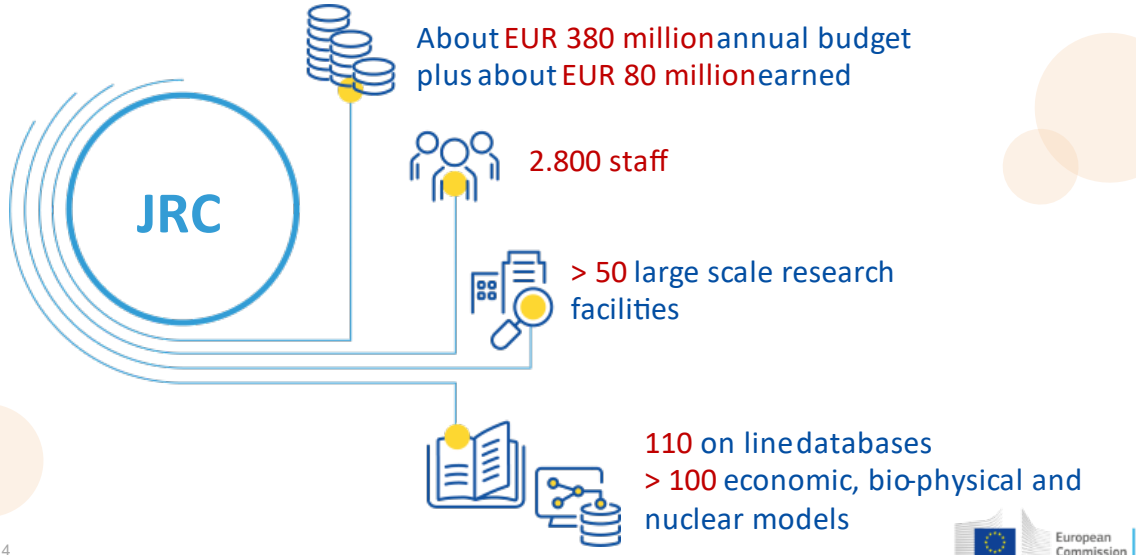- PROTECTING NATURE
- PROMOTING CLEAN ENERGY

Why EIRIE?

According to the JRC Smart Grid Projects outlook and other sources, investment in Research and Development in Energy is not uniform among the EU Member States Fifteen European countries account for less than 5% of the EU research and innovation funds.

In order to achieve EU sustainable goals, smart grids investment throughout Europe needs to be boosted and equalized among members.

Aligns with DG ENER priorities.

7

Fragmentation:
- big picture, overview
- stakeholder mapping.
- mapping of funding possibilities

Communication:
- stakeholder involvement.
- information and dissemination.
- avoid duplication

Data:
- Access, security,
- knowledge, services, infrastructures, policies.
- Data loss

3.3.9 The objectives of the project, SUPEERA

The next speaker was **Ivan Matejak** from EERA, representing the SUPEERA project. In his intervention he pointed out the experience gained from the collaboration between SUPEERA and PANTERA projects in jointly organising a series of 10 workshop as part of a series of events dedicated to the EU-13 countries.
He identified the working areas of the project SUPEERA and how these are related to the work of

the PANTERA project:

