PANTERA

Pan European Technology Energy Research Approach

Work Package 1

Project coordination and management

Deliverable 1.8

Final Project Progress Report

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Abbreviations

CSA	*Coordination and Support Action*
Del	*Deliverable*
DER	Distributed Energy Resource
DG ENER	*Directorate General Energy*
DOA	*Description of Action*
EERA	*European Energy Research Alliance*
EIRIE	*European Interconnection for Research Innovation & Entrepreneurship*
ENTSO-E	*European Network of Transmission System Operators for Electricity*
ERA SES	*European Research Area Smart Energy Systems*
ETIP SNET	*European Technology & Innovation Platform for Smart Networks for the Energy Transition*
EU	*European Union*
EUSEW	*European Union Sustainable Energy Week*
GA	*Grant Agreement*
HLUC	*High Level Use Cases*
IEA	*International Energy Agency*
IEC	*International Electrotechnical Commission*
IES	*Integrated Energy System*
ISO	*Independent System Operator*
ISGAN	*International Smart Grid Action Network*
JRC	*Joint Research Centre*
KPI	*Key Performance Indicators*
MS	*Milestones*
NECP	*National energy and climate plans*
PC	Project Coordinator
PO	*Project Officer*
R&D	*Research & Development*
R&I	*Research & Innovation*
RICAP	*R&I status and Continuous gAP analysis*
S3P or RIS3	*Smart Specialization Platform*
SG	*Smart Grids*

SWOT	*Strengths, weaknesses, opportunities and threads*
TCP	*Technology Collaboration Programmes*
T&D	*Transmission & Distribution*
WG	*Working Group*
WP	*Work Package*
WT	*Working Team*

Executive Summary

The purpose of the Technical Report 3 document is to provide a detailed description of activities of the PANTERA project from M37 to M54, the work completed as well as the activities planned in support of the EIRIE platform through post project activities of the members of the consortium.

During the period 1st January 2022 to 30th June 2023, substantial technical, scientific and dissemination activities have been initiated with all pending work completed, including all remaining 18 deliverables and two milestones. This notable progress has been achieved thanks to the active involvement of all PANTERA partners in the project & foreseen activities, their close collaboration, and the efficiency of the established consortium monitoring and management procedures. The work plan has been structured to allow a logical progression of the needed activities, to closely follow the objectives, and aligned with the methodology proposed in the Description of Action. For improved coordination and coherence, the activities of the PANTERA project have been categorized under the main three functions of the project: the platform, the regional desks and the working teams while keeping the structure of WPs and the foreseen efforts as described in the Grant Agreement.

To this effect all work packages continued their activities constantly contributing to these three functions as follows, in addition to the coordination responsibilities that WP1 has undertaken, led by the team of the Coordinator:

- EIRIE(PANTERA) platform: WP2, WP3, WP7, WP8, WP5
- PANTERA Regional Desks: WP2, WP4, WP6, WP5
- PANTERA Working Teams: WP2, WP3

The adaption of this approach has constantly been evaluated to make sure that the targeted objectives of the PANTERA project are addressed, aiming to achieve a working environment through which the effort put in raising the activities of the low activity countries to a direction of being more sustainable, is constantly enriched through the adapted mode of working and externally triggered collaborations.

As already indicated, the above identified important functional activities are the basis of the Pantera Process constantly supported by the activities of all work packages during the project and complemented with external support where needed to substantiate their long-term sustainable future. To this effect working relations have been pursued and grown to a satisfactory level with the following:

- JRC and DG Ener have agreed to a formula of supporting the operation of the interactive multifunctional platform EIRIE by hosting it on their servers and provide a service contract through the services of DG Ener to support and operate the platform following the completion of the PANTERA project. This activity has been unfolded during the work of the project and the EIRIE platform has strengthened its presence for hosting knowledge, information and data of projects and the R&I community (www.eirie.eu)
- The S3P smart specialisation platform operated by the Commission has welcomed working relations with the PANTERA consortium to build and operate 6+1 Regional Desks that cover adequately all countries that are classified as low activity countries. The content that is hosted under the Regional Desks corner in EIRIE platform is complete and now available for wider use.
- ETIP SNET through the activities of Working Group 5 that has joined forces with the PANTERA consortium to organise and operate an appropriate number of Working Teams capable of addressing

important themes that will constantly feed information and knowledge to the interactive multifunctional platform. The outcome of these working Teams is reformulated into content, tools, functionalities and knowledge for the EIRIE platform.

- During this third and final phase of the activities of the PANTERA project and since limitations enforced during the COVID period, have been lifted, the consortium has agreed with the SUPEERA project to closely collaborate on workshops and nano workshops since the stakeholders targeted are largely the same. They aim the 13 widening countries, and anything related to the SET Plan process, hence highly related to the work of PANTERA. Using this common agenda, we have planned and organised 10 events with agendas that served both projects. The 10 common events have been co-organised with good success giving added value and impact to the planned objectives.

The core of this document, describes the overall status of the PANTERA project, including the progress achieved through the deliverables and milestones foreseen within the M37 to M54 of the project, and the main results achieved under technical, scientific, and dissemination & communication perspectives. The progress achieved towards the projects' objectives are also discussed in detail with reference to individual Work Packages (WPs), which have been active during this final period of the project.

All 41 deliverables have been submitted to the satisfaction of the Project Officer. As for the milestones' status, all 8 have been achieved in line with what was expected. As for dissemination and communication activities, the PANTERA project was present outreaching several international scientific events, engaging to a good level on networking and dissemination core activities.

Based on the extensive surveys and interactive sessions of the previous reporting periods, partners completed the designing and development of the functionalities and tools that need to be provided by the EIRIE platform creating knowledge. Through this process, they fine-tune and further enhance the envisaged functionalities of the previous reporting periods, so as to ensure the current status of the multi-functional platform that offers a wealth of services to the EU Smart Energy Systems R&I stakeholders and can potentially be established as a central reference point and one-stop-shop for knowledge and information at EU level. Regarding the connection with other owners' platforms, projects and other initiatives (JRC, CORDIS, ETIP SNET, BRIDGE, EXPERA, ASSET, Mission Innovation, EPRI) that would feed EIRIE, partners have mostly been completed hence, integrating them with EIRIE living only EPRI for further work since it was not possible to complete during the duration of the project due to delays from the side of EPRI.

Number of visitors (y-axis) daily to the EIRIE platform over June 2023

During this period, EIRIE has grown stronger with 295 active users and daily connections that enrich content for the benefit of connected users. This is depicted in the histogram revealing rich activity on the platform that has grown satisfactorily from January 2022 to June 2023.

Moreover, this document also describes the activities planned by the

members of the consortium for the post project period to keep the healthy operation of the EIRIE platform.

Finally, a critical assessment of the project progress is presented, by describing the risks already identified during the last period of the project with the corresponding status and corrective actions taken. The progress of each WP and the effective activity of the related WP team with reference to this project period is also assessed against a series of internal Key Performance Indicators, by considering both technical and organizational aspects. The activity recorded reveal positive results which are encouraging in meeting all the targeted objectives of the project.

1 Introduction

The main objective of PANTERA project was to deliver a multi-dimensional platform of pan European status and influence capable of leveraging coherence and trust as a pull towards enhanced R&I in energy systems centred around an integrated grid active and responsive. This platform developed (as described in more detail in section 2.3.2), along the envisioned concept linking available sources of knowledge, information, and data, thus forming a single point of reference for accessing related data. This platform brings together the attractiveness of successful partnerships being national, regional, or European building through them the will for enhanced adaption to areas and partnerships that can broaden active participation for mutual benefit. From the beginning the element of sustainable presence of the collaborative platform strongly influenced the design and approach that was adapted.

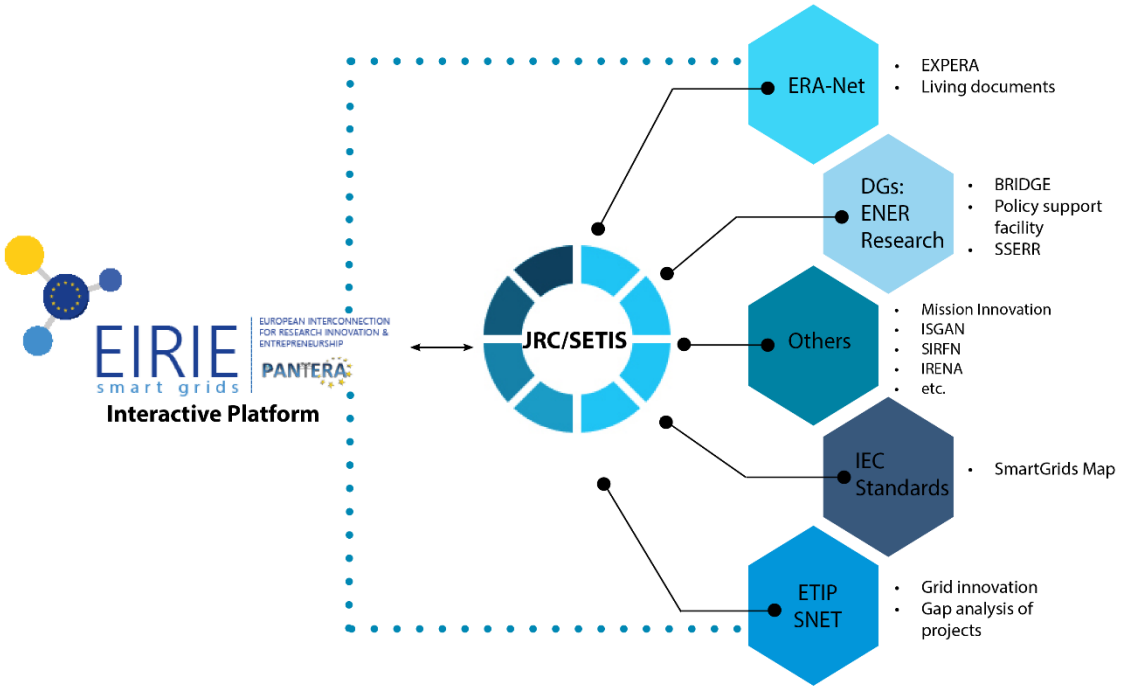


Figure 1: Connectivity of EIRIE with other knowledge sources

Through the collaborative work of the consortium, the EIRIE platform was developed with the support of the external contractor BILBOMATICA, integrating data from different platforms, associations and projects to connect the R&I community of EU to enhance collaboration, wider interest and use on the project results, avoid duplication and lost euros, strengthen the participation of all Member States in support of the fifth pillar of the Energy Union (RIC) and energy transition.

At the same time to boost impact and engage stakeholders and users, the PANTERA project acted through a plethora of workshops organized throughout Europe with emphasis on the low activity countries. Where collaboration was possible the planned workshops were a collective effort with partners like the SUPEERA project or conferences that were happening in the selected countries.

The project comprises eight work packages (WP), each of them with a specific measurable objective, as indicated below:

1. Ensure an efficient and smooth coordination of the scientific, organizational, and technical activities of the project, as well as its overall administration, covering overall project coordination, organizational, scientific and technical management, administrative, financial and contractual management, quality control procedures, data control and managing risk **(WP1)**
2. Identify and establish communication links with R&I stakeholders active in the fields of smart grids, storage and local energy systems including policy makers, standardisation bodies and experts in both research and academia representing the EU-27 energy system **(WP2).**
3. Develop an innovative top-down and bottom-up approach for effectively identifying the key challenges in accelerating R&I activities in low spending countries **(WP3).**
4. Formalize a governance structure capable of delivering targeted objectives that will bring under the same umbrella all active entities / stakeholders in the field of smart grids / storage and local energy systems to leverage synergies and maximize benefits **(WP6).**
5. Develop enhanced knowledge-sharing mechanisms that help identify, discuss and structure the key R&I challenges **(WP3,4,8).**
6. Build a pan-European multi-functional collaborative platform through which dedicated tools facilitate the collection of real data / results from on-going projects, build a useful shareable data repository, capable of supporting case studies of exploitable results, scenario building and local energy system analysis accessible by all interested stakeholders **(WP4,6,7,8).**
7. Organise dedicated workshops which facilitate exchanges of experience and capacities between members of R&I community in collaboration with already on-going activities aiming to wider participation, strengthen objectives and extent impact of achieved results **(WP5).**
8. Develop working groups/teams consisting of stakeholders depending on evolving R&I needs and topics identified in the project for generating tools, results, reports, white papers and offer support where needed **(WP6).**

The mid progress report covering M37-M54 of the project, is a cornerstone document for monitoring the project activities and evaluating the progress achieved towards the technical, scientific and dissemination objectives foreseen for this period in accordance with the Description of Action (DoA) as shortly described above.

At the end of month 54, all PANTERA WPs were completed, and all deliverables submitted. Very good progress has been achieved thanks to the active involvement of all PANTERA partners in the project and foreseen activities, their close collaboration, and the efficient monitoring and management procedures established by the consortium. To this effect, the work plan has been structured to allow a logical progression of the needed activities and has closely followed the objectives and methodology proposed in the DoA of the project. For improved coordination and coherence of the project the activities have been categorized under the main three outcomes of the project: the platform, the regional desks, and the working teams.

Between month 37 and month 54, the remaining 18 deliverables have been submitted out of the 40 deliverables foreseen for the duration of the project and all approved. As for the milestones' status, all 8 milestones have been achieved with three of them reported as completed by the 26th of January 2022. This meets all the requirements of the project and can be considered as highly responsive. As for dissemination and communication activities, the PANTERA project was present outreaching several international scientific events, engaging to a good level on networking activities and dissemination of core activities even under the pandemic restrictions that were prevailing for an extensive period within 2022. The project website and different social media channels have also been active and engaging, sharing all the project's latest news and achievements, with the stakeholders and general public. With EIRIE platform being operational for most of the period being reviewed, the visibility of the work of the PANTERA project has further strengthened offering

attractive possibilities to the R&I community of Europe with specific emphasis to the low activity countries.

The coordination and management activities, as well as most of technical activities, proceeded on time without any significant issues. As for dissemination and communication activities, PANTERA project has established a very satisfactory presence at national and EU level as will be presented in this document.

This Final Progress Report is designed in content to compliment the following:

- The Grant Agreement (GA) including its Annexes, and in particular the Annex 1: Description of Action.
- All the deliverables and related Amendments released during the period [M37-M54].
- All tangible results of PANTERA project stemming from the activities such as the ones related to the Platform, Regional Desks and Working Teams.
- The PANTERA website (*http://PANTERA-platform.eu/*), and PANTERA social media platforms (LinkedIn, Twitter, and ResearchGate) with reference to all aspects related to dissemination and communication activities.
- The EIRIE platform (www.eirie.eu) and its content.

1.1 Purpose and scope of this Document

This Technical Report falls within the scope of WP1 dedicated to the Coordination and Project Management, and describes the progress achieved by the PANTERA project during the months 37 to 54. The main objectives of this report are described below:

- Describing the overall status of the project at the end of M54, including the status of deliverables and milestones.
- Describing in detail the progress achieved under individual WPs.
- Describing all the activities during the reporting period, including the deliverables and milestones foreseen till the end of the project.
- Presenting a critical assessment of the project progress with reference to the timeline M37 to M54, through the identification of risks for each WP, with related status and planned mitigation measures.
- Assessing the progress of each WP and the effective activity of the related WP team against a series of internal Key Performance Indicators (KPIs), by considering both technical and organizational aspects.

1.2 Structure of the Document

In the following, the progress of PANTERA project and results achieved within M37 to M54 are described in Section 2. Finally, the critical assessment of the project progress with reference to the timeline M37 to M54 is presented in Section 4. Conclusions and outlook can be found in Section 5.

2 Progress of PANTERA project and results achieved from M37-M54

2.1 Overall status of the PANTERA project.

In month 37 all PANTERA WPs are active. The detailed PANTERA GANTT Chart with related details of the project is shown in Figure 2.

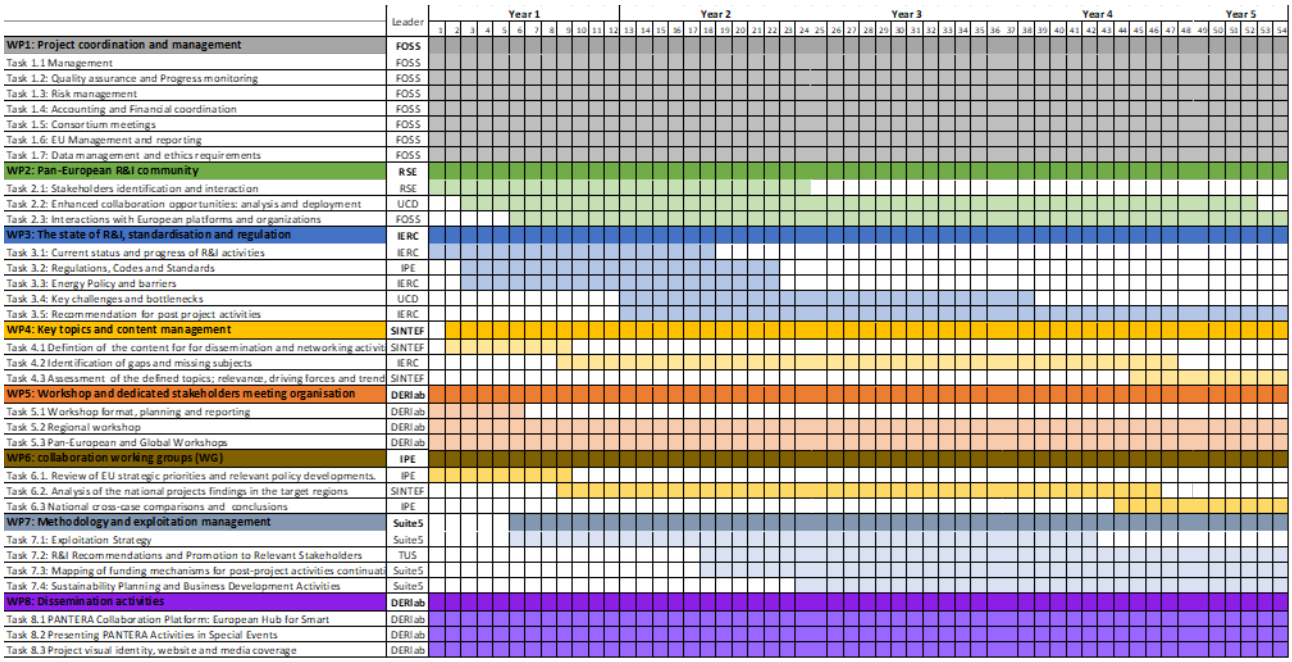


Figure 2: The PANTERA GANTT Chart

With specific reference to the time horizon of M37-M54, 18 deliverables have been submitted (see Table 1 for more details) and the last two milestones have been achieved (Table 2 for details) making a total of 41 deliverables and 7 milestones.

Table 1: List of deliverables released between M37-M54

No	Deliverable Title	WP No	Lead beneficiary	Type	Dissemination level	Due Date in Months
D1.8	Final Project Progress Report	WP1	1 - FOSS	Report	Public	54
D2.2	Report on Enhanced collaboration opportunities	WP2	8 - UCD	Report	Public	52
D2.4	Final Report on interactions with European platforms and organizations	WP2	3 - RSE	Report	Public	54
D3.4	Initial report on key challenges and bottlenecks	WP3	7 - IERC	Report	Public	38
D3.5	Roadmap to 2030	WP3	7 - IERC	Report	Public	52
D4.3	Final report on Identification of gaps and missing subjects	WP4	4 - SINTEF	Report	Public	47
D4.4	Assessment of the defined topics; relevance, driving forces and trends	WP4	4 - SINTEF	Report	Public	51
D5.3	Report on the outcomes of regional Workshops (final)	WP5	2 - DERlab	Report	Public	54

D5.5	Report on the outcomes of Pan-European and Global Workshops (final)	WP5	2 - DERlab	Report	Public	54
D6.4	Catalogue of potential solutions to overcome acceptance barriers for each country	WP6	5 - IPE	Report	Public	54
D6.5	Consolidated summary report on desk activities in the target regions - Final	WP6	5 - IPE	Report	Public	46
D7.1	Exploitation Strategy and Plan	WP7	6 - Suite5	Report	Confidential	42
D7.2	Report on the promotion of Key Mid- term R&I Priorities for Smart Grids	WP7	9 - TUS RDS	Report	Public	54
D7.3	Report on Appropriate Funding Instruments to ensure Project Sustainability	WP7	6 - Suite5	Report	Public	48
D7.4	Sustainability and Business Development Plan	WP7	6 - Suite5	Report	Confidential	51
D7.5	Report on Preliminary Business Development Activities	WP7	6 - Suite5	Report	Public	54
D8.3	PANTERA Collaboration Platform: European Hub for Smart Grids	WP8	2 - DERlab	Websites, patents filing	Public	51
D8.4	Report on Dissemination and communication Activities	WP8	2 - DERlab	Report	Public	54

Table 2: List of milestones achieved within M37-M54.

No	Milestone number	Milestone name	Related work package	Due date (in month)	Means of verification
1	M2	Analysis of the interaction with European platforms and organizations	WP2/T 2.3	M36	Advisory board members' interviews report.
2	M3	Key challenges in R&I activities in Low spending countries - Quantifying the key challenges and providing the way of possible solution	WP3/WP4	M36	Finding the R&I priorities by the countries based on their NECPs information included in the drafted report.

All deliverables were submitted in due time and no serious delays were mentioned. Regarding M2 and M3, 3 weeks delay has been noticed mainly due to the pandemic that affected the planned works time plan. For this reason, the analysis has been delayed as collectively decided by the partners to capture more data and information from all covered countries.