He gave evidence of the gap that exists between the low activity countries the EU13 and the rest of Europe:
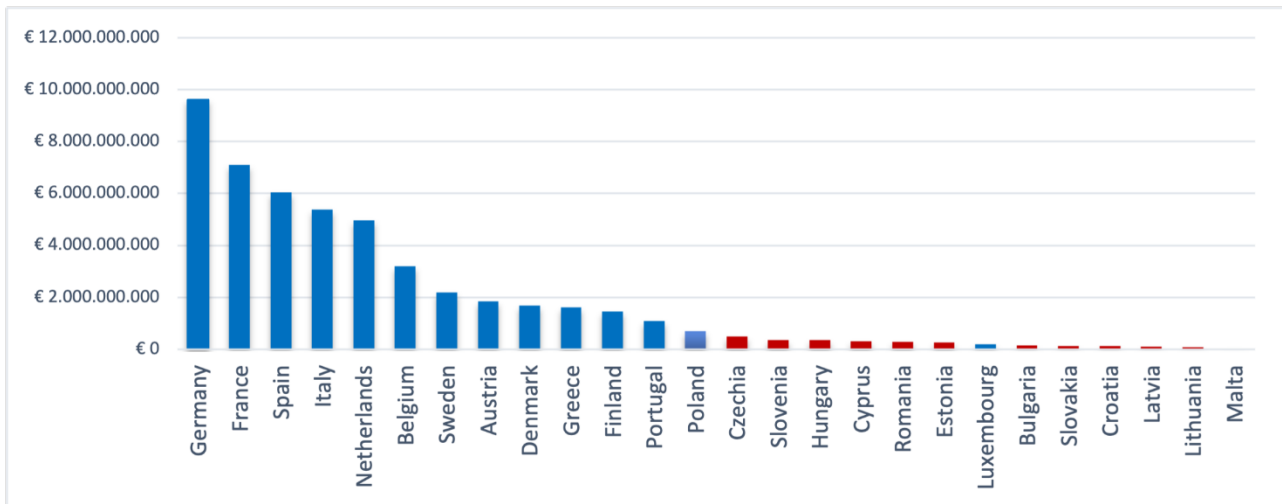
He then informed the participants of the results of an internal valuation that lead to the following main reasons of EU 13 countries performance gap:

- National priorities not aligned with European ones
- Weakness of the R&I systems
- Administrative and regulatory burdens obstructing R&I
- Limited involvement in the SET Plan landscape
- Lack of ties at European and international level
- Absence of integration between business and academia
- EU funds vs national funds

Figure 17: Ivan Matejak during his presentation on SUPEERA Project

Figure 18: Common workshops between PANTERA and SUPEERA

3.3.10 SPRING: Taking over EIRIE

Tha final speaker at the event was **Marialaura Trifilleti from ZABALA / SPRING** project who is supporting the work of ETIP SNET and BRIDGE but also taking over from PANTERA consortium the daily operation of the EIRIE platform as from 1st of July 2023. For this reason, Marialaura was quite clear in her presentation that SPRING is ready to fill the shoes of the PANTERA consortium and make sure that EIRIE continues to serve the R&I community in the days, months and years ahead always with the support of JRC who are hosting it on their servers.

In her short presentation she gave clarity to the following:

- SPRING project and contributing entities and how they serve the activities of ETIP SNET and BRIDGE initiative.
- The importance of working in both initiatives with Working Groups with targeted objectives. The WGs are listed below for both ETIP SNET and BRIDGE and experts are encouraged to express interest to join the WGs since they raise the possibilities of contributing to building knowledge and policies and strengthening collaboration options. This is extremely important for experts coming from widening countries.
- The link between EIRIE and the two initiatives ETIP SNET and BRIDGE is daily and have an important role in promoting the work of projects and the represented R&I community of Europe.
- SPRING and future service contracts will play a critical role in keeping EIRIE operational and constantly growing in the direction that serves best the interests of projects the R&I community of EU.

Working Group 1 Reliable, economic and efficient energy system	**Working Group 2** Storage technologies and system flexibilities	**Working Group 3** Flexible generation
Working Group 4 Digitalisation of the electricity system and customer participation	**Working Group 5** Innovation implementation in the business environment	**NSCG** National Stakeholders Coordination Group

Figure 19: Active working groups of ETIP SNET

Data management	**Business models**	**Regulations**	**Consumer and Citizen engagement**

Figure 20: Active working groups of BRIDGE

Figure 21: Maria Laura Trifiletti from ZABALA Innovation

3.3.11 The epilogue of the project PANTERA

Finally, the event finished with an open discussion with the participants coordinated by **Venizelos Efthymiou** and **Luciano Martini**. In reality it was stressed that this is t**he epilogue of the project PANTERA, but the starting point of a rich future through EIRIE.**

This open dialogue with the participants touched on the following important points:

- PANTERA has done enough to raise awareness in the widening countries of the importance of R&I in the energy transition. But we know there is a lot of ground to cover still to raise ambitions and effective participation. What can be done?

  From the discussion that followed the following important points were noted:

  - o Collaboration activity on EIRIE should be pursued as the door to the stakeholders of countries and mobilizing them to be active and contributing.
  - o Through the channels of communication opened to continue encouraging them to be active in the WGs of ETIP SNET and BRIDGE as experts in the specific fields.
  - o Aim through open calls or direct communication with the Commission the issue of further work through a well-structured CSA to further enhance the above opened channels building on the success of PANTERA efforts in collaboration with the SUPEERA project.

- Joining forces with SUPEERA has proven highly effective to raise the much-wanted impact. Stakeholders are more active as experts in the working groups of ETIP SNET and BRIDGE. We want them to have an influence on national policies in driving NECPs forward with higher ambition and as experts to collaborate through platforms that are available. JPs of EERA, WGs of associations …. What else?

  The discussion that followed showed evidence that the indicated actions in bullet one are valid but in addition EERA through the active JPs should aim to bring closer the 13 widening countries with specific activities and tailored actions that will raise interest and ambition. To this effect, EIRIE can play a widening role to come closer to local stakeholders through the activities planned by all contributors to the regional corner.

- EIRIE is with us. The home of projects, knowledge, data, and valuable information. But not only: a collaborative platform. How ambitious are we? Can we make EIRIE our home for effective collaboration?

  Through the discussion that followed, all participants reached the conclusion that EIRIE is de facto with all the functionalities that it offers, the home of projects and R&I consortia and hence, activities should be constantly enriched bringing stakeholders closer together in enriching their collaboration activities for future projects etc.

- EIRIE is sustainable through the support of DG ENER and JRC. How can we capitalise on that and raise the ambition and confidence of the widening countries?

  Through the discussion that was developed on the basis of the question, there was consensus that EIRIE offers the right platform to bring stakeholders closer together collaborating and delivering. The support that the platform receives from JRC and DG ENER can be a convincing

argument that their voice can be heard, offering the capabilities for more visibility and wider collaboration with centres of excellence in their selected fields. For this to be successful, experts acting through the WGs of ETIP SNET should continue feeding in the status of the industry. Moreover, the projects of BRIDGE will be a constant source of knowledge, results, use case expertise that users of EIRIE will benefit. For all these, to have a lasting service to the stakeholders, the service contract provided by DG ENER should be responsive and supportive to the connected users for error-less daily operation.

Figure 22: Venizelos Efthymiou and Luciano Martini discussing with audience

At lastly, a group photo is taken with the PANTERA members involved in the 4.5 years journey of the project.

Figure 23: Final group photo with the PANTERA members with project officer

4 PANTERA and EERA JP Smart Grids Joint Webinar on EIRIE

4.1 Introduction

The EU project PANTERA and the Joint Programme on Smart Grids of the European Energy Research Alliance (EERA JP SG) jointly organized the final webinar of the PANTERA project on June 28, 2023, from 14 to 15.30 "**EIRIE a knowledge collaborative platform in support of R&I".** The planned webinar aimed to present the EIRIE multifunctional platform and to discuss with JP SG members about its main functionalities and the synergies that could be created with the JP activities and objectives.

4.2 Agenda

| Time (CEST)	Topics	Description	Presenter
14:00 14:05	Opening remarks by Andrei Morch *(SINTEF)*		
14:05 14:15	JRC supporting knowledge creation and sharing	The Smart Energy Systems environment of JRC and hosting services for the R&I community of Europe.	Marcello Barboni (JRC)
14:15 14:25	EERA and the SUPEERA project	Strengthen European cooperation in R&I in order to realize the objectives of the SET-Plan in the broader perspective of the clean energy transition – results from the SUPEERA project	Ivan Matejak (EERA)
14:25 14:35	EERA JP SG	JP Smart Grids & EIRIE: towards an integrated pan-EU R&I framework in the energy field	Luciano Martini (JPC - RSE)
14:35 14:45	The importance of delivering EIRIE	EIRIE a landmark for the R&I community of EU & steps taken to continue serving their needs	Venizelos Efthymiou (FOSS)
14:45 15:30	EIRIE: Home of knowledge, information, and data	Discussing the emergence of EIRIE, status and the role it can play in sharing the wealth that projects generate for the benefit of the R&I community and related stakeholders including policy makers	Coordinator: Andrei Morch All contributing

4.3 Outcomes from the workshop

Andrei Morch (SINTEF) opened the final webinar of the PANTERA project welcoming all the connected participants and presenting the agenda and the speakers of the day. He also mentioned the main activities the EERA JP on Smart Grids is involved in, namely the organization of thematic workshops and webinar for the JP members, writing of common papers and articles, participation in pan-European public consultations and interactions, organization of Horizon Europe Brokerage Events and follow up of the relevant calls.