Both completed milestones have been reported as complete in the ECAS system and individual reports were drafted indicating the actions completed that render the corresponding milestone as complete. The individual drafted reports were made available to the Project Officer for his independent evaluation.

The last Amendment was requested to the Grant Agreement within M37-M54 requesting a six-month extension to allow the consortium to complete country specific activities that were limited due to the COVID

restrictions.

The requested amendment concerned the following changes:

- Changes of Annex 1 (description of the action)
- Change of the action's duration
- Change of reporting periods
- Changes of Annex 2 (estimated budget of the action)

These change(s) are necessary for the following reason(s):

Following a detailed analysis of progress made with the PANTERA project and the promised deliverables, we have identified noticeable shortcomings due to the pandemic difficulties. Two are the main difficulties that we have faced:

- Slow reaction from the owners of collaborative platforms that we have earmarked to connect with including internal developments within JRC in upgrading their systems to host seamlessly the EIRIE platform.
- Lack of physical events to engage fully stakeholders and the members of the Advisory Board. The consortium was taking corrective actions and results were succeeding to a high degree but still more was required to fulfil the targeted objectives.

For the above reasons, the consortium applied for a six-month extension to the duration of the project so as to shift the active period ending 31st December 2022 to end 30th of June 2023. All partners agreed with this project extension always staying within the current approved budget with some reallocation from areas that show lower activity as compared to the planned one, to areas where more resources are required due to the planned six-month extension. These were all internal re-allocations within the budget allocation of partners that do not affect external actors, hence there was no need for a formal amendment to the existing contract. Of course, always with full justification for the reasons of change that are presented in detail in this final technical and financial report of the project.

The amendment included a request to re-allocate surplus budget that was available in Other Direct Costs that was included in the budget of the project to cover travelling and workshops. This was the result of less physical events due to the COVID Pandemic and we proposed to use the anticipated surplus to cover additional personnel costs that were required due to the requested 6-month extension.

The Gantt chart has been duly modified together with the deliverable times of the then remained 18 deliverables. This shifting of deliverable times was dictated by the fact that the project was proposed to be extended by 6 months.

2.2 Progress under the coordination and project management perspective.

2.2.1 Progress achieved under WP1

The coordination and management of the PANTERA project is covered by WP1, which aims to ensure a successful completion of the project goals on time, within the limits defined by the budgetary framework, and adequate quality in line with the European standards.

WP1, led by FOSS and supported by all partners where relevant, consists of six tasks, which are:

2.2.1.1 Task 1.1: Management

This task focuses on the

- Work plan overview and work programme overview for each single WP
- Coordination of each WP Leader and supervision of each WP activity
- Schedule and deadline supervision

- Contract implementation and adherence to Consortium Agreements
- Control of the project outputs and the impacts
- Respect of due dates timely

More details on task 1.1 and the different conducted activities can be found in the D1.1[1]

2.2.1.2 Task 1.2: Quality assurance and Progress monitoring

This task focuses on the

- Quality assurance plan established (kick-off meeting) and the quality manager that was selected by the partners.
- Internal quality of the project: reporting, documentation control, etc
- Project quality evaluation and evaluation of results
- Progress monitoring through the performance indicators set (KPIs)

More details on task 1.2 and the different activities can be found in the D1.4[2].

2.2.1.3 Task 1.3: Risk management

This task addresses all issues related to anticipated risks. Risk identification and management is a continuous process and is performed throughout the entire project.

As a result, risk identification and management began by establishing key project targets and by making an initial identification of the key risk factors and their respective risk events within D1.2. Moreover, this task conducted an assessment and identification of the relevant management methods and tools that will be utilized to mitigate risk.

The key objectives of this task are:

- Review the essential project targets and establish the context of risk management.
- Early identification of the key risk factors and risk events.
- Establishing methods, tools, and project specific work program ISO/IEC 31010:2009, Risk management - Risk assessment techniques and ISO 31000:2009, Risk management - Principles and guidelines to be followed during risk identification and management. Based on the above the coordinator addressed the following:
  - Risk management analysis that was completed within the first 4 weeks of the project together with mitigating actions that needed to be enforced depending on the results of the risk analysis.
  - Drafted a Risk Managing Activity plan addressing all identified risks and corresponding mitigating factors.

More details on task 1.3 can be found in the D1.2[3].

2.2.1.4 Task 1.4: Accounting and Financial coordination

This task focuses on the

- Budget review and cash flow management
- Financial management and payments

[1] https://pantera-platform.eu/wp-content/uploads/2019/07/D1.1-Project-guidelines.pdf
[2] https://pantera-platform.eu/wp-content/uploads/2019/07/D1.4-Quality-Assurance-Plan.pdf
[3] https://pantera-platform.eu/wp-content/uploads/2019/07/D1.2-Risk-management-report.pdf

This task also focuses on the coordination and monitoring activities for the preparation of the periodic technical and financial reports delivered at the end of the third reporting period, as well as on the preparation of the third review meeting (RV3) with the EC, which is planned on the 13th of September 2023.

2.2.1.5 Task 1.5: Consortium meetings

Coordination of all project meetings and Coordination of meeting minutes/ decision registers is under this task. The meeting plan is formed as follows:

Partners of the project pursue virtual meetings regularly to have the appropriate interaction and the completeness of activities within the project as physical meetings were cancelled for most of the time due to the Covid-19 pandemic. Analytical minutes and reporting were uploaded in the ONLYOFFICE initially and SharePoint subsequently, shared repository:

- **Physical meetings:**

From M37-M54 only one physical meeting was organised during the physical workshop in Malta. The rest were organised virtually due to travelling restrictions.

- **Virtual meetings:**

Weekly teleconferences as Consortium Meetings have been happening within this time interval for coordinating the work in progress among the partners. The intensity of the meetings is high to overcome the inability for physical meetings by splitting content into three different regular meetings under the three trajectories of the project: Consortium as a whole including the issues related to the EIRIE platform, regional desks and Working Teams.

Advisory board activities and planning:

Under WP1, the task of managing the activities with the advisory board members is also included. The advisory board members below were invited and engaged to actively contribute to the PANTERA process objectives. A dedicated collaboration space and a newsletter was circulated for facilitating the work and the interaction of the advisory board members with the project consortium during the previous reporting period. Nevertheless, the related activities were re designed according to the holding context and the project needs taking also in consideration the pandemic situation.

Table 3 Advisory board members

a/a	Name	Surname	organisation
1	Mario	Dionisio	BRIDGE and DG Energy
2	Joao	Pecas Locas	INESC Porto
3	Michael	Huebner	ERA-NET SES
4	Gianluca	Fulli	JRC
5	Luciano	Martini	EERA JP for SG
6	Maria Elisa	Gil Bardaji	EERA JP Energy Storage
7	Norela	Constantinescu	ENTSO-E

8	Henry	Donchev	Ministry of Energy Bulgaria
9	Nikos	Hadjinikolaou	Cyprus
10	Johan	Driesen	European University Association
11	Maher	Chebbo	Digital Europe or ESMIG
12	Jochen	Kreusel	T&D Europe
13	Nikos	Hatziargyriou	DSO & EDSO4SG, Greece
14	Brian	Azzopardi	University of Malta
15	Christina	Papadimitriou	Assistant Professor TU/e

Along these lines, PANTERA partners have decided to perform a series of interviews with the AB members so that they are encouraged to get involved in the PANTERA process under the constant guidance and encouragement of the PANTERA consortium. This interaction of the AB members made them adequately conversant with the EIRIE platform its functionalities, the knowledge wealth and the collaboration capabilities that brings together the stakeholders of low activity countries with the rest of Europe. Getting the AB members conversant with the PANTERA process gave them the right inside to allow them to have a personal opinion on the targeted objectives and hence, help the PANTERA consortium through their mature opinion.

To achieve the above, structured interviews for each AB member has been designed to take place from M37 to the end of the project. Different questionnaires have been set up as a guide for each dialogue with the AB members. The questionnaire for each dialogue is split into three different sections, each focusing on the main trajectories of the PANTERA process: the EIRIE platform, the regional desks, the knowledge creation (working teams).

Through this exercise the views of the AB members were carefully harnessed and transferred into a publishable opinion article that can go public through the channels of the EIRIE platform or the website of the PANTERA project. Of course, the consent of the AB members will be sought prior to any opinion going public.

From the interviews conducted the following are presented that capture the responses that the consortium has managed to conclude with the respective members of the AB as a reflection of the achieved benefits.

Advisory Board member: Dr Christina Papadimitriou, Ass. Professor at Einthoven University of Technology in the Netherlands:

Question 1: How conversant are you with the EIRIE platform and the functionalities offered? Can we identify together the areas that you consider most important for the R&I community

I don't recall the full list of functionalities, but I value all of them as highly relevant with the R&I community needs. Especially the search engine for the projects and resources and the data repository.

Question 2: Let us concentrate on these 3 functionalities to understand them better and hear your opinion on what is achieved and especially what is missing if any to further enhance for future use. Suggested areas to concentrate on:

- ***Users and various roles to meet required attributes.***
- ***Content catalogued in Types with well selected METADATA***
- ***Repository Search Tool and arranged groupings***

Along the lines I have provided previously I can see of interest the following bullets for future development of these functionalities:

- Incorporating features like user recommendations, personalized notifications, or project matchmaking to enhance user engagement and facilitate relevant connections.
- Implementing a quality assurance process to validate and maintain the accuracy and consistency of metadata across content items.
- Allowing users to provide feedback or rate the quality and usefulness of content, helping to prioritize resources and improve content recommendations.
- Allowing users to save search queries, set up alerts for new content matching specific criteria, and track their search history for easy reference.
- Implementing user-friendly navigation and filtering options within groupings to enable users to explore content based on their specific interests or needs.
- Exploring the use of data visualization techniques or interactive maps to provide a visual representation of content distribution and aid in data exploration and discovery.

By continuously enhancing these functionalities, EIRIE can improve the user experience and foster collaboration among users. The platform can benefit from user customization and intuitive navigation to ensure that the diverse needs of the R&I community are met, further enhancing its value and impact for future use.

Question 3: Collaboration among R&I community members is fundamental for achieving the high objective of leaving no one behind. Do you find our facilitation responsive and adequately functional?

This includes the offered capabilities of knowing the needs and the challenges of the R&I community: How do you think that the knowledge creation corner and the regional corner shall be shaped/exploited in the future for higher impact?

Yes, I found it responsive and adequately functional with a great future potential. The knowledge creation corner and the regional corner should be further shaped and utilized in a way that empowers the R&I community, promotes collaboration, and addresses the specific needs and challenges faced by community members. By providing comprehensive content, collaboration tools, context-specific information, networking opportunities, and platforms for collective problem-solving, the impact of EIRIE can be maximized in achieving the high objective of leaving no one behind and driving innovation in the energy systems domain.

Question 4: EIRIE has been developed using an agile, adaptable, and modular architecture capable of achieving the single point reference in knowledge for energy systems. How do you value this? How important it is for your work?

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. As an

example of the impact that EIRIE can have is as follows: Researchers are struggling to find validated data for their research activities. In case that they find them, they need a great deal of processing to be usable, exploitable, or combined together. On the other hand, EIRIE is offering this knowledge in standardized and universal way. Of course, knowledge is not only referring to data but to a lot more. The adaptability of EIRIE's architecture allows it to accommodate various energy system models, frameworks, and approaches. This flexibility can be advantageous in addressing different user needs, supporting diverse research areas, and **enabling customization based on specific requirements of the R&I community.**

Question 5: Naming EIRIE as the home for projects to make their published work visible and share their valuable results, how helpful you think this service will be to project consortia? To the R&I community at large?

I am highly convinced that EIRIE can serve as home for the research projects offering them great benefits. eNeuron project which I serve as the technical coordinator is already in good collaboration with EIRIE in sharing its outcomes. EIRIE can help the projects and the R&I community through the following ways:

Increased Visibility: By providing a centralized platform for publishing and sharing project results, EIRIE can enhance the visibility of projects and their outcomes. This increased visibility can attract the attention of potential collaborators, funders, and stakeholders who may be interested in the work, leading to new opportunities for partnerships and further research collaborations.

Knowledge Exchange and Collaboration: EIRIE can facilitate knowledge exchange and collaboration among project consortia and the wider R&I community. By making project results easily accessible, researchers and stakeholders can learn from each other's work, build upon existing findings, and identify synergies and potential areas for cooperation. This can foster innovation, avoid duplication of efforts, and promote the development of more robust and impactful research projects.

Dissemination of Best Practices: Sharing valuable project results through EIRIE can contribute to the dissemination of best practices and lessons learned. Researchers can highlight successful methodologies, approaches, and strategies that have proven effective in addressing energy system challenges. This information can guide future projects, inform policy decisions, and accelerate progress in the field.

Networking and Community Building: EIRIE can serve as a hub for networking and community building within the R&I community. Researchers, industry professionals, policymakers, and other stakeholders can connect, share ideas, and engage in discussions related to energy systems. This collaborative environment can lead to the formation of communities of practice, the exchange of expertise, and the establishment of new research networks.

Impact Measurement: EIRIE's platform can help project consortia and the R&I community in assessing and measuring the impact of research projects. By providing a centralized repository of published work, it becomes easier to track the reach and utilization of project results. This data can be valuable for project evaluation, reporting to funding agencies, and demonstrating the broader impact of R&I efforts.

Question 6: Looking to the future. Can you name an area that we should give more attention? Can you qualify?

The future outlook is that EIRIE remains up to date and enrich its content. To this end integrating AI (artificial intelligence) and ML (machine learning) techniques within EIRIE's architecture can unlock new opportunities to leverage data, improve decision-making, and enhance the overall functionality of the platform. This holds true especially for the living tools as maturity index tool. By harnessing the power of AI and ML, EIRIE can

provide users with advanced analytics, personalized recommendations, predictive insights, and continuous learning capabilities, ultimately advancing knowledge and driving innovation in the energy systems domain.

Advisory Board Member: Henry Donchev Energy Expert, Ministry of Energy of Bulgaria, Expert in International Cooperation Directorate, Bulgaria

Question 1: How conversant are you with the EIRIE platform and the functionalities offered? Can we identify together the areas that you consider most important for the R&I community?

The EIRIE platform provides specific information on Research innovation as well on general issues relative to the decarbonization of the energy sector. It is user-friendly easy to handle to exchange experience and information in specific scientific areas. The main most important areas are:

- Access to potential funding, which is crucial for the scientific communities in Central and Southeast Europe.
- synthesized information on the European decarbonization policy and the ways to achieving the decarbonization goals.
- info on specific needs and circumstances of the Member States.

Question 2: Let us concentrate on these 3 functionalities to understand them better and hear the interviewees views on what is achieved and especially what is missing if any to further enhance for future use. Suggested areas to concentrate on:

- ***Users and various roles to meet required attributes.***
- ***Content catalogued in Types with well selected METADATA***
- ***Repository Search Tool and arranged groupings***

Aside from deliverables, reports, best practices, use cases, regulations, standards and grid codes, the Repository search tool should provide access to a broader range of data, relative to the current status and long-term strategies regarding the achievement of the Green Deal goals throughout the EU, i.e. through the roll-out of smart grid and other innovative technologies relative to the demand-side management.

Question 3: Collaboration among R&I community members is fundamental for achieving the high objective of leaving no one behind. Do you find our facilitation responsive and adequately functional?

This includes the offered capabilities of knowing the needs and the challenges of the R&I community: How do you think that the knowledge creation corner and the regional corner shall be shaped/exploited in the future for higher impact?

A special focus should be put on the regional needs of the scientific communities, also in relation to their scientific and financial potential. The decarbonization goals stemming from the Green Deal are way too ambitious, especially when it comes to achieving those by the Member States of Central and Southeast Europe. The challenge in that context is considerably greater taking account of the capacity of those Member States for innovative solutions and state-of-the-art technologies. The knowledge creation corner in a regional context in that respect would be of crucial importance. A more intensive exchange of best practices in that regard would be highly beneficial.

Advisory Board Member: Dr Gianluca Fulli, JRC C3 Deputy Head

Question 1: How conversant are you with the EIRIE platform and the functionalities offered? Can we identify together the areas that you consider most important for the R&I community?

Over the recent months I regularly came across of issues in relation to the EIRIE platform discussing content, attributes, functionalities and services offered to the R&I community. I have seen glimpses of the platform but I did not have the time and the need to go deeper into the services offered and hence, I can confess that

I am not a user. However, I do know the discussions going within my department as regards its development and services offered and I can confirm that I see real value of promised services and offered deliverables till today. I can single out two important contributions that will be vital to the R&I community in Europe:

- The effort of connecting EIRIE to all other sources of knowledge in the field of energy and building a platform with the capabilities of acting as a single point of connection is of prime importance for building trust and interest in the R&I community for using it as the access point to their search for answers in the field.
- The versatility in hosting the results, knowledge, data etc of projects offering visibility and making them accessible to the R&I community is of crucial importance for building the research capabilities in the field in Europe.

Question 2: Let us concentrate on these 3 functionalities to understand them better and hear the interviewees views on what is achieved and especially what is missing if any to further enhance for future use. Suggested areas to concentrate on:

- ***Users and various roles to meet required attributes.***
- ***Content catalogued in Types with well selected METADATA***
- ***Repository Search Tool and arranged groupings***

Making EIRIE accessible, multifunctional, and interactive for users to have the capability for managing their own data in a structured standardized way is a real step forward for encouraging R&I community to connect and use. This will add to the usability of the platform offering the maximum to the user through its strong search engine, developed on a standardized metadata architecture that maximizes responsiveness to all users. Self-managing content can be very helpful through the effective use of roles that can safeguard quality of content. We have a long way to go for achieving this responsiveness of users, but it is the correct way forward and we should put the right effort to achieve it.

Question 3: Collaboration among R&I community members is fundamental for achieving the high objective of leaving no one behind. Do you find our facilitation responsive and adequately functional?

This includes the offered capabilities of knowing the needs and the challenges of the R&I community: How do you think that the knowledge creation corner and the regional corner shall be shaped/exploited in the future for higher impact?

I am not well acquainted with the functionalities described but reacting to the analysed architecture and the details of the planned services, I can only give my full support for achieving such services. I am convinced that following this route will give visibility to stakeholders coming from all corners of Europe and the visibility gained can only benefit us all. We as JRC will continue to offer our support for keeping these services operational, and will be ready to contribute to future enhancements that may arise.

Advisory Board Member: Dr Joao Peca Lopes, professor at INESCTEC in Porto Portugal

Question 1: How conversant are you with the EIRIE platform and the functionalities offered? Can we identify together the areas that you consider most important for the R&I community?

He has confirmed that he is well informed about the capabilities of EIRIE and he has got some of his students connected and using the offered services. Analysing the various offered functionalities, the professor has narrowed down as of critical importance the services offered of,

- Hosting project results for visibility and sharing out to all interested members of the R&I community in Europe.

- Building a collaboration area with all relevant information for building research consortia for addressing common objectives. This gives options to stakeholders and countries that are not available today, helping to raise interest and the platform that can facilitate effectively the process.

Question 2: Let us concentrate on these 3 functionalities to understand them better and hear the interviewees views on what is achieved and especially what is missing if any to further enhance for future use. Suggested areas to concentrate on:

- ***Users and various roles to meet required attributes.***
- ***Content catalogued in Types with well selected METADATA***
- ***Repository Search Tool and arranged groupings***

The openness and versatility of the EIRIE platform in adapting to the needs of the R&I community is welcomed, offering the possibility of real visibility to project consortia in managing their project results and future work. Quite often, project consortia were facing the problem of offering to their project results life visibility, considering the status as highly limiting in learning from others and continuing from where knowledge currently stands. For this reason, EIRIE offering a sustainable future with structured and standardized visibility of project results and outcomes can only be considered as a very positive step forward that will be highly welcomed and used. We are ready to work with you in this direction and our university will consider EIRIE as the home for promoting the results of our work and encourage our students to make good use of it.

Question 3: Collaboration among R&I community members is fundamental for achieving the high objective of leaving no one behind. Do you find our facilitation responsive and adequately functional?

This includes the offered capabilities of knowing the needs and the challenges of the R&I community: How do you think that the knowledge creation corner and the regional corner shall be shaped/exploited in the future for higher impact?

In our work collaboration is fundamental. For this reason, the services offered by EIRIE in enhancing the process and opening possibilities for R&I community coming closer together can only benefit us all. Knowledge creation is a collective effort and thus, getting it structured and organised in groups that have common interests and scope can only flourish and we will contribute to its success. In these early days, the benefits are not obvious but patient work forward in this direction can deliver and we are ready to contribute as we have already started the process between the three universities: INESCTEC of Portugal, TUS of Bulgaria and UCY of Cyprus.

Advisory Board Member: Myriam Gil Bardaji (EERA JP Energy Storage coordinator)

Question 1: How conversant are you with the EIRIE platform and the functionalities offered? Can we identify together the areas that you consider most important for the R&I community?

Question 2: Let us concentrate on these 3 functionalities to understand them better and hear the interviewees views on what is achieved and especially what is missing if any to further enhance for future use. Suggested areas to concentrate on:

- ***Users and various roles to meet required attributes.***
- ***Content catalogued in Types with well selected METADATA***
- ***Repository Search Tool and arranged groupings***

Question 3: Collaboration among R&I community members is fundamental for achieving the high objective of leaving no one behind. Do you find our facilitation responsive and adequately functional?

This includes the offered capabilities of knowing the needs and the challenges of the R&I community: How do you think that the knowledge creation corner and the regional corner shall be shaped/exploited in the future for higher impact?

Having discussed shortly all the above 3 questions Myriam responded as follows:

As EERA JP Energy Storage coordinator, Myriam finds very important to raise attention on countries less involved at EU level and welcomes the efforts of the PANTERA project in this direction.

Myriam, considering what has been discussed during the first meeting with PANTERA advisory board members, is very keen to start a collaboration between EIRIE and the StoRIES (https://www.storiesproject.eu) project sharing data about the research infrastructure making them available through EIRIE to the R&I community in Europe. This has been inserted in the to do list of PANTERA and it is expected that someday soon, the project StoRIES will be linked to EIRIE and it could publish its results and information about energy storage research infrastructure.

Besides, Myriam stressed the importance of the EIRIE platform as a search tool. Nowadays huge quantity of information has been produced and several research facilities are available, however in many cases it is hard for a researcher to find what is looking for, even if it exists and it is available. Therefore, the EIRIE search functionalities need to be exploited at best making easier to find research results through appropriate filters and to find research infrastructures for specific needs.

Myriam suggested also that a relevant feature of EIRIE could be to collect the deliverables of the EU projects, to give the possibility to search within documents as well as to act as a searchable repository for results and data from EU projects.

During the meeting it was also discussed how to clearly show to the organisations coming from target countries which are the benefits of collaborating at EU level, for example within an EERA JP. Myrian, citing the experience of the JP Energy Storage, said that setting up a mobility scheme for researchers could be a good point to attract interest. However direct contacts and dedicated effort is indeed needed to get the interest of organisation from countries so far not so present at EU level. Myriam also mentioned the awards that the JP is organising that gather good interest, especially from PhD students that have the possibility to present their work, and, if awarded, can get an open access publication possibility granted by the JP.

During the discussion it was also suggested to use the collaborative space of the EIRIE platform to prepare shared replies to open EC consultations or event to facilitate consortia building in reply to European open calls.

2.2.1.6 Task 1.6: EU Management and reporting

This task focuses on the:

- Regular update (by email to project officer)
- Discussion of criticalities and problems with EU
- Grant reporting (progress, interim and final reports)
- Managing the Grant Agreement proceedings
- Amendments filing
- Deliverable reporting to EU

2.3 Progress towards the overall objectives.

In the following points, the overall status of the scientific activities carried out by the PANTERA Consortium and the progress achieved under individual active technical WPs from M37 until M54 are presented.

2.3.1 The PANTERA Process

Through a careful evaluation of the targeted objectives of the PANTERA project aiming to achieve a working environment through which the effort put in raising the activities of the low activity countries to a direction of being more sustainable, a conscious decision has been taken by the consortium, to develop the PANTERA process by introducing the following main functions:

- Design, develop, populate, and operate a multifunctional, interactive platform (EIRIE)
- Develop and operate a representative number of Regional Desks
- Organize and run an appropriate number of Working Teams covering important areas that can be a constant source of information and knowledge to the multifunctional platform.

Hence, irrespective of the targeted objectives of each and every work package, the PANTERA project has amalgamated into the above three main functions constituting the PANTERA process.

The above identified important functional activities were constantly supported by the work of all work packages during the project and complemented with external support where needed to substantiate their long-term sustainable future. To this effect working relations have been pursued and grown to a satisfactory level with the following:

- JRC and DG ENER have agreed to a formula of supporting the operation of the interactive multifunctional platform by hosting it on their servers and provide a service contract through the services of DG ENER to support and operate the platform following the completion of the PANTERA project.
- The S3P smart specialisation platform operated by the Commission has welcomed working relations with the PANTERA consortium to build and operate 6+1 Regional Desks that cover adequately all countries that are classified as low activity countries.
- ETIP SNET through the activities of Working Group 5 has joined forces with the PANTERA consortium to organise and operate an appropriate number of Working Teams capable of addressing important themes that will constantly feed information and knowledge to the interactive multifunctional platform.

2.3.2 EIRIE (PANTERA Platform)

As indicated above the content and functionalities of the developed EIRIE platform are enriched with work coming through the work of all the Work Packages of the PANTERA project and details of this work will be presented in the respective chapters of this period report. However, the overall architecture of the EIRIE platform and related important features are introduced in this section. As already indicated, EIRIE has been developed to be an interactive multi-functional platform that is up and running and substantially enriched during this reporting period and it aims at extending connectivity with the R&I community of EU to enhance collaboration, strengthen the participation of all Member States in support of the Energy Transition and improve the participation of low-spending countries in R&I activities in the area of Smart Energy Systems.

To this end, it offers a bundle of services and functionalities towards ensuring that EIRIE is established as a central reference point of knowledge, aiming to take on board the existing entities and activities in Europe, expanding on them to capitalise on synergies and bring in the interests of low spending R&I countries.

2.3.2.1 Integration with other platforms

EIRIE integrates with the most popular platforms in the area of Smart Energy Systems, such as the Smart Electricity Systems and Interoperability Platform of the Joint Research Centre of the European Commission, the Knowledge Sharing Platform of ETIP SNET, the BRIDGE portal, the EXPERA platform of ERANET Smart Energy Systems, the Mission Innovation Platform, the EU Research Results Platform (CORDIS), the DERlab Research Infrastructures database and the ASSET platform offering training material in the area of smart grids, to offer a wealth of services and functionalities that span 4 distinct, but also interrelated areas, as follows:

- Project Evaluation and Reporting Services, involving simple analytics and visualizations over aggregated project-relevant data, giving a quick snapshot about the status quo of R&I activities per member state, technology type, involved stakeholders, etc. EIRIE also offers access to Project

Evaluation results with regards to their Maturity Index. Finally, EIRIE offer services for getting access to R&I Facilities and Infrastructures for validating research results.

- Stakeholder Community Building, with emphasis given on the operation of 6+1 Regional Desks, towards fostering discussion and collaboration between regional stakeholders and increasing awareness on regional activities towards increasing R&I funding in the area of Smart Energy Systems
- Sustainability and Collaboration Services towards knowledge co-creation, through living/ online collaborative documents that capture the joint know how of the PANTERA community.
- Data Search Services, capitalizing on a strong and versatile search engine (classic filtering and list-based results), complemented with Data Linking functions towards facilitating discovery and identification of relevant information that might be of interest to the EIRIE community stakeholders.
- Additional Services, including:
    - Matchmaking Services for fostering and enhancing collaboration between R&I stakeholders and reinforcing participation of low-spending countries in funded activities,
    - Training Services, for educating stakeholders on Smart Grids R&I relevant topics, through tertiary (reports, best practices) and vocational (webinars) education,
    - News and Events services, for keeping the EIRIE community members up to date with relevant information and events of their interest.

The development of the interactive multifunctional platform EIRIE (European Interconnection for Research Innovation & Entrepreneurship) has progressed well during the last 18 months and has strengthened its presence giving access to all R&I stakeholders in the EU as visioned. Connectivity with other platforms as indicated in the visionary schematic of Figure 1, has progressed well and valuable data, information and knowledge is already flowing among the connected platforms: CORDIS, JRC, ETIP SNET, BRIDGE, DERlab, Mission Innovation, EXPERA and ASSET.

2.3.2.2 Hosted on JRC Smart Electricity Systems

Following extensive discussions with JRC final agreement was reached for EIRIE to be hosted on the Smart Energy System servers of JRC. This agreement brings EIRIE within the Smart Energy System applications of JRC and together grow into seamless means supporting the R&I community of Europe. Among the applications that already exist in the Smart Energy System area of JRC are the following:

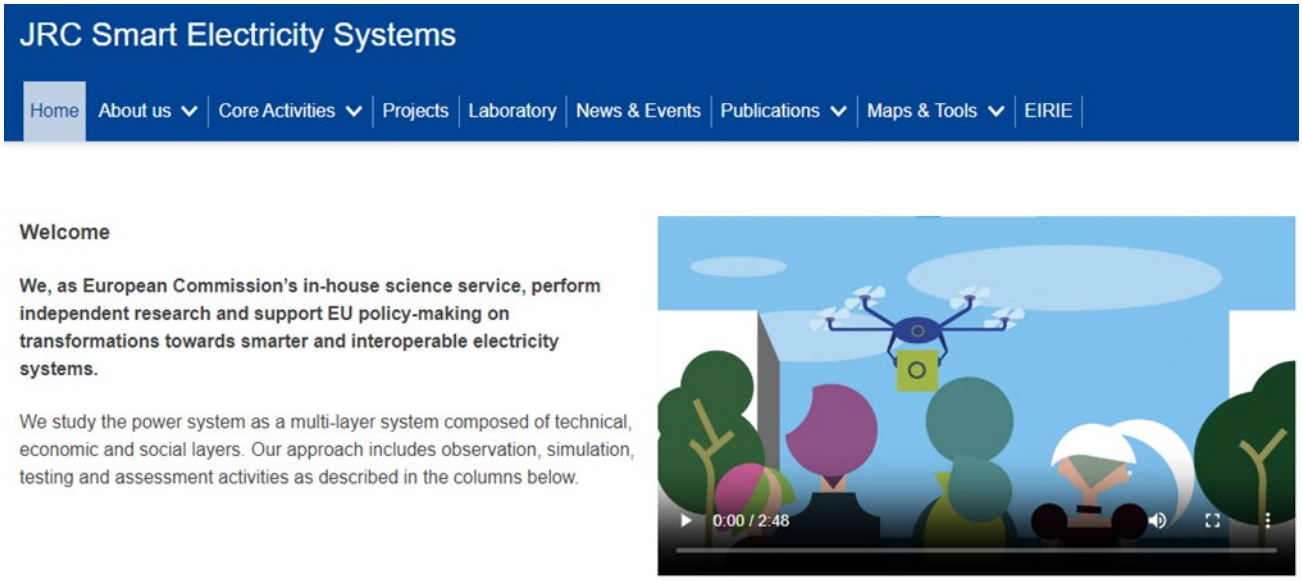


Figure 3: EIRIE is hosted in the JRC Smart Electricity Systems

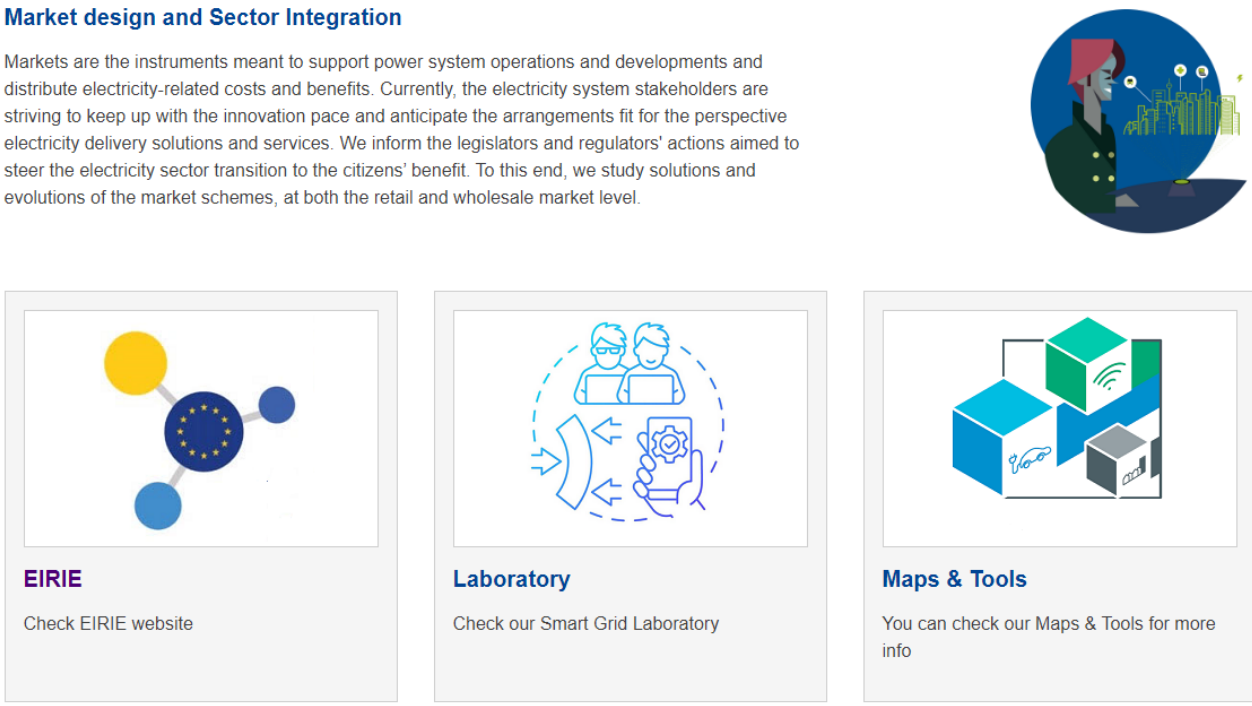


Figure 4: Applications of JRC within the Smart Energy System

Moreover, the major issue of sustainability of the EIRIE platform has been addressed. Agreement was reached with DG ENER to extend the support to the EIRIE platform beyond the PANTERA project through a dedicated Service contract that can take over from the PANTERA consortium on completion of the 4.5-year contract.

2.3.2.3 Design principles of the EIRIE platform

Over the past 18 months, we worked hard as the consortium of PANTERA to pass on the following benefits coming through the EIRIE platform to all Europeans:

- An easy access to information on potential funding and consortium building
- A central point for collaborating on the issues relevant for the energy sector.
- An active role in the community and a support in providing input to European policies.

How can EIRIE play this bridging role?

- EIRIE will help bridge the gaps that currently exist in the energy field in Europe between Member States, by bringing together the attractiveness of successful partnerships being national, regional, or European.
- EIRIE will act as the meeting point of all actors active in the fields of smart grids, storage and local energy systems in R&I from all Europe and will contribute to the achievements of the envisioned carbon-free system of 2050.

For EIRIE to be able to offer the above services, careful design issues have been addressed using the expert services of the hired contractor BILBOMATICA offering the following vision that made the above possible:

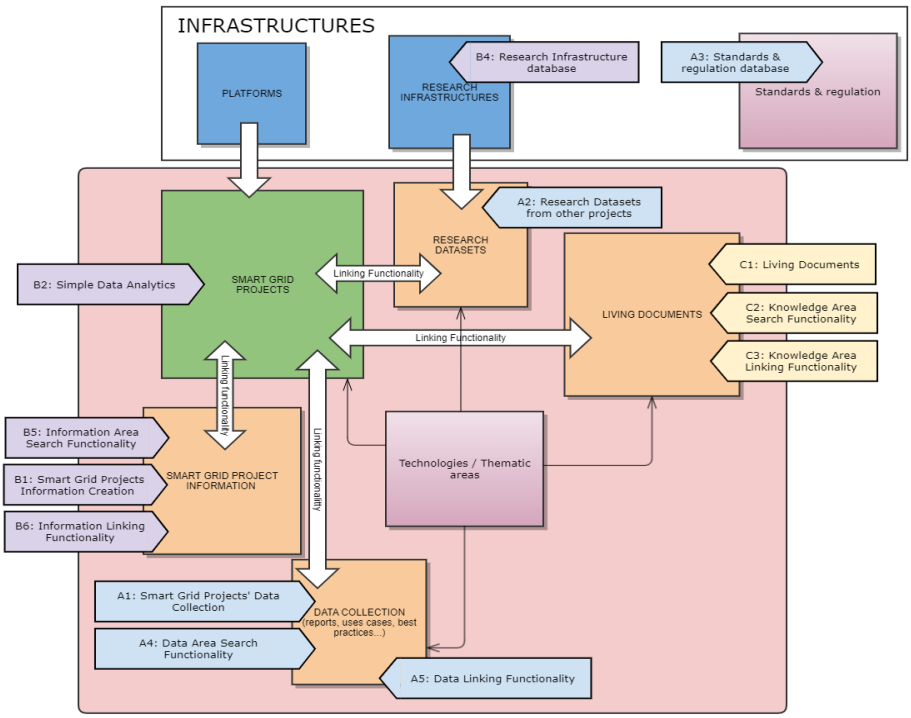


Figure 5: Visionary architecture of the EIRIE platform

Managing data, information and knowledge is critical to the functioning of the EIRIE platform that promises to be the single point of reference for project reporting, data harnessing and managing, information and knowledge repository with advance features for storing and retrieving for giving advance services to all R&I community of Europe.

For this reason, we have given careful attention to the EIRIE data model to be smartly structured and universally understood via a taxonomy that is agreed with the wider circle of stakeholders.

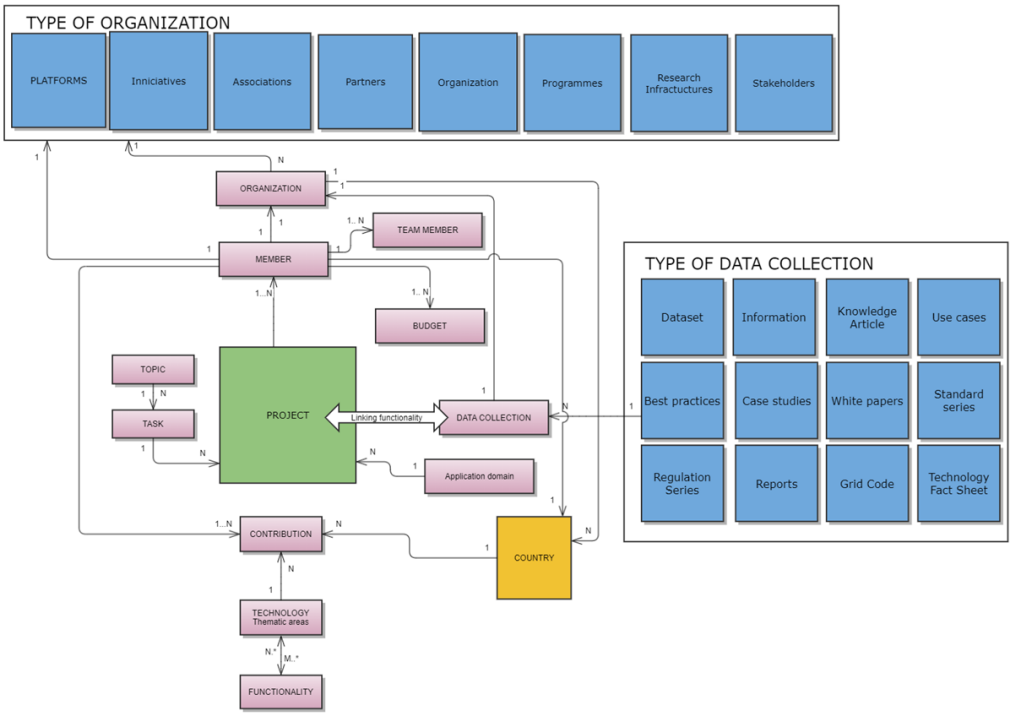


Figure 6: EIRIE Data Model

The agreed data model is presented in Figure 6 indicating distinctly the areas that are critical in building a repository that is flexible, expandable, and rich in content to meet the needs of stakeholders throughout Europe.

To build this open data base and being accessible to other sources of data, information, and knowledge, we needed to develop with the support of BILBOMATICA this universal connectivity which is depicted in the schematic below:

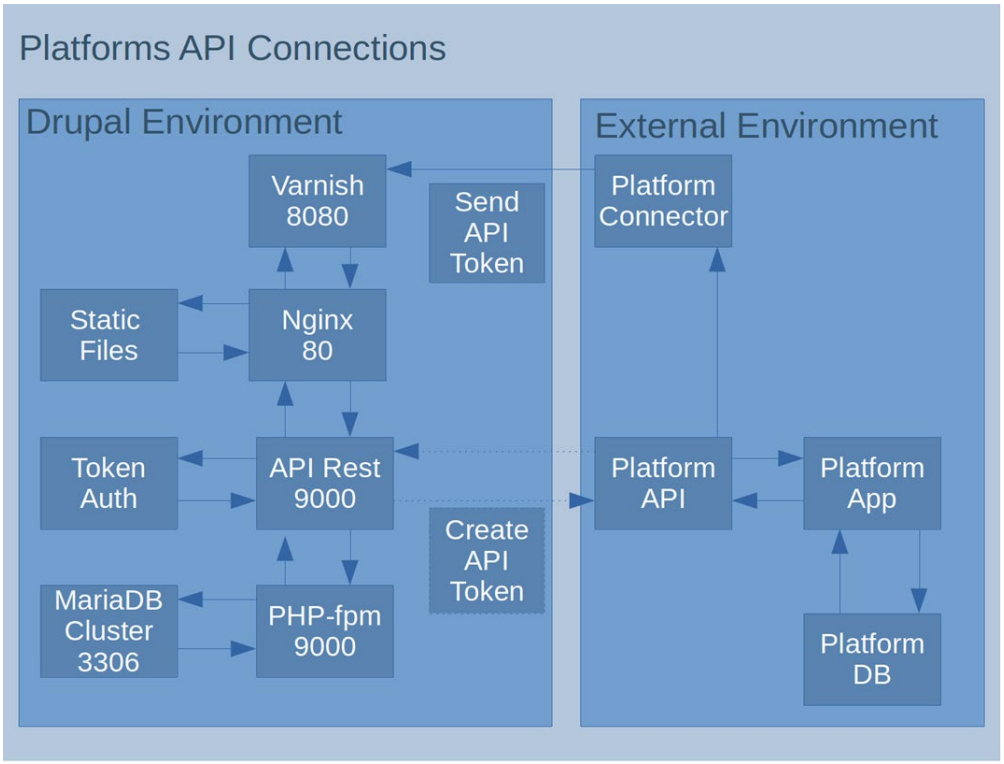


Figure 7: EIRIE API for connecting with other platforms

The developed solutions can safely connect the platforms throughout Europe using a tailored made Restful Web Service API following the requirements of the technical services of JRC. In short, this application depicted above offers the following connection capabilities that have been used successfully with the platforms that connectivity has been secured:

- For the access to the Drupal data from other systems, we are implementing a Restful Web Service API.
- This Technology permits access from practically every language and services. It becomes a bridge between different platforms and applications.
- Drupal 9 has a way to expose endpoints to manage the Drupal content types.