Marcello Barboni (JRC) focused his presentation on the Smart Electricity System and Interoperability (SESI) platform, the main activity of the Security, Distribution and Market Unit of the Joint Research Centre (JRC).

First of all, Barboni provided an overview about the JRC whose purpose is to provide independent and evidence-based knowledge and science, supporting EU policies to positively impact society. With 2.800 employees the JRC manages more than 50 large scale facilities and 110 online databases. The headquarters is in Brussels and research facilities are located in 5 countries (Belgium, Germany, Italy, Spain and The Netherlands).

Focusing on the SESI platform, Barboni pointed out that it describes the activities of the Security, Distribution and Market Unit of the JRC which are mainly about studying the power system as a multi-layer system composed of technical, economic and social layers. A specific section of the SESI website is dedicated to EIRIE. SESI concentrates on 4 core activities:

1. System resilience and security of supply: power system risk preparedness, regulation and electricity security in the EU are studied.
2. Digital energy interoperability: focused on (i) the ability of smart grid actors, components and applications to work together by exchanging data and information, and (ii) electric mobility solutions, demand response techniques, AI, blockchains, storage devices and distributed energy generators.
3. Citizens communities and protection: dealing with public acceptance and community engagement.
4. Market design and system integration: dealing with market and regulatory factors as well as renewable solutions integrations into the power system (including storage solutions and EV).
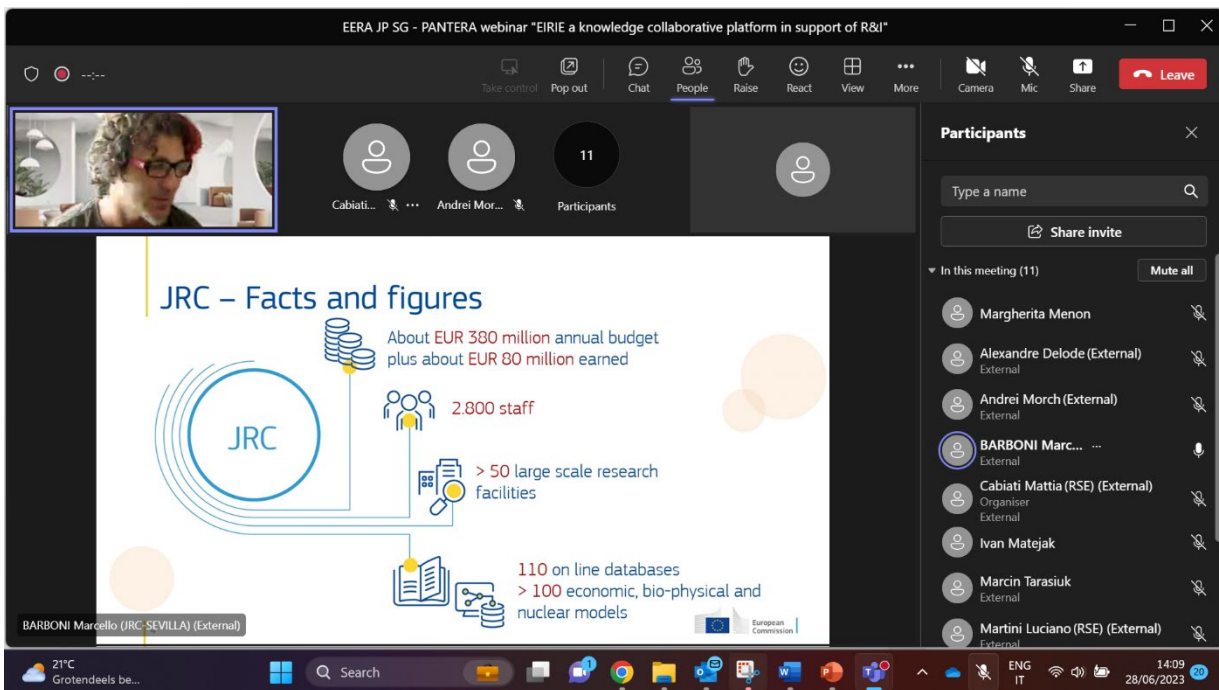
As concerns EIRIE, Barboni stressed that the platform is a natural fit with the activities of SESI and for this reason a specific section of the SESI website is dedicated to EIRIE.