It is EIRIE's vision to create, through this multi-functional collaborative platform, a reference operational point to unify European activity, incentivize further investments in smart grids and support access to exploitable results that will enable further cooperation and bridge the existing gaps.

The welcome page in Figure 8 gives the message that EIRIE is here to support and accessible by all R&I community of Europe.

Figure 8: EIRIE landing page

2.3.2.4 Login and Roles

A lot of importance was given in developing the platform on the login approach and the roles of users to achieve the security in access and data management required. The roles identified as required and were implemented till today are the following:

- Login through EU-Login in the following link:

  https://ses.jrc.ec.europa.eu/eirie/en
- **Roles:** Different Roles to manage the content.
  - Role1: Users from other platforms we integrate with
  - Role2: PANTERA project Users / Platform users / Partners
  - Role3: External users (i.e. 'EU Research Community')
  - Role4: Projects
  - Role4: Content Manager
  - Role5: Platform Administrator (Super User)

2.3.2.5 Search tool

EIRIE offers a strong and versatile search engine (classic filtering and list-based results are featured). Through this functionality one can search and find fine-grained and targeted information available in the EIRIE platform and referring to project-related results, like project deliverables, reports, best practices, use cases, regulations, standards, and grid codes.

Figure 9: EIRIE Search Tool

In line with the vision requirements of the PANTERA project, the EIRE platform was developed with a strong search tool equipped with the following components:

- Area of selection: projects, organizations, and data collections
- Quick access to: “research infrastructures” and “standards and regulations”;
- Advanced search forms for each category
- Faceted searches
- Paginated lists

2.3.2.6 News, events, and newsletter

The News section aims to inform users about recent EIRIE publications or upcoming workshops/conferences. EIRIE selects information provided in the News section according to its relevance to the EIRIE. EIRIE welcomes suggestions to insert a particular news (event, publication) through a dedicated filling form:

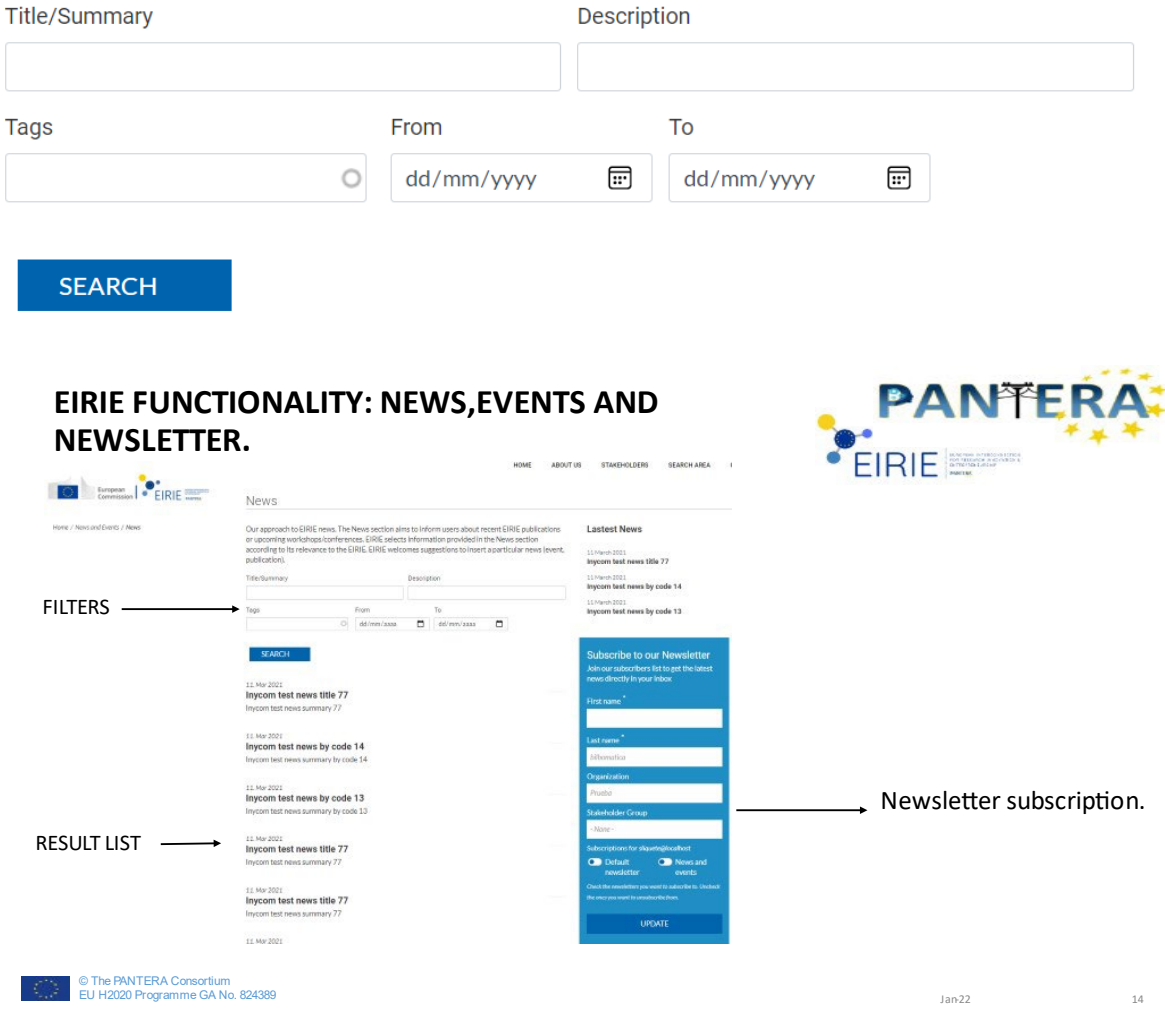


Figure 10: EIRIE News, Events and Newsletters

2.3.2.7 Education and training

We are in the midst of the energy transition, meaning **technological solutions are changing fast**. This, together with the need to offer **lifelong education** and **vocational training** to practitioners at all levels, to keep the quality of offered services to the highest degree possible, explain the necessity to build the appropriate educational and training material and make it accessible to all.

To this effect the EIRIE platform is already collaborating with two projects offering worthwhile educational and training material to make it accessible to all users of the EIRIE platform:

1. *ASSET project*
2. *EDDIE project*

More will be added as they are made available and accessible.

Figure 11: EIRIE hosting educational / training courses

2.3.2.8 Data Analytics - Heat map

In the heat maps below, you can view a selection of the distribution of Smart Grid/ Smart Energy Systems projects awarded across the EU through National, Regional and EU programmes.
Apart from the visualization of aggregated project data, the map offers you an interactive environment that allows for further drilling in and analysing the project-related information available in EIRIE with the use of a wide variety of filters (e.g. maturity level, application domain, technology deployed, etc).

Through the map you will also be able to further analyse project-related information with the use of dedicated bar diagrams appropriately correlating pairs of data elements such as:

- Number of projects per technology deployed in each country.
- Number of projects per stakeholder type in each country.
- Funding amount per technology deployed in each country.
- Funding amount per stakeholder type in each country

Heatmap visualizations offer an alternative analysis means for visualizing the data and demonstrating key figures for each country (number of projects, funding), while allowing for further analysis through the utilization and combination of a variety of filtering criteria.

Projects funded heat map with size of bubble indicating the relative number of projects funded.

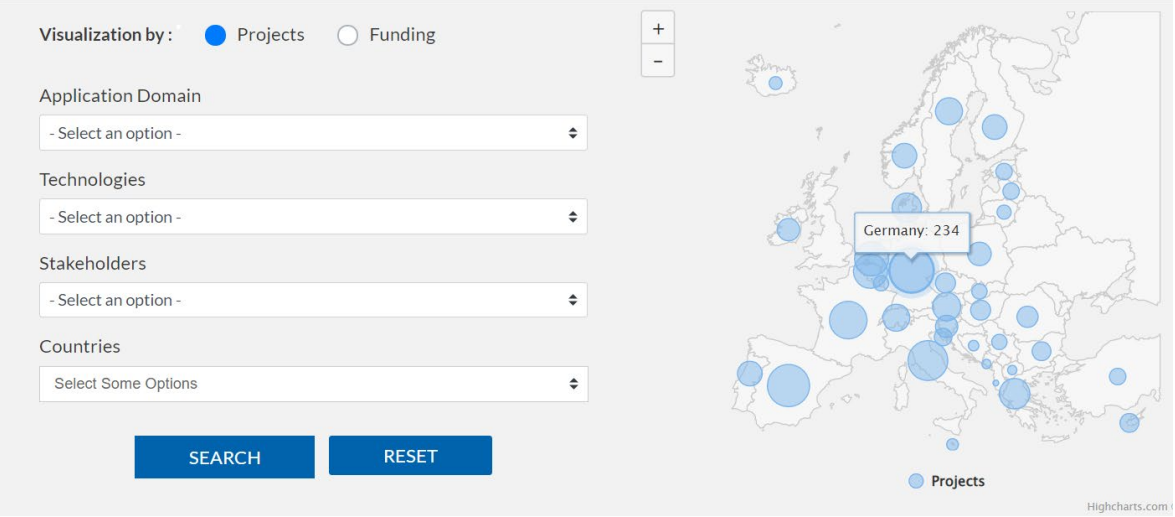


Figure 12: Projects Heat Map of EIRIE

Funding heat map with size of bubble indicating the relative funding received by stakeholders of the specific country for projects

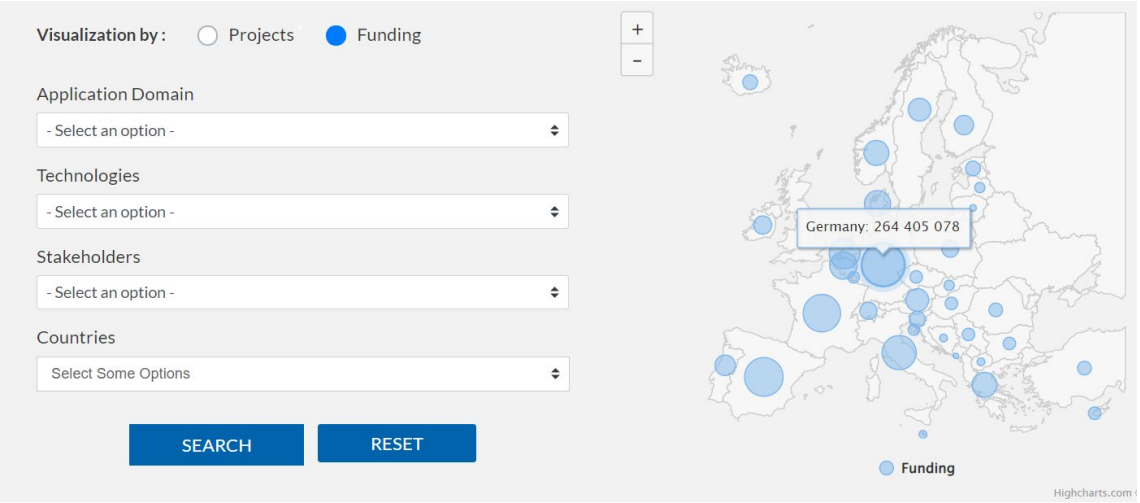


Figure 13: Funding Heat Map of EIRIE

2.3.2.9 System Maturity quantification tool and evaluation of R&I needs of the smart grid

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. As such, an analysis approach for assessing progress in developing major functionalities of the smart grid is needed to be well established and adopted. This way not only the next steps of development shall be better defined but also the needs of the system will be better identified.

A solid methodology for quantification of the maturity level of the High-Level Use Cases (HLUC) of the smart grid paradigm as they are defined in the European Technology and Innovation Platform Smart for Energy

Transition (ETIP SNET) roadmap has been defined. The first step of the process is the evaluation of the advancement of the technologies, then the level of the maturity of the HLUC that will support the integrated grid of the future and lastly the smart grid system readiness as a whole. Through this evaluation, the needs for future research can be identified and hence, the funding of the European Commission (EC) has a quantified direction to go. **Based on this methodology a tool has been developed that can be utilized by all users through the EIRIE platform. The intention is making it available accessible by the R&I community for evaluation, quantification and building useful reports.**

Three metrics are used to evaluate the smart grid system maturity quantification. In figure 14, the three metrics that are used, are shortly presented.

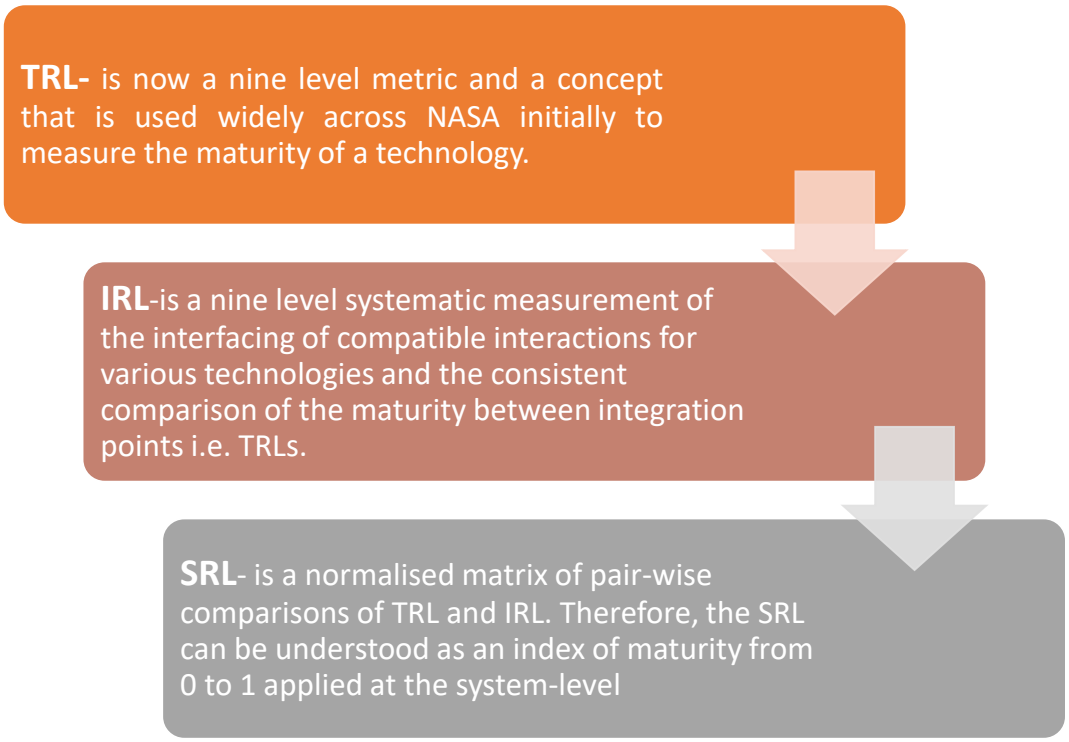


Figure 14: The three metrics formulation for the System maturity quantification tool

The process entails that 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 and the remaining metric, SRL, is computed by applying the designed evaluation method taking under consideration both TRL and IRL.

The R&I Roadmap 2020-2030 of ETIP SNET is focused on RD&I activities in smart electricity grids, interconnected with heat and gas systems covering also storage and conversion technologies. In specific, the ETIP SNET R&I Roadmap 2020-2030, together with its planned detailed Implementation Plans, addresses the framework in which the European energy system shall develop on the road to achieving the goal of full decarbonization by 2050. In particular, it focuses on the intermediate step of 2030, identifying the system HLUC to be developed and considers the related tasks that need to be solved during the next decade to enable the HLUC and to prepare for the further steps toward 2040 and 2050. The evolution of the systems is based on the forming technologies that are listed in Figure 15 and form the basis for tracking progress through projects.

Group of Technologies	№	Technology/Systems
Integrated grid	IG1	Flexible ac transmission systems (FACTS)
	IG2	Models, Tools, Systems for the operation analysis, control and the development of the integrated grid including cost elements
	IG3	HVDC
	IG4	Forecasting (RES)
	IG5	Asset management
	IG6	Outage management, fault finding and associated equipment (including protection)
	IG7	Equipment and apparatus of the integrated grid
	IG8	Equipment, sensing, monitoring, measuring for analysis and solutions and control
	IG9	Advance distributed control
	IG10	Feeder auto-restoration / self-healing
	IG11	Smart metering infrastructure
Customers and market	CM12	Distributed flexibility, load, forecasting, management & control and demand response including end devices, communication infrastructure and systems
	CM13	Smart appliances
	CM14	Building control, automation and energy management systems
	CM15	Electric vehicles
	CM16	Energy communities
	CM17	Lighting
	CM18	Electricity market
Storage	St19	Electric Storage
	St20	Thermal Storage
	St21	Power to X
	St22	Pumped storage
	St23	Other Storage
Generation	Ge24	Flexible generation
	Ge25	Solar including PV & Concentrated Solar Power
	Ge26	Wind
	Ge27	Hydropower
	Ge28	Hydrogen & sustainable gases
	Ge29	Other generation
Digitalisation, Communication and Data	DCD30	Communication networks including devices and systems for signals and data connectivity and solutions
	DCD31	Digital Twins
	DCD32	Artificial intelligence
	DCD33	Data and cyber security including repositories

Figure 15: The approved list of technologies that constitute the integrated grid

The development of technologies serving the energy system of 2030 is a decisive need calling for research, small-scale pilots, large-scale demonstrations and deployment of products and services leading to replication and scaling-up to realize real-world implementation. As can be appreciated, the real system is composed of technologies and interconnected sub-systems communicating and delivering the HLUC of the grid. Projects deliver these developments and thus the evolution of technologies, solutions and systems are the valuable deliverable of projects that respond to calls for contribution. This linking chain of evolution is of critical importance to clarify since on this sequence and interdependence we can develop the sound methodology that can be universal and responsive starting from the evaluation of project results and leading to sound quantification of research needs. Hence, what is of critical importance is keeping track of technologies / solutions / systems advancement since through this, the quantification of the maturity of HLUC can be deduced following a universal approach and thus the whole smart grid system readiness can be evaluated. As can be appreciated topics and sub-topics, referred also in the Roadmap of ETIP SNET, are the starting point in forming the content of calls through which projects spring but they do not contribute in any way to the development / maturity of technologies / solutions / systems which form the real world of the interconnected grid.

In consequence, as the maturity of these HLUC are quantified, the research needs, and thus related research topics and funding schemes can be decided to support the emergence of more projects that will target further development of technologies / solutions / systems. In other words, research topics are the result of the identification of the R&I needs for required technical advancements for specific technologies / solutions / systems thus clarifying the process forward. **Figure 16 shows the diagram of the process described and highlight the role that the system maturity quantification tool must play.**

To sum up this tool that is made available to be openly used by the R&I community within the EIRIE platform is to have as input the results of the R&I projects of the EU. The main contribution of this process can be summarized as follows:

- Enhances the TRL index tackling all the weaknesses that this index currently exhibits,
- Provides a solid process on how the integrated system readiness can be quantified.
- Provides feedback on the implementation plan and Roadmap of ETIP SNET to define the priorities, tasks and topics for the EU calls.

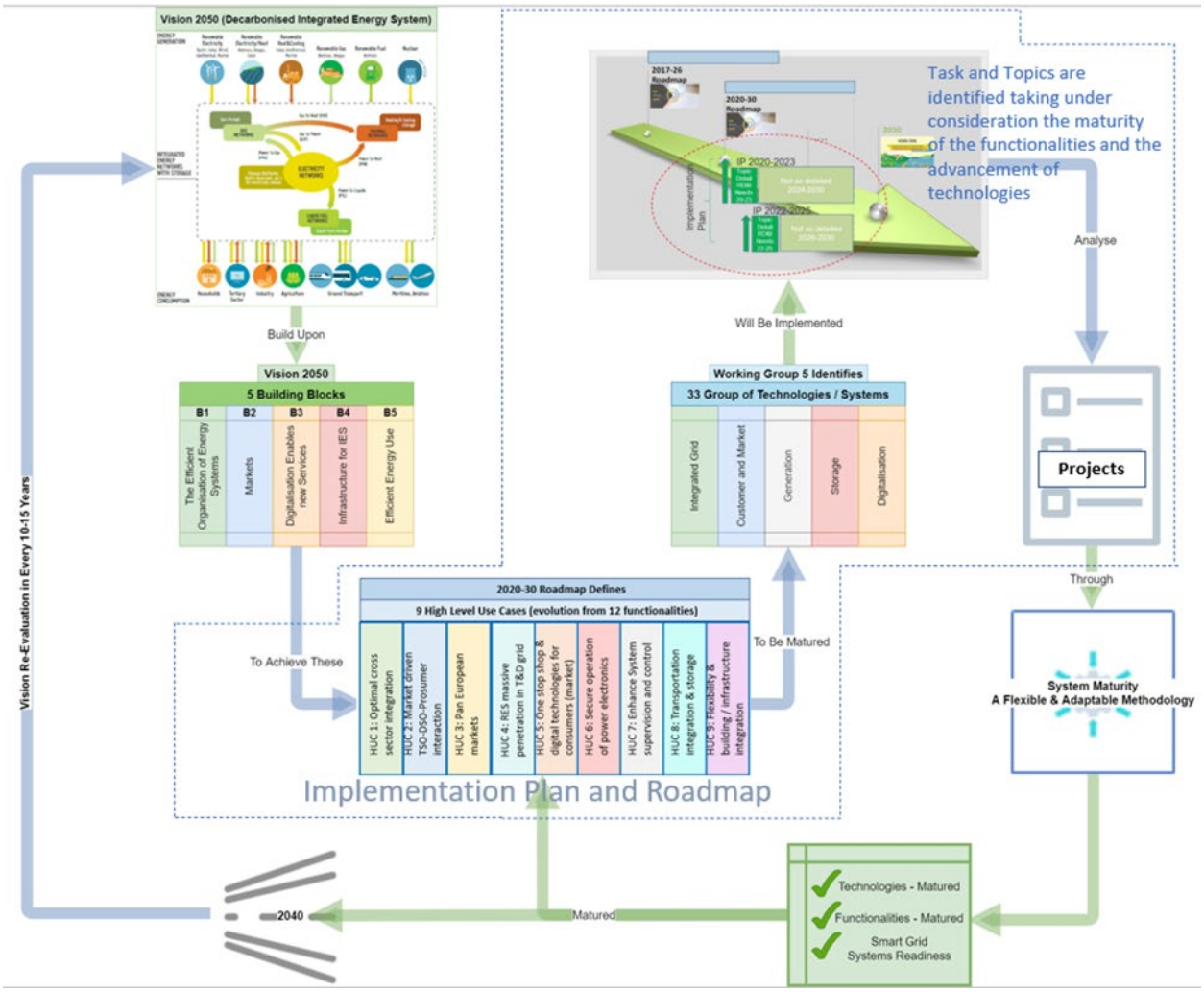


Figure 16: The need of the proposed methodology supporting the ETIP SNET vision

Based on the above findings, the maturity index tool has followed a full development phase based on well documented processes identified in literature but elaborated and developed to meet the requirements of EIRIE and the project. Technology Readiness Levels (TRL) are a type of measurement system used to assess the maturity level of emerging technologies under development. One shortcoming of the current TRL scale is that it is unable to offer a comprehensive illustration of the difficulty of integration of a specific technology or subsystem into a complex system. A complete representation of the difficulty of integration of the subject technology or subsystems into an operational system has been captured in published papers and this has been taken into consideration. Based on this, the Systems Readiness Level (SRL) methodology has been developed, that unites the TRL for each technology with Integration Readiness Levels (IRL) that express the contribution of each of these technologies to build a well-functioning integrated system of technologies serving the high-level use cases leading to the envisioned integrated smart grid.

The decision on where to draw the boundaries for complex integrated systems is important for the SRL effectiveness. Specifically, advanced technology systems that include multiple technologies may be treated as a subsystem with these components evaluated as a single measure of TRL. For our purpose a nesting process is proposed that treats a subset of component technologies in a system or subsystem as a single entity in the SRL calculation and thus determines the level at which component technologies are defined

As far as the SRL computational methods are concerned, several approaches have been presented before. The adopted method is depicted in Figure 17.

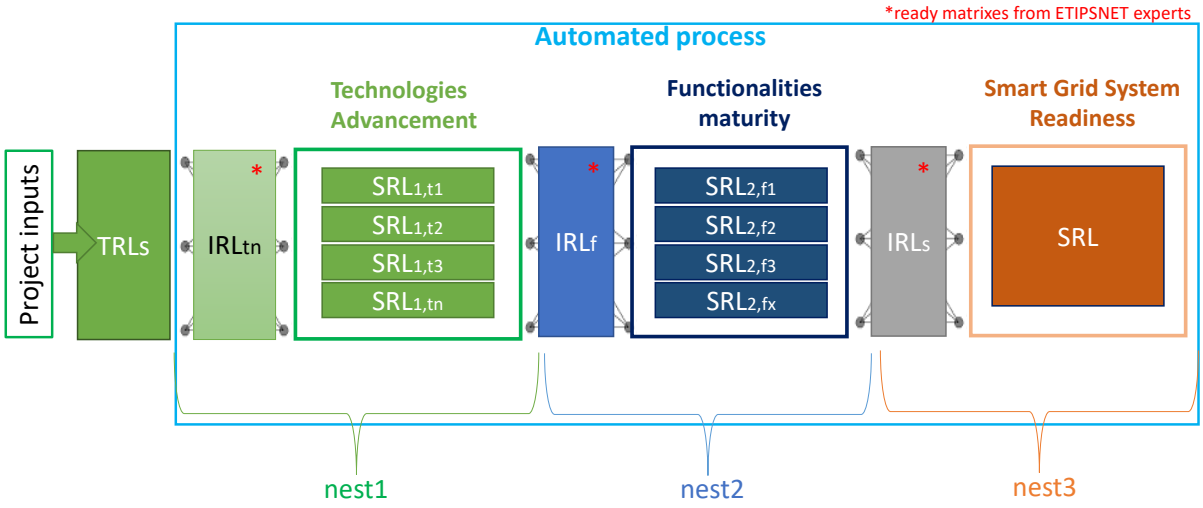


Figure 17: The maturity index process depicted forming the basis of the designed tool

Following the development of the maturity index tool the complete valuation process for identifying gaps and needs in R&I based on current status of development is to be addressed in the coming months through the work of WT3.

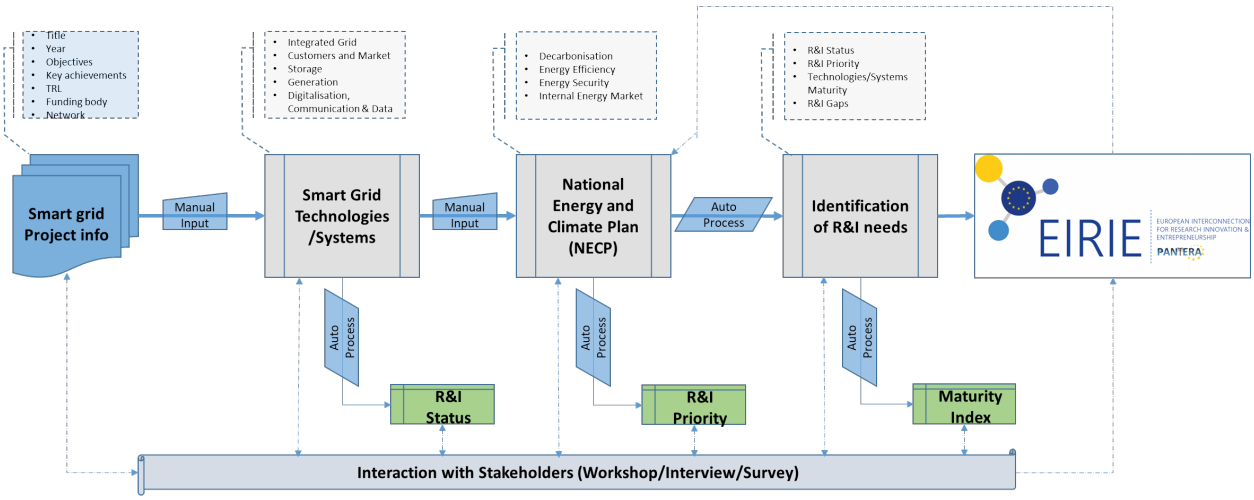


Figure 18: Gap analysis using the results of the maturity index tool

It would be possible to perform sensitivity analysis on the TRLs and IRLs within the system of interest to evaluate the SRL system projection due to an increase in one or more of the constituent technologies or integrations. A projection of the SRL maturity based on selected technologies can lead to an optimisation of SRL evolution based on resources allocation hence facilitating decisions to be made at the EU level.

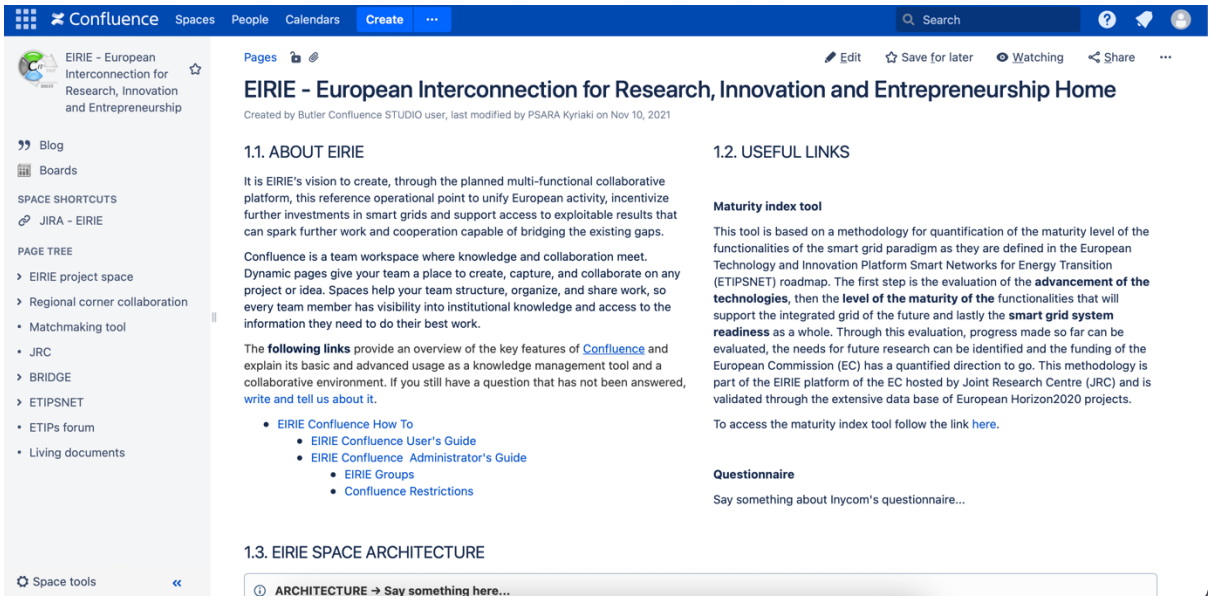
2.3.2.10 Knowledge Creation and Confluence collaboration space

Confluence

It is EIRIE's vision to create, through the planned multi-functional collaborative platform, this reference operational point to unify European activity, incentivize further investments in smart grids and support access to exploitable results that can spark further work and cooperation capable of bridging the existing gaps. To achieve this, the solutions of JRC within Confluence have been used by the PANTERA consortium to develop the working environment through which all collaboration work and knowledge creation can flourish. A short description of the developed designs to facilitate this envisioned workspace is presented in the

paragraphs below.

Confluence is a team workspace where knowledge and collaboration meet. Dynamic pages give the EIRIE platform users a place to create, capture, and collaborate on any project or idea. Spaces help stakeholders to structure, organize, and share work, so every team member has visibility into institutional knowledge and access to the information they need to do their best work.



Confluence is for teams of any size and type, from those with mission-critical, high-stakes projects that need rigor behind their practices, to those that are looking for a space to build team culture and engage with one another in a more open and authentic way.

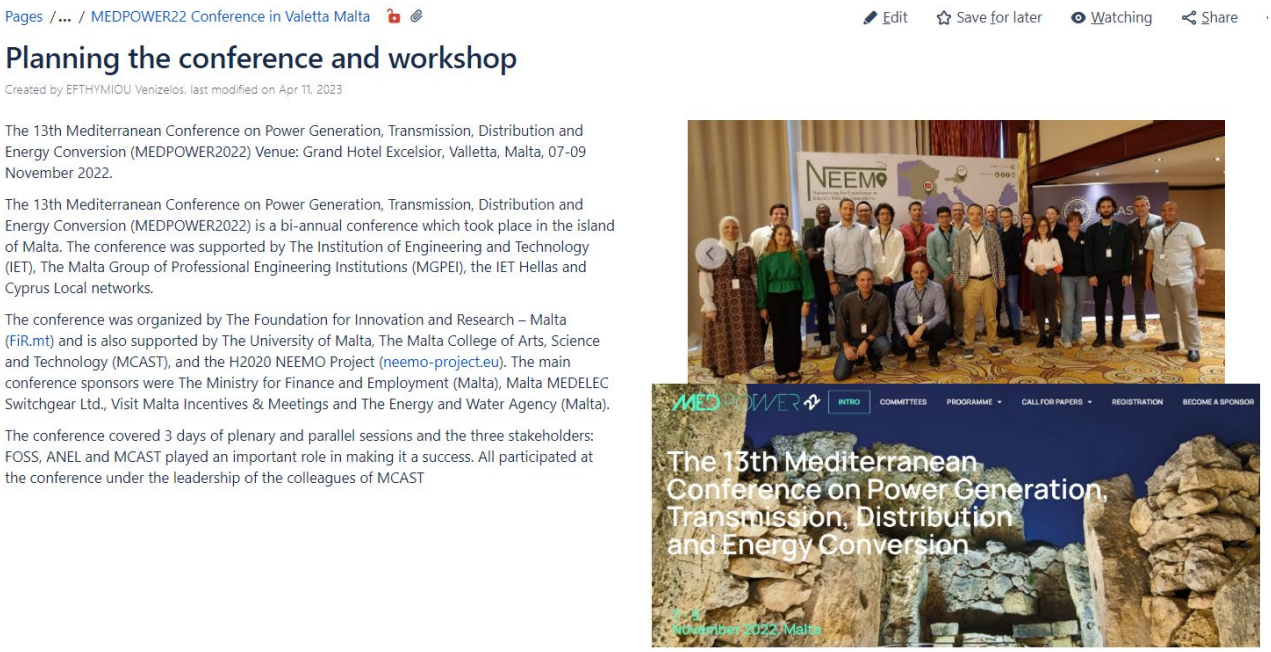


Figure 19: A conference organised by stakeholders acting through CONFLUENCE pages

All content lives in ***pages*** – living documents created on EIRIE Confluence site. Various different types of pages can be created such as project plans, meeting notes, troubleshooting guides, policies, and more. Confluence comes bundled with templates that can be used as a basis for almost any kind of content. In case none of the existing templates can be used for a specific type of content you want to create, a blank page can be used and adjusted accordingly.

Pages are stored in ***spaces*** – workspaces where teams can collaborate on work and keep all content organized. All EIRIE content is grouped together in the same space. Each space comes with an overview (or homepage) and a blog, so it's easy to share updates and announcements with your whole team.

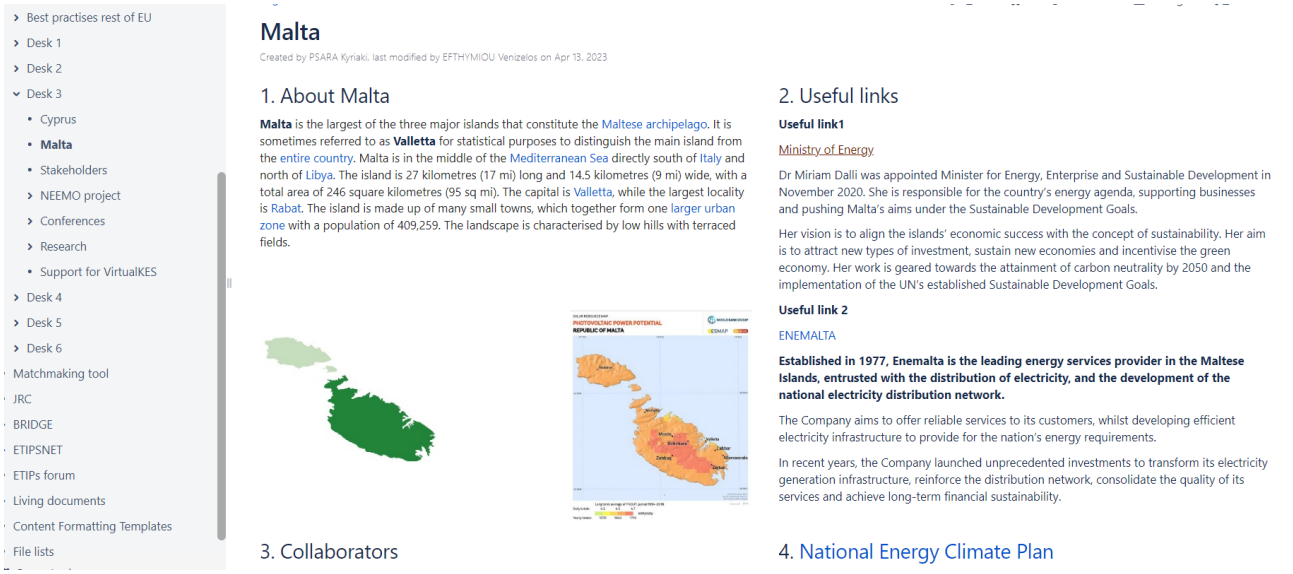


Figure 20: A typical page with page tree and content that is cross-referenced

Space content is organized with a hierarchical ***page tree*** that makes finding work quick and easy. Pages are nested under related pages to organize pages in just about any way. The following figure represents the page tree of the EIRIE confluence space.

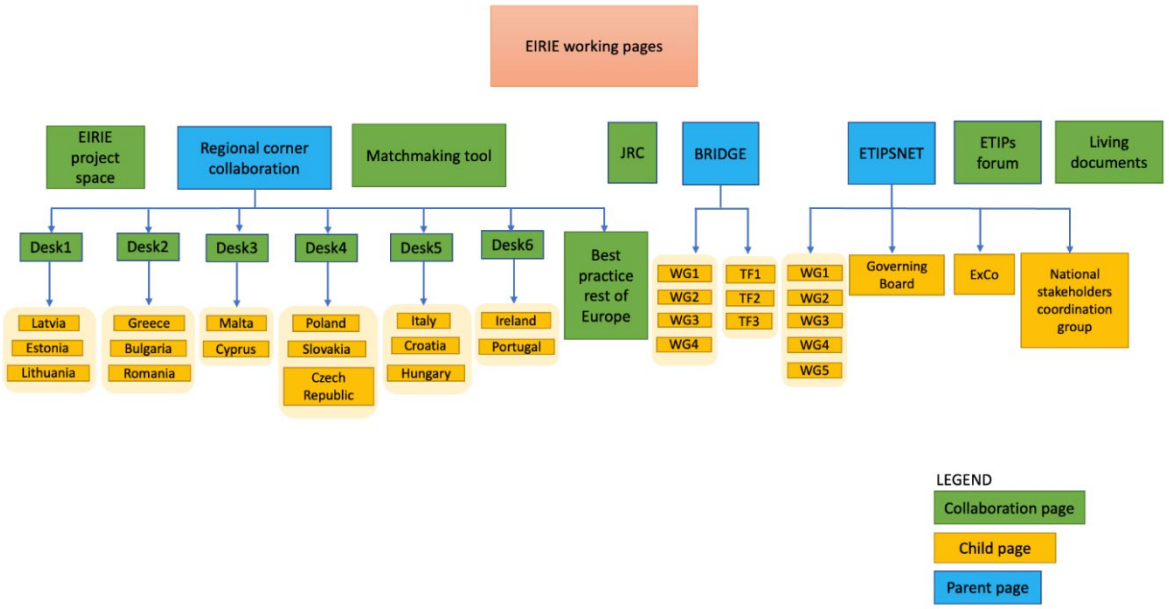


Figure 21: Page Tree of EIRIE Confluence Space

Page restrictions allow confluence users to control who can view and/or edit individual pages in a space. Project managers can add restrictions for individuals or for confluence groups. The following is a mapping of the pages to their restricted groups:

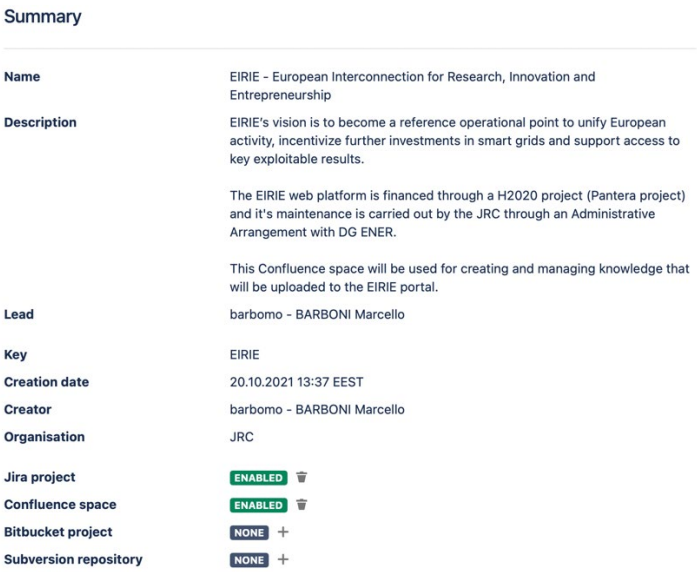
- **Regional corner collaboration** (p.eirie.latvia, p.eirie.estonia, p.eirie.lithuania, p.eirie.greece, p.eirie.Bulgaria, p.eirie.romania, p.eirie.malta, p.eirie.cyprus, p.eirie.poland, p.eirie.slovakia, p.eirie.czech.republic, p.eirie.italy, p.eirie.croatia, , p.eirie.hungary, p.eirie.ireland, p.eirie.portugal, p.eirie.best.practises.rest.of.eu, p.eirie.confluence.managers)
    * Best practise rest of the world (p.eirie.best.practises.rest.of.eu, p.eirie.confluence.managers)
    * Desk 1 (p.eirie.latvia, p.eirie.estonia, p.eirie.lithuania, p.eirie.confluence.managers)
        * Latvia (p.eirie.latvia, p.eirie.confluence.managers)
        * Estonia (p.eirie.estonia, p.eirie.confluence.managers)
        * Lithuania (p.eirie.lithuania, p.eirie.confluence.managers)
    * Desk 2 (p.eirie.greece, p.eirie.Bulgaria, p.eirie.romania, p.eirie.confluence.managers)
        * Greece (p.eirie.greece, p.eirie.confluence.managers)
        * Bulgaria (p.eirie.Bulgaria, p.eirie.confluence.managers)
        * Romania (p.eirie.romania, p.eirie.confluence.managers)
    * Desk 3 (p.eirie.malta, p.eirie.cyprus, p.eirie.confluence.managers)
        * Malta (p.eirie.malta, p.eirie.confluence.managers)
        * Cyprus (p.eirie.cyprus, p.eirie.confluence.managers)
    * Desk 4 (p.eirie.poland, p.eirie.slovakia, p.eirie.czech.republic, p.eirie.confluence.managers)
        * Poland (p.eirie.poland, p.eirie.confluence.managers)
        * Slovakia (p.eirie.slovakia, p.eirie.confluence.managers)
        * Czech Republic (p.eirie.czech.republic, p.eirie.confluence.managers)
    * Desk 5 (p.eirie.italy, p.eirie.croatia, p.eirie.hungary, p.eirie.confluence.managers)
        * Italy (p.eirie.italy, p.eirie.confluence.managers)
        * Croatia (p.eirie.croatia, p.eirie.confluence.managers)
        * Hungary (p.eirie.hungary, p.eirie.confluence.managers)
    * Desk 6 (p.eirie.ireland, p.eirie.portgal, p.eirie.confluence.managers)
        * Ireland (p.eirie.Ireland, p.eirie.confluence.managers)
        * Portugal (p.eirie.portugal, p.eirie.confluence.managers)
    * Best practise rest of the world (p.eirie.best.practise.rest.of.eu, p.eirie.confluence.managers)
- **Matchmaking tool**
- **JRC** (p.eirie.JRC , p.eirie.confluence.managers)
- **BRIDGE** (p.eirie.bridge.wg1, p.eirie.bridge.wg2, p.eirie.bridge.wg3, p.eirie.bridge.wg4, p.eirie.bridge.tf1, p.eirie.bridge.tf2, p.eirie.bridge.tf3, p.eirie.confluence.managers)
    * BRIDGE WG1 (p.eirie.bridge.wg1, p.eirie.confluence.managers)
    * BRIDGE WG2 (p.eirie. bridge.wg2, p.eirie.confluence.managers)
    * BRIDGE WG3 (p.eirie. bridge.wg3, p.eirie.confluence.managers)
    * BRIDGE WG4 (p.eirie.bridge.wg4, p.eirie.confluence.managers)

    * BRIDGE TF1 (p.eirie.bridge.tf1, p.eirie.confluence.managers)
    * BRIDGE TF2 (p.eirie. bridge.tf2, p.eirie.confluence.managers)
    * BRIDGE TF3 (p.eirie.bridge.tf3, p.eirie.confluence.managers)
- **ETIP SNET** (p.eirie.etip.snet.wg1, p.eirie.etip.snet.wg2, p.eirie.etip.snet.wg3, p.eirie.etip.snet.wg4, p.eirie.etip.snet.wg5, p.eirie.etip.snet.governing.board, p.eirie.etip.snet.exco, p.eirie.etip.snet.nscg, p.eirie.confluence.managers)
    * Governing Board (p.eirie.etip.snet.governing.board, p.eirie.confluence.managers)
    * ExCo (p.eirie.etip.snet.exco, p.eirie.confluence.managers)
    * ETIP SNET WG1 (p.eirie.etip.snet.wg1, p.eirie.confluence.managers)
    * ETIP SNET WG2 (p.eirie.etip.snet.wg2, p.eirie.confluence.managers)
    * ETIP SNET WG3 (p.eirie.etip.snet.wg3, p.eirie.confluence.managers)
    * ETIP SNET WG4 (p.eirie.etip.snet.wg4, p.eirie.confluence.managers)
    * ETIP SNET WG5 (p.eirie.etip.snet.wg5, p.eirie.confluence.managers)
    * National stakeholders coordination group (p.eirie.etip.snet.nscg, p.eirie.confluence.managers)
- **ETIPs forum** (p.eirie.etip.snet.etips.forum, p.eirie.confluence.managers)
- **Living Documents**

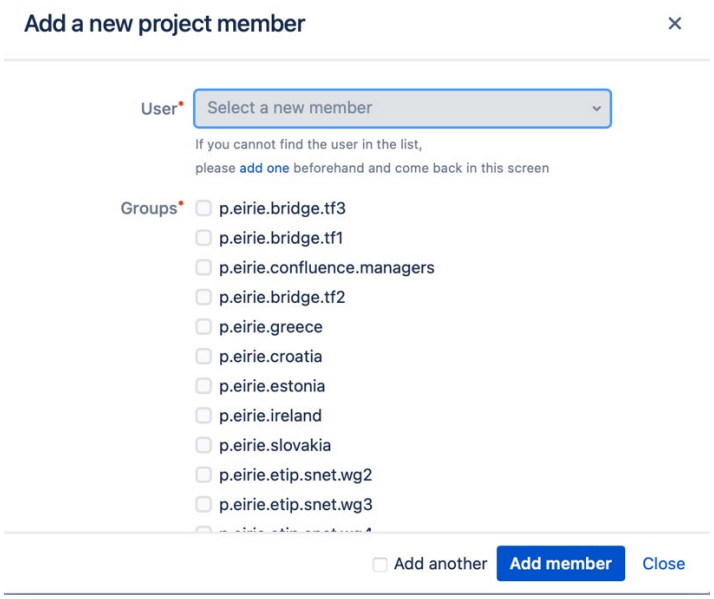
To facilitate the work within Confluence, use is made of the Confluence environment of JRC. The CITnet service provides a collaborative space for developers at EC, it promotes the Open-Source development process and knowledge sharing principles. Services include Butler, Jira, Confluence, SVN, Bamboo, Nexus, BigPicture, Sonarqube, FishEye, TEMPO, Bitbucket, Zephyr, Callendar, and Jira Agile.

CITnet Butler

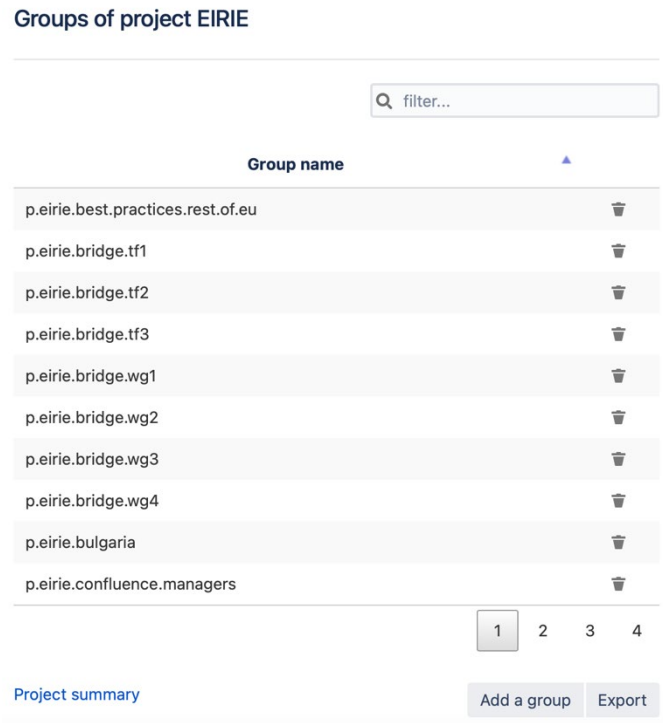
CITnet Butler is a tool written by CITnet team for the IT project managers (PM). Butler allows us to create the project ***EIRIE - European Interconnecton for Research, Innovation and Entrepreneurship***. Additionally, through Butler we are able to add/remove plugins associated with the project such as the confluence space and a JIRA project.



The Butler service also allows project managers to manage project users, by adding/removing users, adding user to a specific group, and changing users' permissions in CITnet.



Finally, project managers can manage project groups through the Butler services by changing user membership and creating custom security.



For each new project, there are three default groups already created, namely, p.eirie.project.managers, p.eirie.developers and p.eirie.users. For the first type of group, p.eirie.project.managers, all users are able to manage the project/users/groups/plugins in CITnet, manage content, and create content. For the second group, p.eirie.developers, are able to manage content and create content. Whereas for the last group,

p.eirie.users, users are only able to create content.

GROUP	JIRA	Confluence
p.eirie.developers	Read/write	Read/write
p.eirie.project.managers	Read/write/admin	Read/write/admin
p.eirie.users	Read/write	Read/write

ALL		Pages			Blog		Comments		Attachments		Restrictions	Mail	Space		
	View	Delete Own	Add	Export	Delete	Add	Delete	Add	Delete	Add	Delete	Add/Delete	Delete	Export	Admin
p.<projectKey>.developers	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗
p.<projectKey>.project.managers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓
p.<projectKey>.users	✓	✓	✓	✗	✗	✓	✗	✓	✗	✓	✗	✗	✗	✗	✗

The security of each CITnet project can be customized beyond the 3 default groups provided. This is done through the Butler service by creating a new project group and adding users into it. Then this group can be used in any CITnet application for example by giving permission only to a specific group in a specific page in Confluence. By taking into consideration the structure of the EIRIE platform the following groups were created according to the collaboration needs of the participants:

- p.eirie.confluence.managers
- p.eirie. best.practises.rest.of.eu
- p.eirie.regional.corner.collaboration
- p.eirie.latvia
- p.eirie.estonia
- p.eirie.ithuania
- p.eirie.greece
- p.eirie.bulgaria
- p.eirie.romania
- p.eirie.malta
- p.eirie.cyprus
- p.eirie.poland
- p.eirie.slovakia
- p.eirie.czech.republic
- p.eirie.italy
- p.eirie.croatia

- p.eirie.hungary
- p.eirie.Iceland
- p.eirie.portugal
- p.eirie.jrc
- p.eirie.bridge.wg1
- p.eirie.bridge.wg2
- p.eirie.bridge.wg3
- p.eirie.bridge.wg4
- p.eirie.bridge.tf1
- p.eirie.bridge.tf2
- p.eirie.bridge.tf3
- p.eirie.etip.snet.wg1
- p.eirie.etip.snet.wg2
- p.eirie.etip.snet.wg3
- p.eirie.etip.snet.wg4
- p.eirie.etip.snet.wg5
- p.eirie.etip.snet.governing.board
- p.eirie.etip.snet.exco
- p.eirie.etip.snet.nscg
- p.eirie.etip.snet.etips.forum

2.3.3 6+1 Regional Desks

PANTERA 6+1 approach is an inherent part of PANTERA process which aims at strengthening national participation rate in smart grid investments by making national stakeholders' needs and expectations more visible on the European arena. It is a place for raising discussions with national decision-makers, sharing experience and challenges in research and innovation, inviting local stakeholders to interact more actively with PANTERA and other EU-level initiatives. Thus, it is a key opportunity for attaining PANTERA ambition of creating a true pan-European R&I community.

As already established within the previous reporting period, PANTERA 6+1 approach includes six PANTERA Regional Desks committed to target countries which appear to have a lower rate of smart grid investment and one best-practice Desk elaborating on gathering and systemizing good experience in projects and R&I governance from more successful countries. The term "Regional" describes the way the work is organized within the consortium rather than geographical division; it stresses the intention of PANTERA to be closer to the local stakeholders and adapt to the local processes and cultures. Selected PANTERA partners are responsible for the host country and for the closer, so called associated, countries.

Status and results achieved in the coordinated regional work is reported under WP6. A special place in the EIRIE platform called regional corner shall include all insights of activities under WP6 also hosting collaboration potential among regional stakeholders.

Figure 22: the PANTERA Regional Desks

The Regional Corner stands as a dynamic and integral part of the EIRIE platform, serving as a central hub for fostering collaboration and interaction among diverse stakeholders. Each Pantera' country has its dedicated page where essential information is showcased. From country highlights and workshop reports to best practice examples and studies, these pages serve as a repository of valuable insights and achievements from each nation's energy landscape.

Figure 23: Examples of the information published on Regional Corner

2.3.4 Working Teams

In close cooperation with ETIP SNET working group 5 that is currently operating with wider experts that can feed into the PANTERA platform much wanted data, information, and knowledge (see Fig.24).

- Work closely with DERlab in populating the platform with all the information related to research infrastructure, regulations and standards that are much needed for effective R&I activity in the targeted countries.
- Working on R&D needs in identifying progress made in the technologies, systems, and solutions in support of the energy transition. This work is organised to be in full coordination with experts of ETIP SNET and the consortium of the supporting service contract that is currently SPRING, aiming to formalize procedures, populate data and results from wider sources of information. High level objective of this work is the evolution into maturity indices for technologies, systems and solutions that can be made available for wider use through the planned multifunctional platform.
- Generate innovation support for the market uptake of projects in full coordination with the services offered by DG RTD and support the scalability and replicability work of BRIDGE for raising the impact of R&I work in Europe.
- Be close to international activity in the field of smart grids, storage, and local energy systems by working closely through WT5 with the international activities of ETIP SNET and the affiliated activities of Mission Innovation, ISGAN etc.

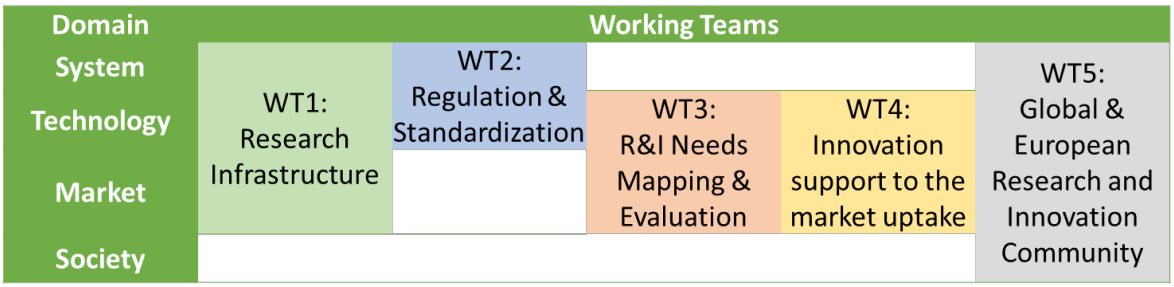


Figure 24: The working teams' visualization

Work in progress and results achieved through the Teamwork are reported in many sections of this report since teamwork is a collective effort and all members of the consortium are actively contributing.

2.4 Overall status of the PANTERA activities carried out within M37-M54 of the project.

2.4.1 Progress achieved under WP2

WP2 breaks down in 3 different tasks, one of which already ended in a previous reporting period:

- Task 2.1 "Stakeholders identification and interaction" (M1-M20)
- Task 2.2 "Enhanced collaboration opportunities: analysis and deployment" (M3-M52)
- Task 2.3 "Interactions with European platform and organizations" (M6-M54)

Task 2.2 is closely related to task 2.3 and the work, on several occasions, has been done in conjunction.

Task 2.2 Enhanced collaboration opportunities: analysis and deployment

The efforts within task 2.2 have been devoted to link the activities of the PANTERA project with other EU level initiatives like EERA and projects with similar objective like SUPEERA to strengthen the action of the project in involving local stakeholders. The main objectives guiding this activity were:

- Promote R&I activities towards the stakeholders coming from the target countries!
- Show the benefits coming from the cooperation at EU level, both in terms of results achieved through

EU projects and opportunities coming from the participation in international initiatives and associations.

In the following are summarised the main activities accomplished related to task 2.2

Collaboration with DERLab and ISGAN Annex 5

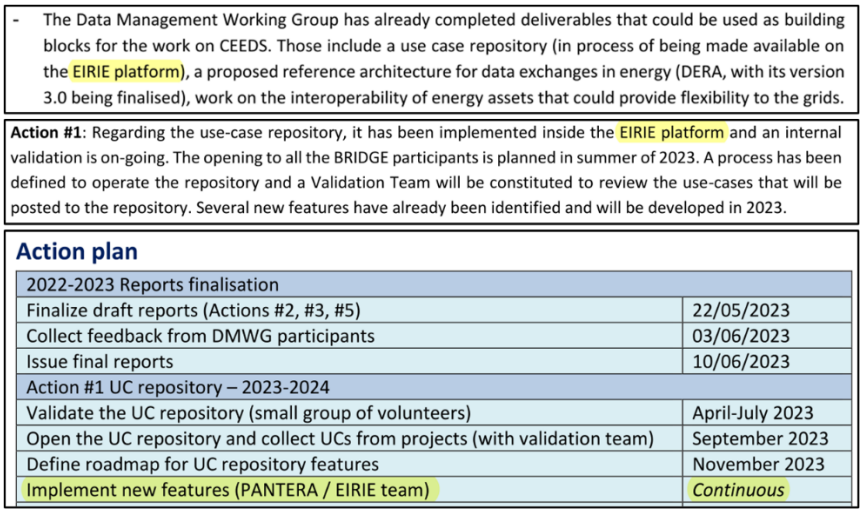
The DERlab Research Infrastructure database have been synchronized with the one available on the EIRIE platform, thus supporting the added value of EIRIE concerning the accessibility of a wide range of information on testing infrastructure.

Furthermore, DERlab members (beyond the PANTERA Consortium) have been actively involved in PANTERA workshops and activities, offering valuable inputs and supporting capacity building on R&I in smart grids, storage, and local energy systems.

DERLab acts also as operating agent of the Working Group 5 - Smart Grid International Research Facility Network (SIRFN) of the International Smart Grid Action Network[4] (ISGAN). During the SIRFN technical meetings and ISGAN executive committee meetings DERlab reported about PANTERA activities and the EIRIE platform thus supporting the creation of a link to be exploited for other PANTERA activities.

Collaboration with BRIDGE

The BRIDGE initiative is deeply engaged in finding a way to allow projects to deliver conclusions, recommendations about future exploitation of the project results and in finding a common repository for project outcomes, data and information. The EIRIE platform has been developed by the PANTERA project with aims that are perfectly in line with these objectives of BRIDGE. Therefore, a collaboration has been seen as valuable from both sides. After preliminary discussions BRIDGE recognised the opportunity of a collaboration with the PANTERA project to exploit the functionalities of the EIRIE platform. As a result, it has been discussed with DG ENER to use EIRIE as a repository for all the results of the project involved in the BRIDGE initiative and this is expected to be implemented with the current generation of projects and the ones that will follow. During the BRIDGE General Assembly on 28th to 30th March 2023 held in Brussels it was discussed the importance of the EIRIE platform for the BRIDGE initiative outlining it in the official document "Conclusions and next steps"[5]. The EIRIE platform is claimed to play a key role for the work of BRIDGE as for example for the use case repository of the Data Management Working Group. In Figure 25 are reported some extracts of the conclusions of the BRIDGE general assembly 2023 relevant for the PANTERA project.



- The Data Management Working Group has already completed deliverables that could be used as building blocks for the work on CEEDS. Those include a use case repository (in process of being made available on the EIRIE platform), a proposed reference architecture for data exchanges in energy (DERA, with its version 3.0 being finalised), work on the interoperability of energy assets that could provide flexibility to the grids.

Action #1: Regarding the use-case repository, it has been implemented inside the EIRIE platform and an internal validation is on-going. The opening to all the BRIDGE participants is planned in summer of 2023. A process has been defined to operate the repository and a Validation Team will be constituted to review the use-cases that will be posted to the repository. Several new features have already been identified and will be developed in 2023.

Action plan

2022-2023 Reports finalisation	
Finalize draft reports (Actions #2, #3, #5)	22/05/2023
Collect feedback from DMWG participants	03/06/2023
Issue final reports	10/06/2023
Action #1 UC repository – 2023-2024	
Validate the UC repository (small group of volunteers)	April-July 2023
Open the UC repository and collect UCs from projects (with validation team)	September 2023
Define roadmap for UC repository features	November 2023
Implement new features (PANTERA / EIRIE team)	*Continuous*

Figure 25: Extracts of the conclusions of the BRIDGE general assembly 2023

Collaboration with the SUPEERA project

[4] www.iea-isgan.org

[5] https://bridge-smart-grid-storage-systems-digital-projects.ec.europa.eu/news/bridge-general-assembly-2023-conclusions-next-steps

The PANTERA project has established a fruitful collaboration also with the SUPEERA[6] project. In fact, the two projects share common objectives, even if tackling them from a slightly different angle.

Linking the activities of the PANTERA project with those of the SUPEERA project in the targeted widening countries has led to successful co-organized events with notable satisfactory results presented through detailed outcome reports issued by the two consortiums and shared for the wider audience through the web pages of the two projects. The events that were co-organized are the following:

- Splitech, Croatia on 10th September 2021
- Riga, Latvia on 27th April 2022
- Sofia, Bulgaria on 25th of May 2022
- Nicosia, Cyprus on 1st June 2022
- *Budapest, Hungary on 26th October 2022*
- *Bucharest, Romania on 23rd March 2023*
- Vilnius Lithuania on 27th April 2023

In the following it is reported a brief summary of the two events reported in italics in the list above.