Ivan Matejak (EERA) presented the SUPEERA project and its main results. SUPEERA is a 42-months project, that started in January 2020 with a total budget of EUR 1.7 million. It is structured in 3 main working areas:

1. Facilitation of the execution of the SET-Plan.
2. Accelerating innovation and uptake by industry.
3. Impact assessment pursuant to the Clean Energy Transition policy framework.

Similarly, to the PANTERA Project, within working area 1, SUPEERA supported the mobilization of EU-13 countries' research organizations. In this respect, results show that the participation of EU-13 countries in the SET plan Implementation Working Groups is very limited. Their involvement is mostly circumscribed to nuclear safety, batteries, energy efficiency in industry and PED, with Cyprus being the most active country. SUPEERA shows that EU-13 countries poor contribution in the execution of the SET plan is the result of limited participation and success rate in Horizon 2020 calls. Indeed, only 5% of the total Horizon 2020 budget has been allocated to research teams located in the EU-13 Member States. Matejak pointed out that the root causes of these gaps are mainly:

- National priorities not aligned with European ones;

- Weakness of the R&I systems;
- Administrative and regulatory burdens obstructing R&I;
- Limited involvement in the SET Plan landscape;
- Lack of ties at European and international level;
- Absence of integration between business and academia;
- EU funds vs national funds: the fact that EU-13 countries have easy access to national funds makes EU funds less attractive.

In order to overcome this imbalance, the EU Commission constituted a horizontal pillar within Horizon Europe dedicated to widening the participation and strengthening the European Research Area.

Matejak then focused on illustrating the close collaboration established over the years between the SUPEERA and the PANTERA projects. Several physical and online workshops have been organized together in the EU-13 countries in order to have a better understanding of the low participation in the SET Plan and EU funded programmes and to facilitate their engagement and participation in these frameworks and funding schemes. Around 330 people participated to the workshops (18% industry - 65% academia - 15% government).

As regards the impacts that SUPEERA had so far, it contributed to:
- Enhance synergies among CSA initiatives;
- Improve scientific cooperation;
- Increase SET Plan visibility;
- Analyse national R&I landscapes.

Moreover, the project identified some short-term measures that the EU Commission should put in place to encourage the involvement of EU-13 countries:
- Provide more funding towards research activities vs networking and administrative tasks;
- Paradigm shift: empowering instead of supporting;
- Enable widening institutions to become R&I leaders themselves;
- Recognize existing Centres of Excellence in EU-13 countries.

Finally, SUPEERA elaborated also long-term recommendations:
- Establishing of more structured ad hoc approaches (no one-fits-all solutions);
- Better alignment between the EU and national agendas (NECPs);
- Better coordination between different funding instruments (CF, ERDF, HEU);
- Reduce the administrative burden on widening institutions;
- Seal of Excellence Community of Practice (facilitate information sharing);
- Speed up strategic changes at national, regional, and institutional levels.

Andrei Morch (SINTEF) considered very interesting that PANTERA and SUPEERA projects arrived at very similar conclusions as far as the low participation of EU-13 countries in EU-funded R&I activities is concerned.

Luciano Martini (EERA JP on Smart Grids coordinator - RSE) introduced the EERA JP on Smart Grids highlighting its strong link with the PANTERA project. The JP SG currently has 36 members covering 18 countries in Europe and it is structured in 5 sub-programmes (SP):
1. SP1 - Technologies and tools for the management of future power systems *(coordinated by DTU)*
2. SP2 – Storage integration *(coordinated by VTT)*
3. SP3 – Distribution Network Flexible operation *(coordinated by FOSS)*
4. SP4 – Consumer and Prosumer activation and Engagement through digitalization and ICT *(coordinated by VITO)*
5. SP5 – Flexible transmission *(coordinated by NTNU)*