Workshop in Budapest, Hungary on 26th October 2022: "International research collaboration opportunities: fostering EU Clean Energy transition in Hungary"

Several stakeholders from academia, research institutes, and industry were invited to participate in this event. The workshop was officially opened by the Vice-Rector for Science and Innovation of the Budapest University of Technology who stressed that projects such as SUPEERA and PANTERA are crucial catalysers for bringing together key EU stakeholders in the energy sector. He also highlighted the importance of developing new approaches to R&I to reach strategic autonomy considering the unfolding energy crisis. The workshop went on involving local stakeholders in two panel discussions (see Figure 26) that discussed R&I activities supporting clean energy transition in Hungary and how to foster the active participating & contributing on the EIRIE platform. The workshop was also a relevant opportunity to present to local stakeholders the benefits of collaborating at EU level and engage them in future activities of the PANTERA project.

Figure 26: Panel discussions of the workshop "International research collaboration opportunities: fostering EU Clean Energy transition in Hungary", Budapest

Workshop in Sofia, Romania on 23rd March 2023, "International research collaboration opportunities fostering EU Clean Energy transition in Romania".

SUPEERA and PANTERA have joined forces to enhance collaboration in R&I activities in Romania, facilitating knowledge exchange and showcase best practices of how international networking and cooperation between national stakeholders and key international associations and organizations can be beneficial for establishing long-lasting interactions and fostering joint R&I activities. This workshop offered a detailed overview of the European policies, strategies, EU funding programs, and collaboration opportunities at the disposal of the research community of Romania to bring them closer to the R&I activities of Europe and get active with the

[6] https://supeera.eu

SET Plan process. Meanwhile, the invited experts and stakeholders will share their experiences in the project implementation.

Figure 27: Panel discussions of the workshop "International research collaboration opportunities fostering EU Clean Energy transition in Romania", Sofia

Collaboration with EERA Joint Programme on Smart Grids

The PANTERA project closely collaborated with the EERA Joint Programme on Smart Grids (EERA JP SG). In particular, the main interactions took place during the regular EERA JP SG meetings when the results of the project have been presented to JP members. During these events were also possible to get feedbacks and useful suggestions about the development of the EIRIE platform. The JP SG covers topics closely related to the PANTERA project and has almost 40 members from all around Europe thus representing a key interlocutor for PANTERA.

The outcomes of PANTERA have been presented in all the JP SG steering committee meetings that usually involves around 20 R&I organisations from all around Europe. JP SG members not involved in PANTERA were interested in the results shared by the project and the discussion that followed the presentation of PANTERA activities made possible to get key insight to steer the projects' actions in a more effective way.

More in details the outcomes of PANTERA have been presented during the following EERA JP SG Steering Committee (SC) meetings:

- 31st SC - 9th-10th May 2019, Larnaca, Cyprus
- 32nd SC - 22nd-23rd October 2019, Porto, Portugal
- 33rd SC - 23rd April 2020, Web meeting
- 34th SC - 6th November 2020, Web meeting
- 35th SC - 25th March 2022, Web meeting
- 36th SC - 10 May 2022, Web meeting
- 37th SC - 14 June 2022, Palermo, Italy

In the following Figure 28 are reported the extracts of some of the agenda of the mentioned SC meetings with highlighted the agenda point related to the PANTERA project.

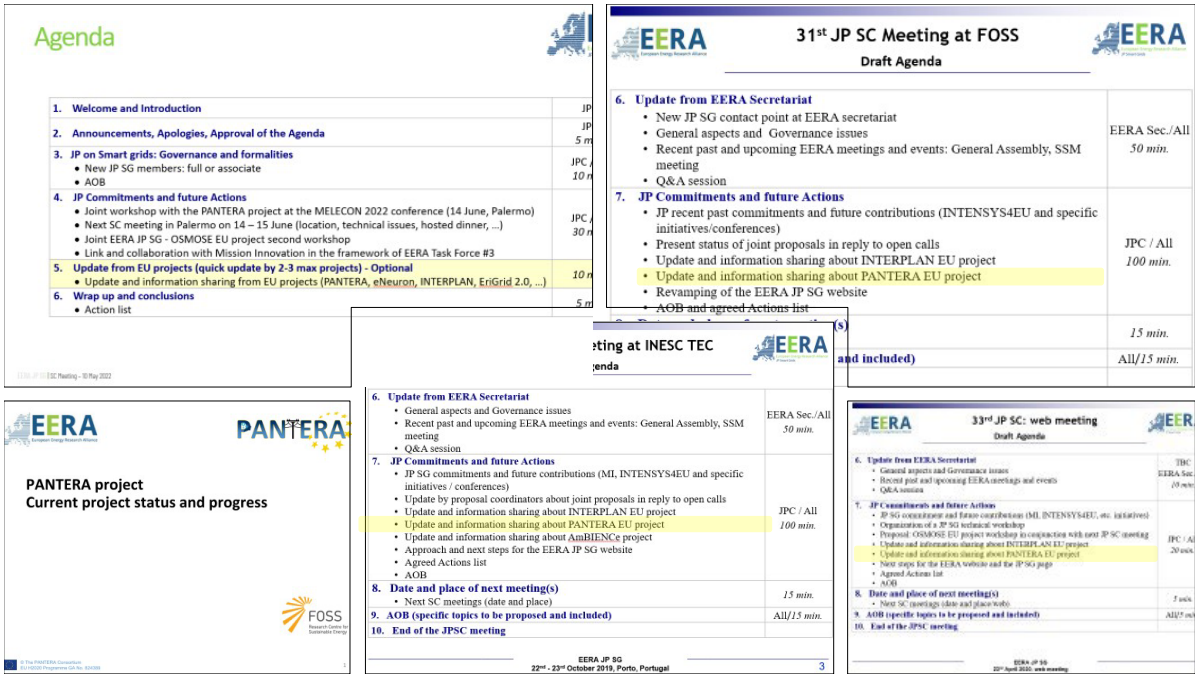


Figure 28: extracts of some of the agenda of the EERA JP SC meetings with highlighted the point related to the PANTERA project

JP SG presented during in PANTERA workshops

The relation between PANTERA and the JP on SG have been bidirectional, in fact the JP activities have been presented several times during the workshops organised by PANTERA. This has been an important action since the EERA JP on Smart Grids with its European scope is a relevant association to foster a deeper integration of the R&I field at EU level.

In the following Figure 29 are reported, as an example, some slides used to present JP SG during PANTERA workshops.

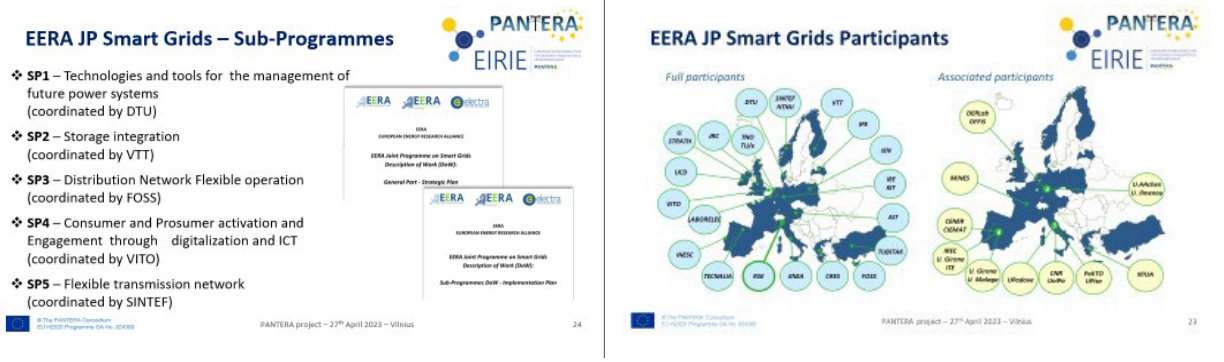


Figure 29: example of slides used to present the EERA JP on Smart Grids during PANTERA workshops.

Joint EERA JP SG – PANTERA joint workshop organised in Palermo

The workshop "The EIRIE platform enabling R&I activities and investment in smart grids" have been organised by PANTERA and the EERA JP SG within the IEEE MELECON 2022 conference that was held at the University of Palermo in June 2022.

The workshop gave the possibility to PANTERA members to interact with Italian stakeholders active in the smart grid and energy system research and innovation field. More in details, the topics discussed during the workshop, through two keynote speeches and two round tables, were related to the role of storage, E-Mobility and policies to support the clean energy transition.

The first keynote by Marcelo Masera (JRC) stressed the importance of R&I activities and acknowledge the relevance of projects like PANTERA in fostering knowledge sharing and capacity building. The second keynote, by Adel El Gammal (EERA secretary general) pointed out the relevance of the REPower EU plan as a pathway to reduce the Europe dependence on fossil fuel imports (especially from Russia) not only by boosting renewable energy, but also increasing energy efficiency of buildings and industrial processes.

Moreover, the two Round Tables (RT):

- RT 1: Storage and electromobility: a huge opportunity to enhance system flexibility. How to match grid and users' needs to foster renewables uptake
- RT 2: The role of policies in fostering the deployment of innovative solutions. Recent development in citizen and renewable energy communities and how they could support local renewable sources exploitation

gave the possibility to discuss with local stakeholders about key topics for research and innovation actions.

In the following Figure 30 are reported some pictures and slides from the workshop.

Figure 30: Pictures and slides from the workshop jointly organised by PANTERA and EERA JP SG

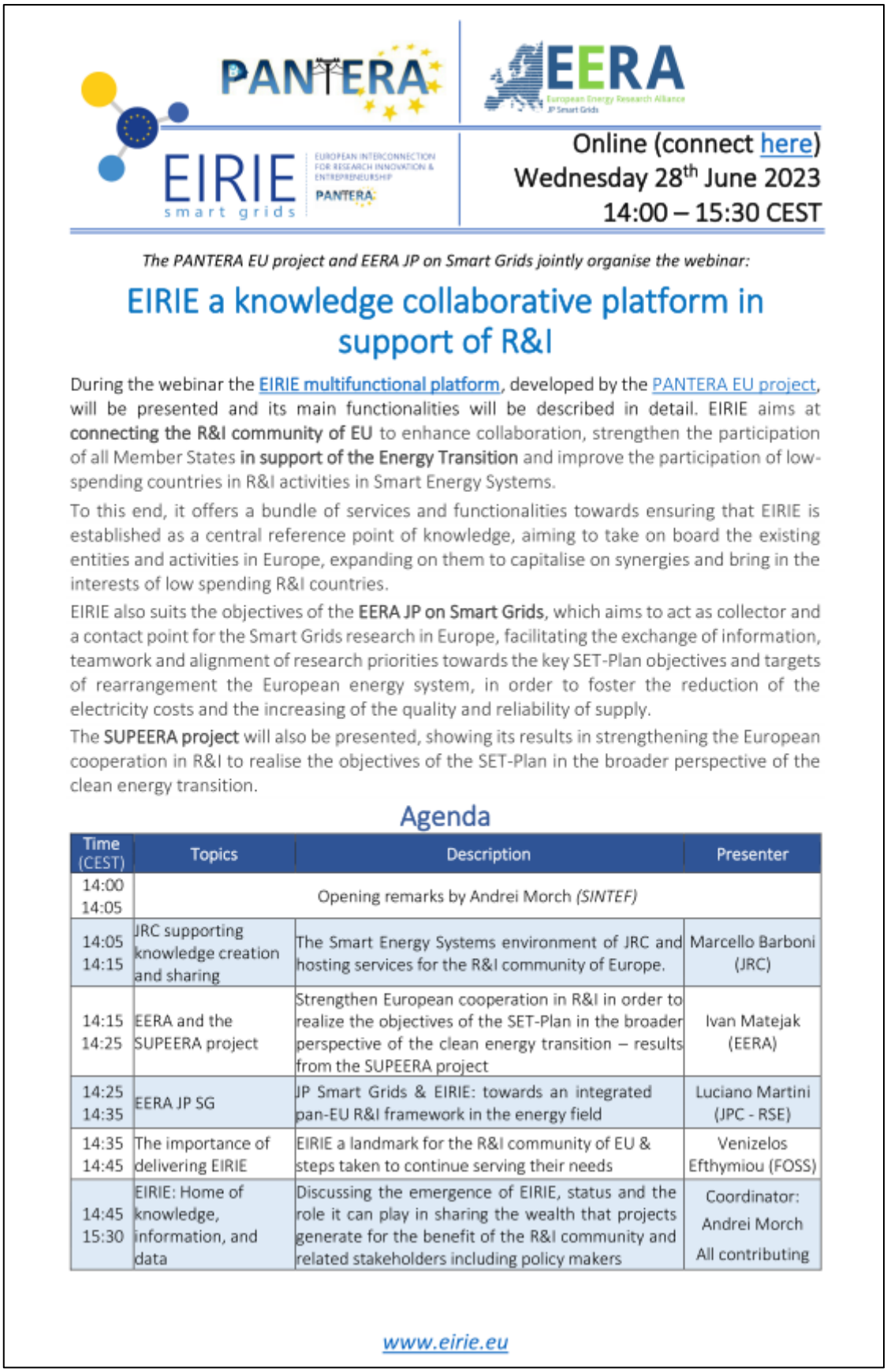
Dedicated EIRIE webinar

The PANTERA project and the JP SG jointly organized a webinar dedicated to the EIRIE multifunctional platform (June 28, 2023) to discuss about its main functionalities and the synergies that could be created with the JP activities and objectives. During the webinar the close collaboration between SUPEERA and PANTERA has been remarked, as well as the strong link between PANTERA and EERA JP.

The activities of the JP SG can be supported by the EIRIE platform, that represents a meeting point for all actors active in the field of energy research and innovation from all around Europe. Additionally, to the relevant functionalities and information that EIRIE can provide to the JP, the platform can be also used to share and disseminate JP activities (news, events, etc.) and to reinforce its community with new members.

Another important aspect remarked in the webinar is that EIRIE is not aiming on replacing the already well-functioning platforms in Europe but to allow to have access to all of them. EIRIE functionalities and material can be useful to R&I practitioners (can have access to databases, best practices, projects results, state-of-art material, etc.), R&I organizations (to cross promote opportunities, encourage synergies among projects and initiatives, highlighting achievements and best practices, engaging low spending countries, etc.) and also to policy makers (e.g. for supporting them to define inefficiencies of R&I activities).

As a conclusion, has been stated that EIRIE can really represent the space where people can continue meeting and sharing knowledge after the end of projects. Figure 31 reports the agenda and concept note of the webinar.



Online (connect here)
Wednesday 28th June 2023
14:00 – 15:30 CEST

The PANTERA EU project and EERA JP on Smart Grids jointly organise the webinar:

EIRIE a knowledge collaborative platform in support of R&I

During the webinar the EIRIE multifunctional platform, developed by the PANTERA EU project, will be presented and its main functionalities will be described in detail. EIRIE aims at **connecting the R&I community of EU** to enhance collaboration, strengthen the participation of all Member States **in support of the Energy Transition** and improve the participation of low-spending countries in R&I activities in Smart Energy Systems.

To this end, it offers a bundle of services and functionalities towards ensuring that EIRIE is established as a central reference point of knowledge, aiming to take on board the existing entities and activities in Europe, expanding on them to capitalise on synergies and bring in the interests of low spending R&I countries.

EIRIE also suits the objectives of the **EERA JP on Smart Grids**, which aims to act as collector and a contact point for the Smart Grids research in Europe, facilitating the exchange of information, teamwork and alignment of research priorities towards the key SET-Plan objectives and targets of rearrangement the European energy system, in order to foster the reduction of the electricity costs and the increasing of the quality and reliability of supply.

The **SUPEERA project** will also be presented, showing its results in strengthening the European cooperation in R&I to realise the objectives of the SET-Plan in the broader perspective of the clean energy transition.

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

www.eirie.eu

Figure 31: Agenda and concept note of the EERA JP SG - PANTERA webinar on the EIRIE platform

Task 2.3 Interactions with European platform and organizations

Within PANTERA task 2.3, project members interacted with European level initiatives such as ETIP SNET and BRIDGE as well as international ones like Mission Innovation, EPRI and ISGAN. Through this interactions PANTERA got updated information about the most relevant R&I topics in the energy field. Moreover, the work under this task allowed the PANTERA project to:

- Establish good collaboration links with European and International organizations.
- Develop collaboration between other platforms and the EIRIE platform to secure content that ensures engagement and interaction with stakeholders at pan-European level.
- Gather updated information from the global smart grids research and innovation field.
- Promote the activities of the PANTERA project.

In fact, establishing a high number of good connections was instrumental in the launching phase of the EIRIE platform. In this view, a campaign to periodically release tweets has been set up and the most important news from the international initiatives and other content of interest (e.g. projects) has been shared. To this effect the most relevant news from the international activities with which PANTERA is collaborating are summarized and posted on twitter through the PANTERA project account.

In the following are reported the main activities performed.

Interaction between PANTERA Working Teams and the ETIP SNET

PANTERA actively collaborated with the ETIP SNET especially in the framework of the ETIP SNET Working Group 5 (WG5) "Innovation implementation in the business environment". More in details PANTERA members were active in all the five Working Teams (WT) that have been created within ETIP SNET WG5 to address different relevant aspects of the innovation of the energy field. In the following it is reported a summary of the activities carried out and of the results achieved:

- **WT1 – Research Infrastructure Repository:** The structure and the taxonomy for the EIRIE platform has been discussed and agreed with all WT members. This has been a relevant step to allow a seamless transfer of the information available in different web spaces towards EIRIE. For example, relevant information and data about the research infrastructure available at different EU research organisations and universities has been transferred to EIRIE. WT1 was also active in keeping constantly updated this information.
- **WT2 – Regulations and Standards:** WT2 was active in mapping the standards available within the Smart Grids domain to make this information available on the EIRIE platform (through the search function).
- **WT3 – R&I needs mapping and evaluation:** WT3 was active in support of the PANTERA "R&I status and Continuous gAP analysis" (RICAP) process devoted to developing a methodology on how to foster the alignment of different activities performed within EU initiatives (e.g. the ten-year plan and Implementation Plan of ETIP SNET and BRIDGE task Forces). In this view a taxonomy to support information exchange, especially through the EIRIE platform has been developed. The main outcomes of this activity fed the knowledge area of the EIRIE platform and sent clear feedback about the maturity of the technologies, the R&I needs and the priorities under the prism of a wide and holistic spectrum. More in details a Technology Readiness Level (TRL) index tool has been developed based on processes identified in literature. Following, a System Readiness Level (SRL) methodology has been developed and integrated with the TRL index to obtain an index called Integration Readiness Levels (IRL) that express how much these technologies are presently ready to be deployed in the real environment.
- **WT4 – Market Maturity & Commercialization Self-Assessment Toolbox:** PANTERA members worked to the development of tools that aim to guide the R&I community in the market ("Innovation Radar Tool" and "Self-Assessment Tool").

- **WT5 – Global & European Research and Innovation Community:** WT5 activities were dedicated on facilitating information flow leveraging the involvement in international initiatives. PANTERA members regularly participated in the ETIP SNET Working Groups 5 meeting reporting and sharing information about the main ongoing initiatives active at EU and international level and getting information from ETIP SNET members as well.

  Within the activities of WT5, PANTERA published a series of Tweets through the PANTERA Twitter account to transfer the information from European and international initiatives also to the broad public. This action is relevant to raise awareness not only within the R&I community about the importance of collaborating to accelerate the development and deployment of innovative solution within the energy field, but also to inform and get the interest of the broad public. In Figure 32 are reported, as an example, some of the Tweets published.

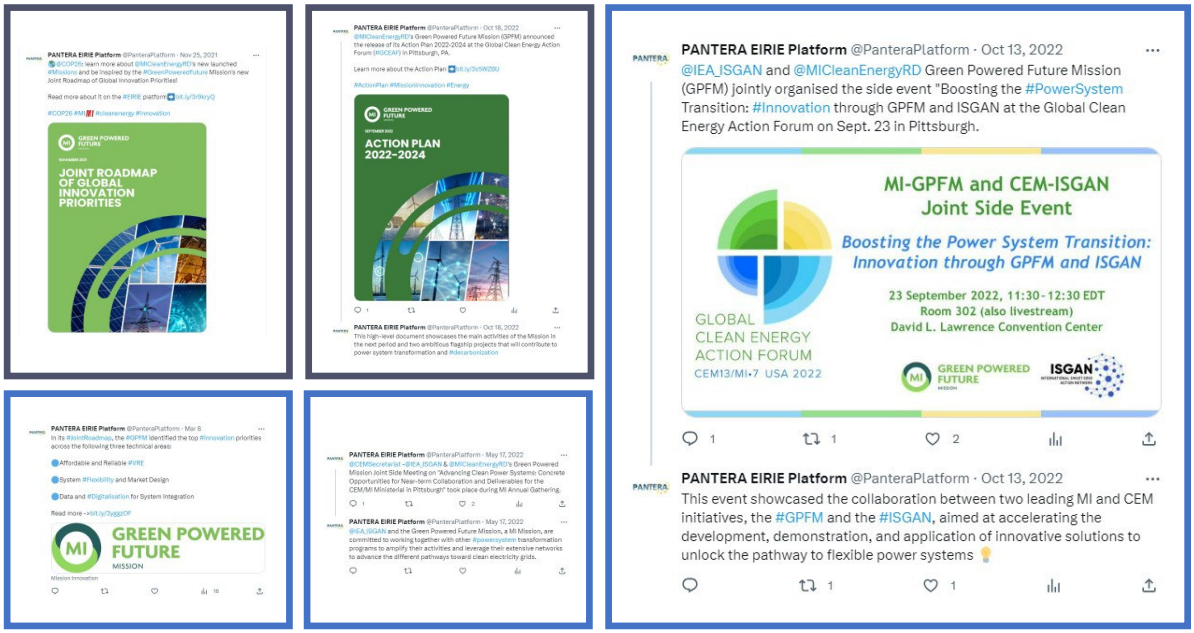


Figure 32: An example of the Tweets published the PANTERA twitter account about the international activities in the R&I field that PANTERA was closely linked

Another activity carried out within the WG5 of ETIP SNET was the drafting, by the coordinator of the PANTERA project, of a policy paper on Regulatory Sandboxes. The paper has been completed and submitted within the promised timeline.