Martini then underlined that most of the PANTERA project partners are also members of the JP on Smart Grids (7 out of 9, namely FOSS, RSE, UCD, Derlab, IPE and SINTEF). This represents one of the reasons why it was extremely easy during the project lifetime to jointly organize events by PANTERA and the JP. Indeed, over the years many workshops and webinars were organized:

- July 2019 – workshop in Sofia
- December 2019 – workshop in Dublin
- February 2020 – workshop in Athens
- November 2020 – webinar in Cyprus
- September 2021 – workshop in Croatia at the SpliTech conference
- June 2022 – workshop in Palermo at MELECON 2022
- October 2022 – workshop in Budapest
- November 2022 – workshop in Budapest at the CANDO EPE 2022 conference
- March 2023 – workshop in Bucharest
- April 2023 – workshop in Vilnius

Martini also presented how EIRIE can support the JP SG activities. As a matter of fact, EIRIE, as an interactive multi-functional platform, represents a meeting point for all actors active in the field of energy research and innovation from all around Europe. In particular, EIRIE offers the following functionalities and information:

- Projects results and outcomes
- Stakeholders' community building
- Research infrastructures
- Standards and Regulation
- Matchmaking and R&I funding opportunities
- News & Events

It can also be used by the JP to share and disseminate its activities (news, events, etc.) as well as to reinforce its community, attracting new members (especially from EU-13 countries).
In this last respect, Martini pointed out that EU-13 countries are not well represented in EERA and particularly in JP on Smart Grids. Indeed, only 3 out of 36 members of the JP are coming from EU-13 countries. Therefore, one of the JP objectives is to improve EU-13 countries representation, through effective use of the functionalities of EIRIE.

Irina Antoskova (IPE) asked what measures have been taken to expand EERA JP on Smart Grids by including countries that are currently not covered.

Luciano Martini (EERA JP on Smart Grids coordinator - RSE) replied that several workshops have been organized, rotating the location in different countries and properly advertising and engaging with local authorities (government and regulatory authorities' representatives were often invited), clearly specifying that the JP's final target is academia, universities and research centres. One of the goals for the future is precisely to have more organization from EU-13 countries on board.

Venizelos Efthymiou (PANTERA project coordinator – FOSS) expressed his satisfaction for the remarkable results the PANTERA project managed to achieve through 54 months of intense activity, delivering the EIRIE platform among others, that is considered to be a landmark for the R&I community, being multifunctional, accessible and shareable throughout Europe. Indeed, as pointed out in the mission statement, EIRIE represents a reference platform and one-stop shop for information sharing, collaboration and knowledge creation aiming at supporting the advancement of R&I activities in Smart Grids at national, regional and pan-European level and, subsequently, facilitating the Energy Transition. The aim of EIRIE is not to replace already well-functioning platforms in Europe but to allow to have access to all of them. Therefore, through EIRIE, R&I practitioners can have:

- Access to a pan-European database with analytical and exploitable information on smart grid

projects;
- Information about best practices in R&D sector;
- First-hand insights into interesting smart grid projects, results, ideas and initiatives;
- Access to state-of-the-art training material and education programmes.

Moreover, EIRIE allows R&I organization to:
- Cross promote opportunities, encouraging synergies with projects and initiatives through information sharing and promoting opportunities, highlighting key achievements and best practices;
- Make feasible for the R&I low spending countries to be engaged in a more active manner in EU R&I activities.

EIRIE represents a useful tool also for policy makers, supporting them in:
- Defining inefficiencies of R&I activities at national, regional and EU level thus allowing to prioritise policy action towards advancing R&I in low-performing topics;
- Pooling together different available instruments into one platform, in such a way that it will effectively contribute to the increase of knowledge, coordination of R&I activities and networking.

Efthymiou then specified that EIRIE is hosted in JRC's Smart Energy System Environment (responsible also for its maintenance), under the europa.eu domain. Therefore, the use of EU login credentials is needed for centralized authorization and verification. The integration with the most prominent and widely used platforms around EU and beyond is in EIRIE scope (connection is already put in place with many platforms). On completion of the PANTERA project, the EIRIE management and content administration will take place under DG ENER service contracts and in collaboration with ETIP-SNET, BRIDGE and PANTERA experts.

Finally, Efthymiou stressed that stakeholders are central in developing EIRIE, whose aim in this respect is to:
- Bring stakeholders closer to decision making, information and collaboration possibilities in order to serve their interests in broader terms;
- Provide project reporting in response of the needs of consortia building knowledge forward for broader visibility and use;
- Offer analytics and tools orientated to support the endeavours of all stakeholders for achieving the strategic objectives of energy transition.

Irina Antoskova (IPE) asked to illustrate what is the main/primary new functionality of EIRIE that other platforms are not providing

Venizelos Efthymiou (PANTERA project coordinator – FOSS) replied that other platforms are not hosting results of projects in the long-term as EIRIE does, indeed EIRIE is bringing and hosting all publications related to a specific project making them available for R&I purposes. Moreover, EIRIE provides also some tools, such as the Maturity Index tool that allows to assess what is the contribution of projects to the development of technologies and how it is related to the total maturity of the energy system and to the energy transition process. This helps the process of evaluating results through the actual contribution of research and innovation community and serving the interest of policy makers who need to know where the limitations and gaps stand and how to bring R&I plans forward.

Andrei Morch (SINTEF) presented the PANTERA project Regional Desks specifying that, as the different regions in Europe play a significant role in the achievement of the project objectives, PANTERA came up with the concept of Regional Desks. Therefore, 6 regional desks have been created to address PANTERA target countries. Furthermore, 1 best-practice desk was set-up as well to elaborate on good experiences in projects and R&I governance from more successful countries. Morch then informed the participants that, according to a survey elaborated, stakeholders expect

that the PANTERA project provides them with the following benefits/support tools:
- Firsthand insight into interesting smart grid projects, results, ideas and initiatives;
- Networking and potential partnerships;
- Learning from other experience (especially in practice-oriented projects);
- Cross-cutting information about different project initiatives;
- Policy recommendations.

In addition, according to stakeholders, the main barriers and gaps which limit the funding and development of R&I in the energy field are:
- Lack of responsive networking facilities;
- Limited monetary resources;
- Limited human resources;
- Limited national policy in support of R&I activities.

Morch then mentioned again the main attributes of EIRIE, specifying that it is a sustainable and interactive multi-dimensional pan-European platform based on a knowledge sharing mechanism that will help identify, discuss and structure key R&I challenges. In addition, regional desks and ad hoc working groups have been settled to respond to R&I needs and tackle key topics identified by the PANTERA project.

A practical overview was also provided about the functioning of the EIRIE search tool and the "Confluence" tool was presented. The latter is a collaboration wiki tool integrated within EIRIE consisting of a team workspace where knowledge and collaboration meet by creating, collaborating and organizing all the work done within EIRIE in one place.
Finally, Morch asked all the presenters what they have learned through the project.

Ivan Matejak (EERA) pointed out that the experience of SUPEERA and PANTERA projects that were partly implemented during COVID-19 pandemic clearly revealed the need for future financial support schemes to be sufficiently flexible in order to answer and adapt to the new emerging and disruptive priorities. SUPEERA work packages, for example, were renegotiated twice during the project lifetime to re-adapt to new emerging priorities. If projects are not structured to be flexible enough to face disruptions of any kind the risk is that they will bring no added value both to beneficiaries and to entities that fund them. Matejak also suggested that every project in its initial phase should search for similar initiatives both to avoid overlaps and to create productive synergies.

Venizelos Efthymiou (PANTERA project coordinator – FOSS) highlighted that the PANTERA project allowed to have evidence of the great wealth in terms of knowledge, information and capabilities that EU-13 countries have. It is thus a responsibility of all parties involved (EERA, JPs, JRC etc.) to try to bring all that wealth forward through collaborative ways, contributing to the energy transition. This is what the EU Green Deal pushes for.

Andrei Morch (SINTEF) agreed that EU-13 countries have many experts with broad knowledge and willing to share opinions. The importance of direct interaction with and among stakeholders should thus not be underestimated and EIRIE platform will precisely allow users to directly interact with key stakeholders.

Luciano Martini (EERA JP on Smart Grids coordinator - RSE) stressed that EIRIE platform is mainly about knowledge sharing, creating, and keeping connected an extremely broad energy community. Thousands of projects are funded by the EU Commission, but it is well known that after their end the great risk is that all knowledge they produced is lost. EIRIE is precisely trying to solve this issue, collecting in one place all the information produced by EU Commission funded projects.

Andrei Morch (SINTEF) pointed out that knowledge continuously created by EU projects is not only about documents and reports but also expertise developed by people, the way they interact and built

together. Therefore, EIRIE can really represent the space where people can continue meeting and sharing knowledge after the end of projects.

Venizelos Efthymiou (PANTERA project coordinator – FOSS) closed the meeting by thanking all the participants and expressing great satisfaction for the results achieved by the PANTERA project that allows to create and strengthen collaboration opportunities in Europe (with EERA aisbl, SUPEERA, EERA JP on Smart Grids, ETIP-SNET, BRIDGE, JRC, etc.), building a research community made up of people that are strongly contributing to succeed in the energy transition process.

5 Conclusions

One of the main objectives of the PANTERA project and specifically WP5, is Organisation of dedicated workshops which facilitate exchanges of experience and building up active participation of members of the R&I community. The participation of stakeholders in the organised workshops in collaboration with already on-going activities is aiming to wider participation, enlightening on policies adapted, strengthen objectives and extent impact of achieved results. Under this prism, the PANTERA consortium is organising these regional and pan-European workshops with a specific focus on the countries which are less active in research and innovation in smart grids, storage and local energy systems.

However, each workshop is centred around a selected theme that is of vital importance to the region that is hosting the workshop aiming to alert policy makers attending the workshop, hear their view; discuss possible solutions and mobilise support from the active stakeholders of the region. Bringing together policy makers with the European dimension on the selected themes and discussing options and solutions with the interested stakeholders was and is central in the proceedings of the organised workshops not only as a day discussion but as an initial step in bringing attention to the selected themes to both policy makers and stakeholders and build the appropriate platform through which interest will continue and be strengthened for lasting solutions.

Initially, the PANTERA consortium planned detailed events throughout Europe in meeting all the stakeholders of the low activity countries. However, due to the restrictions imposed by COVID, the consortium revised all plans to make room for regional activity during the post COVID period that is shorter in allowed time. Along these lines, the consortium has laid out the following approach to maximize possibilities of meeting the stakeholders of the low activity countries:

- The introduction of nano workshops running in parallel with published events gave evidence of bringing together stakeholders with the support of the local organisers, giving accessibility to countries that are not represented in the consortium of PANTERA.

- Collaborating with the SUPEERA project that is targeting all the 13 widening countries that are primarily the countries targeted by PANTERA as well. The objectives of the SUPEERA project were also highly relevant since the aim was to raise interest in the SET Plan process in support of the energy transition. Hence, the targeted stakeholders were close to the interests of PANTERA as well.

- Build the collaboration options through EIRIE and CONFLUENCE giving more versatile options for attracting stakeholders to share knowledge and build R&I objectives that fit best to the specificities of the region that they are working in. This called closer working environment with JRC services, that attracted more interest from the side of the stakeholders.

- Apply for a sixth month extension to the project duration, to offer more useful time for organising physical events hence, closer collaboration with local stakeholders. Extension was eventually approved and adapted plans brought more options for working with the targeted stakeholders.

- Reduce the targeted pan-European events to the minimum so as to have adequate time for organising physical events with the targeted stakeholders coming from the low activity countries.

The revised strategy for physical events proved to be instrumental in achieving the targeted objective, allowing the physical organisation of more than 14 events in years 2022 to 2023. These added to the 3 already achieved during the first year of operation ahead of the COVID restrictions, the achieved events were altogether 17 plus the final event in Brussels, which is more than the targeted total of 16 throughout the whole duration of the project. These are only the physical events, and to these we should add all the virtual events that were organised that added more meaningful collaboration with the targeted stakeholders including the ones coming from the low activity countries.

This Deliverable D5.5 gives all details of the two pan-European events in the period 2022 to 2023:

- The final event in Brussels on the 19th of June 2023 with the title **"Strengthening research collaboration opportunities Fostering EU Clean Energy   transition"**

- The final webinar of the consortium organised on the 28th of June 2023 with the participation of JRC, EERA JP for SG and SUPEERA project. The title of the webinar was **"EIRIE a knowledge collaborative platform in support of R&I**

6 Annex

6.1 List of Figures

6.2 List of Tables