Support to ETIP SNET regional workshops

PANTERA supported the ETIP SNET also in the framework of the ETIP SNET regional workshops, more in details are summarised in the following:

- **14th Regional workshop (European Commission, Hybrid - 31st May and 1st June 2022)**
  - Day 1: PANTERA members were involved in the roundtable aimed to foster direct exchange of information covering many topics of our future energy system in Europe. Several High-Level Use Cases (HLUCs) and Project Priority Concepts have been discussed.
  - Day 2: PANTERA members were active in the workshop to discuss approaches to investigate the identified HLUCs and to share the outcomes, challenges and lessons learnt by different projects from all levels.

- **15th Regional workshop (ENLIT Europe, Frankfurt, Germany – 1st December 2022)**
  - PANTERA members were active in the session dedicated to bringing together owners and managers of national and regional funding and development programs with the European Commission and ETIP SNET representatives from research and industry. The discussion was based on the HLUC and PPCs, with a focus on Research Development and Innovation (RDI) programmes in South (S-EU) and South-East Europe (SE-EU). In the Panel Session 1 there were a discussion around S-EU and SE-EU projects of Joint Programming Platform ERA-Net Smart Energy System. The Panel Session 2 instead consisted of presentations from invited speakers about their respective projects.

- **16th Regional workshop (Iberdrola Global Smart Grids Innovation Hub, Bilbao – 28th February 2023)**
  - The workshop invited owners and managers of national or regional funding programs to present and discuss their national energy and innovation programs and followed the same structure as the previous workshop. After an introduction on the overall structure of ETIP SNET and BRIDGE and an overview of ETIP SNET Implementation Plan 2022-2025, the discussion focused on the HLUCs and PPCs, with an analysis of HLUCs (from HLUC1 to HLUC8). The speakers were asked to provide a pitch about their respective projects with respect to the different HLUCs, followed by feedback and discussions during which PANTERA members were active.

- **17th Regional workshop (Vaasa EnergyWeek, Vaasa, Finland, Hybrid – 21st March 2023)**
  - The workshop invited owners and managers of national or regional funding programs to present and discuss their national energy and innovation programs. Objective and methodology of the workshop were similar to the ones followed in the previous meetings mentioned above, consisting in speeches on projects or companies followed by feedbacks and discussion.

Connection of EIRIE to other platforms

Within task 2.3, PANTERA members supported the linking of the EIRIE platform with other relevant repositories/platforms created by other European and international initiatives by leveraging the connections established.

In this way a fruitful bidirectional knowledge, information and data exchange between EIRIE and the following platform/repositories has been established:

- DERlab database that collects information about the research infrastructures capabilities of several research centres all over Europe and beyond.
- Mission Innovation SGIA platform, a tool to enable the sharing of technical results and best practices, catalysing the public and private sectors joint efforts towards the goals of accelerating the development and deployment of innovative smart grids technologies worldwide. SGIA covers not only technological but also policy & regulatory and financial aspects, involving all relevant stakeholders.
- ERA Net EXPERA platform that allows to share knowledge among members of the ERA-Net SES Knowledge Community. ERA Net activities have been taken over by the Clean Energy Transition Partnership (CETPartnership). PANTERA members are presently committed to establish a fruitful

collaboration with the CETPartnership. The contents from EXPERA will remain accessible.

- ASSET project that aims to create a new ecosystem to develop energy transition solutions for zero-carbon emissions.

Work for connecting EPRI knowledge platform with EIRIE is ongoing and PANTERA stakeholders are presently committed to contribute to the materialization of this link with EIRIE thus enriching the knowledge base of EIRIE, serving the R&I community.

Technically, the link between EIRE and all these other platforms is made through Application Programming Interfaces (API) developed case by case. Moreover, the data handling architecture of EIRIE has been implemented in such a way that it can facilitate the various functionalities for storing, retrieving and managing of such information coming from different sources.

In Figure 33 it's reported a graphical representation of the link of the EIRIE platform

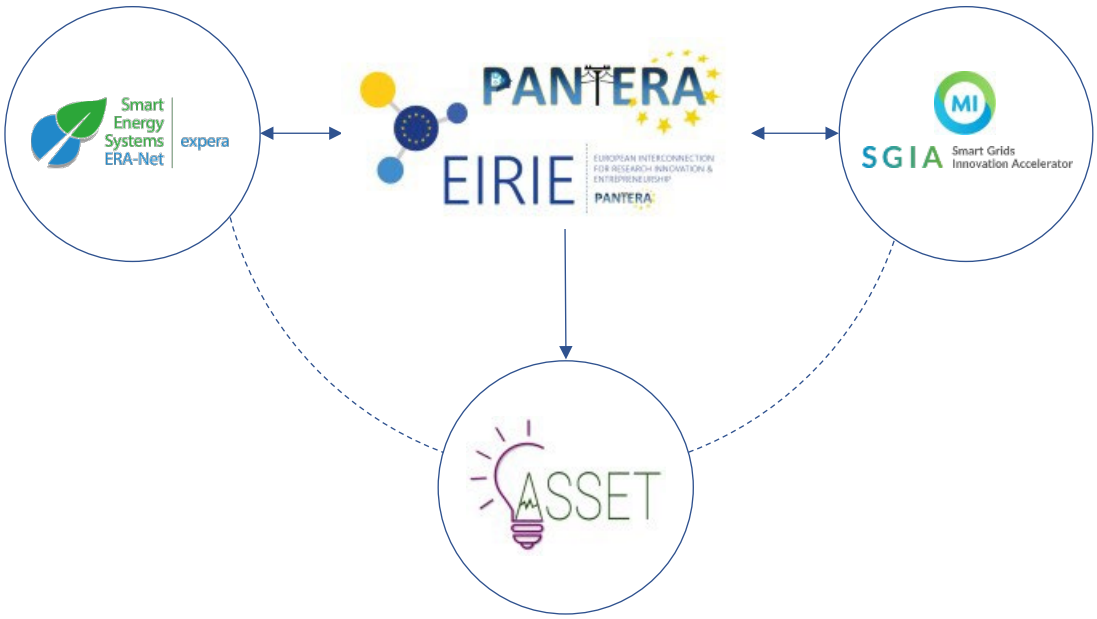


Figure 33: A graphical representation of the link of the EIRIE platform

PANTERA / EIRIE platform interactions with EU level entities

The EIRIE platform has been built with the aim to become a single reference point for the energy system in the R&I field and to serve the R&I community fostering the involvement of actors from less involved countries. It is therefore key that the EIRIE platform would not be shut down after the end of the PANTERA project. In this view, through a number of actions involving all the PANTERA members and WPs the PANTERA project succeeded in this effort. Here are briefly summarised the actions carried out with the support of task 2.3.

- The responsibility of managing the EIRIE platform has been transferred to the project SPRING coordinated by Zabala.
- After different discussion an agreement has been reached with the JRC to host EIRIE on their Smart Energy Systems EUROPA servers.
- JRC made available the CONFLUENCE tool to make possible active collaboration (e.g. writing of shared documents and pages) on the EIRIE platform. The CONFLUENCE environment has been integrated within EIRIE.

Considering the future exploitation of the EIRIE platform it's important to underline that the European Commission DG ENER has taken the decision to consider EIRIE as the repository for the outcomes of EU funded projects, for BRIDGE activities as well as for ETIP SNET results.

This decision is already being implemented by the Working Group DATA of BRIDGE that decided in 2022 to build a Use Cases common repository on EIRIE. This is currently in the testing phase.

MILESTONE MS1: Analysis of the possibilities to involve organizations, especially from the targeted countries.

Within this reporting period it has also been reached the milestone MS1. A short document meant to give evidence of this have been submitted. The Milestone was concerned to the response and participation of stakeholders to the workshops that have been organised, their interaction with the EIRIE platform and with the media channels of the project (website and Twitter).

MILESTONE MS2: Analysis of the interaction with European platforms and organizations.

Within this reporting period milestones MS2 has also been reached. To achieve this the PANTERA established a process of a continuous dialogue with the advisory board members to gather information on the PANTERA process and the activities linked. Advisory board members are representing different categories of stakeholders across Europe and, having leading positions in their respective organisations, they are able to provide key insight and feedbacks to the PANTERA project. A short document meant to give evidence of this have been submitted.

2.4.2 Progress achieved under WP3

The objective of WP3 is to identify the current state and progress of the R&I, regulations and relevant standardisation activities in the areas of smart grid and then develop an efficient process to address the key challenges at national and EU level and recommend for post project activities.

WP3 breaks down in the following different tasks:

- T3.1- Current status and progress of R&I activities [M1 – M18] – develop a process to address the R&I status and needs at national level.
- T3.2- Regulations, Codes and Standards [M3 – M22] – identify the regulations, grid codes and technology standards.
- T3.3-Energy Policy and barriers [M3 – M22] - Identify the national and EU energy policies and barriers (at community level) related to smart grids, storage, and local energy system.
- T3.4- Key challenges and bottlenecks [M13 – M38] - develop an efficient process to address the key challenges and bottlenecks.
- T3.5- Recommendation for post project activities [M13 – M54] - develop a roadmap for post project activities.

With the aims of this coordinated action for setting up a European forum, International Energy Research Centre (IERC) is leading this WP3 and with participants working together to identify the current status and progress of the R&I activities in the field of smart grids, storage and local energy systems at the national and EU level towards the development of decarbonised European smart grid network.

During the time interval 37-54 months of the project the following were achieved per task:

- T3.1: This Task has been completed in M18 according to the planned timeline. The deliverable report (D3.1) has also been submitted. One of the key outcomes of this task is that the PANTERA team has developed the RICAP technical process (R&I status and Continuous gAP analysis), where an attempt has been made to develop a universal methodology by linking the past to the present and future plan to achieve the target based on the ETIP SNET vision 2050, as shown in Figure 35. RICAP administrative

process is also structured to perform the required administrative task to communicate with relevant stakeholders, collect project information and share the outcomes to EU and PANTERA platform. The PANTERA recommends how the proposed technology classification can be linked to the FUNCTIONALITY of the ETIP SNET 2020-2030 roadmap. A case study for Ireland was given as an example to demonstrate the R&I status based on the technology classification, mapping with FUNCTIONALITY under the RICAP process. A final recommendation is made to implement the proposed RICAP process in future R&I status analysis towards the achievement of a decarbonised EU smart grid network.

- T3.2: This Task has also been completed in M22 according to the planned timeline. The deliverable report (D3.2) has also been submitted. The network/grid codes, regulations and standards that technically fit the smart grid solutions have been reviewed. This task has also identified the mapping process to link the regulation, grid codes with the FUNCTIONALITY as defined in the ETIP SNET roadmap.
- T3.3: This Task has also been completed in M22 according to the planned timeline. The deliverable report (D3.3) has also been submitted. Meeting the EU and national target to decarbonise the smart grid network as well as empowering energy citizens as prioritised in the NECP, this task has focused on the national energy policy for the countries of low R&I activities. Special focus is being given on the consumers' empowerment, their participation in the local energy market and integration into the wholesale energy market. NECPs have been reviewed to identify the gaps and provided the recommendation for the implementation and deployment of smart grid technologies (PANTERA Technology classification, as identified in the PANTERA RICAP process) and to align with the ETIP SNET 2030 roadmap.
- T3.4: This task presents the current state of the integration of citizens as active smart grid contributors in Europe, European vision and definitions of the term for such integration, the role of collective self-consumption and citizens and renewable energy communities, as well as the standards and the best engineering practices in this regard. More specifically, this task has identified the "enablers" of citizens' empowerment in the energy transition, e.g., demand response, DERs, RES, energy storage systems, local markets, communication, and energy management and automation systems; tracing the barriers back to the gaps; investigated to what extent each of the barriers hinders the citizens' engagement in each member state. This task has been completed and the outcomes have been delivered through the deliverable D3.4.
- T3.5: This task identifies post-project sustainability actions for various activities while providing links to other tasks within PANTERA. It is crucial to have a well-structured and unified approach to assess the progress of these activities. PANTERA has developed a universal methodology to analyze national and EU projects' R&I activities and status. To do this, the PANTERA team has developed administrative and technical processes/methodologies and tools to incorporate the categorization of "Smart Grid technologies/systems", their current R&I status, priorities and maturities to achieve the decarbonization of integrated energy system targets outlined by ETIP SNET Vision 2050. These are presented in this deliverable D3.5 together with what is considered as plausible actions following the completion of the project PANTERA. This report (Deliverable 3.5) is the final deliverable "Roadmap to 2030" and describes the work carried out within task 3.5 of the PANTERA (PAN European Technology Energy Research Approach) covering the recommendations of the project consortium for post project activities in meeting the policies leading to 2030.

The following deliverables have been released under the above activities:

D3.1. Report on current status and progress in R&I activities: Technology [IERC, R, PU, M18]

D3.2. Report on RCS in EU-28 [IERC, R, PU, M22]

D3.3. Report on community energy policy and barriers [IERC, R, PU, M24]

D3.4. Initial report on key challenges and bottlenecks [UCD, R, PU, M39]

D3.5. Roadmap to 2030 [IERC, R, PU, M54]

PANTERA proposed activities and framework solutions are presented in Figure 34. WP3 through constant coordination work has contributed extensively in the following fields in support of the objectives of the PANTERA Process:

• Participated in all the discussions of the consortium in developing and approving the specifications for the multifunctional platform.

• Having the main objective to serve the PANTERA platform, work under WP3 has developed the PANTERA RICAP process (both administrative and technical) to identify the current R&I status and needs to meet the national and EU target on decarbonisation of smart grid network. This will constantly feed-in information and knowledge in the platform that will be highly beneficial to the broader R&I community.

• The RICAP process is highly contributing to the work of Working Team 3 with the results broadly used by ETIP SNET and BRIDGE.

• The network/grid codes, regulations and standards for smart grid solutions have been reviewed and a mapping process to link the regulation, grid codes with the FUNCTIONALITY as defined in the ETIP SNET roadmap has been developed.

• The policy barriers in relation to empowering energy citizens and their active participation in the local and wholesale energy market have been reviewed at the national level, gaps have been identified and possible recommendations are being made.

• The sustainability of the PANTERA platform (as post-project activity) to serve the purpose is also outlined.

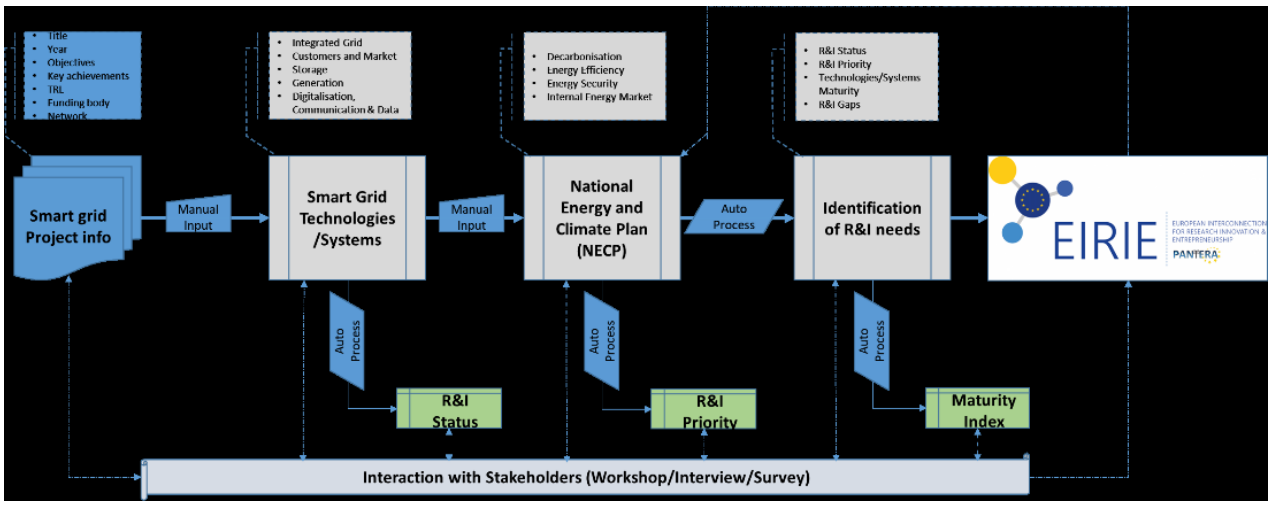


Figure 34: Dynamic RICAP process to identify the R&I status, priority and maturity of smart grid technologies

PANTERA RICAP

R&I status and Continuous gAP analysis process

(How PANTERA is contributing to shape the EU and National Smart Grid Research & Innovation (R&I) activities towards the decarbonisation of Integrated Energy System)

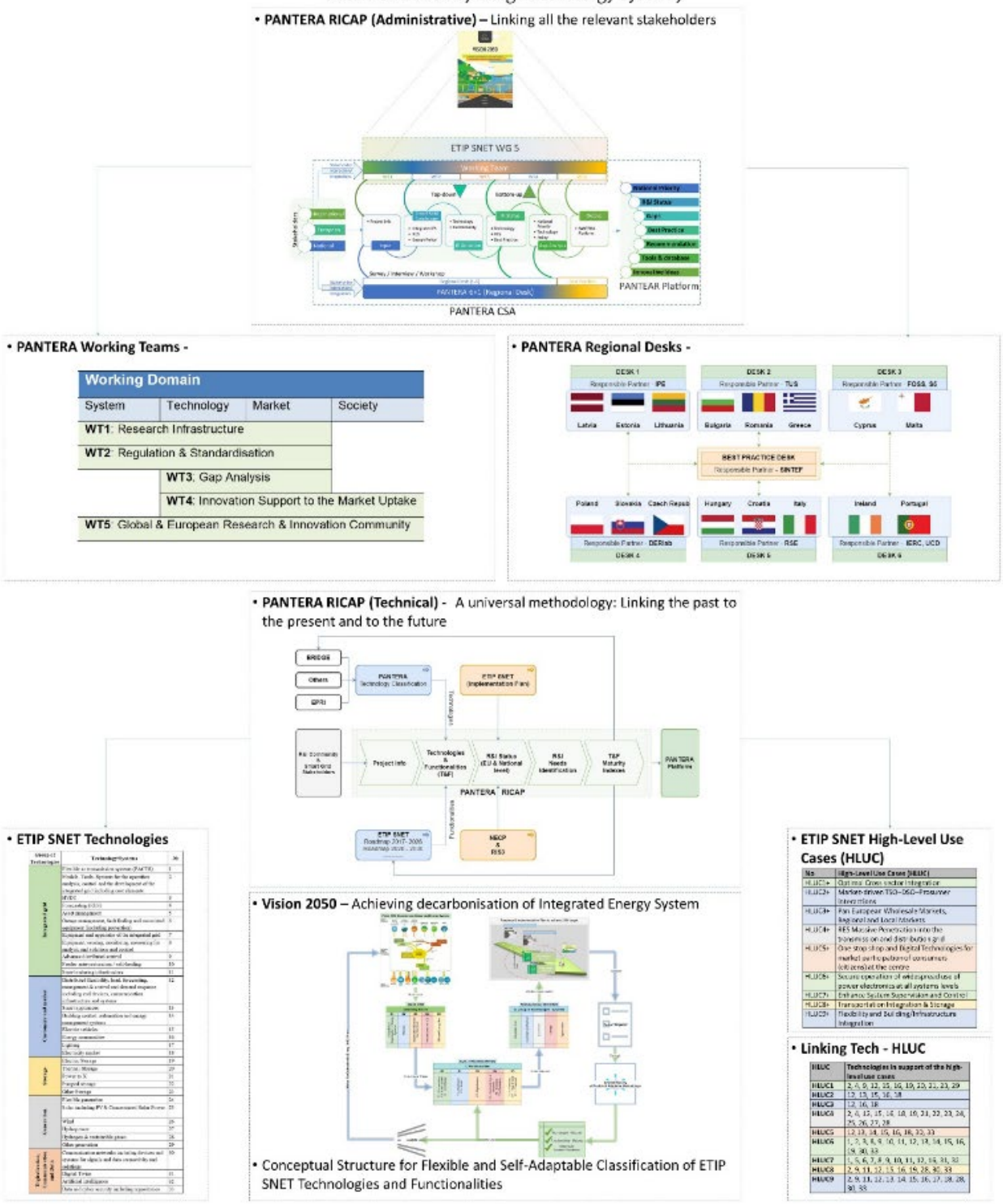


Figure 35: PANTERA proposed activities and framework solutions

2.4.3 Progress achieved under WP4

The objective of WP4 is to identify the way and topics for dissemination and networking activities within the project, which is consisting of setting up a forum, event organization, virtual meetings, establishing collaborative working spaces and social media. WP4 is led by SINTEF Energi AS.

The activity breaks down into three different tasks (dates are adjusted according to the project's amendment) and the overall workflow in the tasks is presented in Figure 25.

- T4.1: Definition of the content for dissemination and networking activities [M3-M9] (SINTEF)
- T4.2: Identification of gaps and missing subjects [M9-M47] (IERC)
- T4.3: Assessment of the defined topics; relevance, driving forces and trends [M45-M54] (SINTEF)

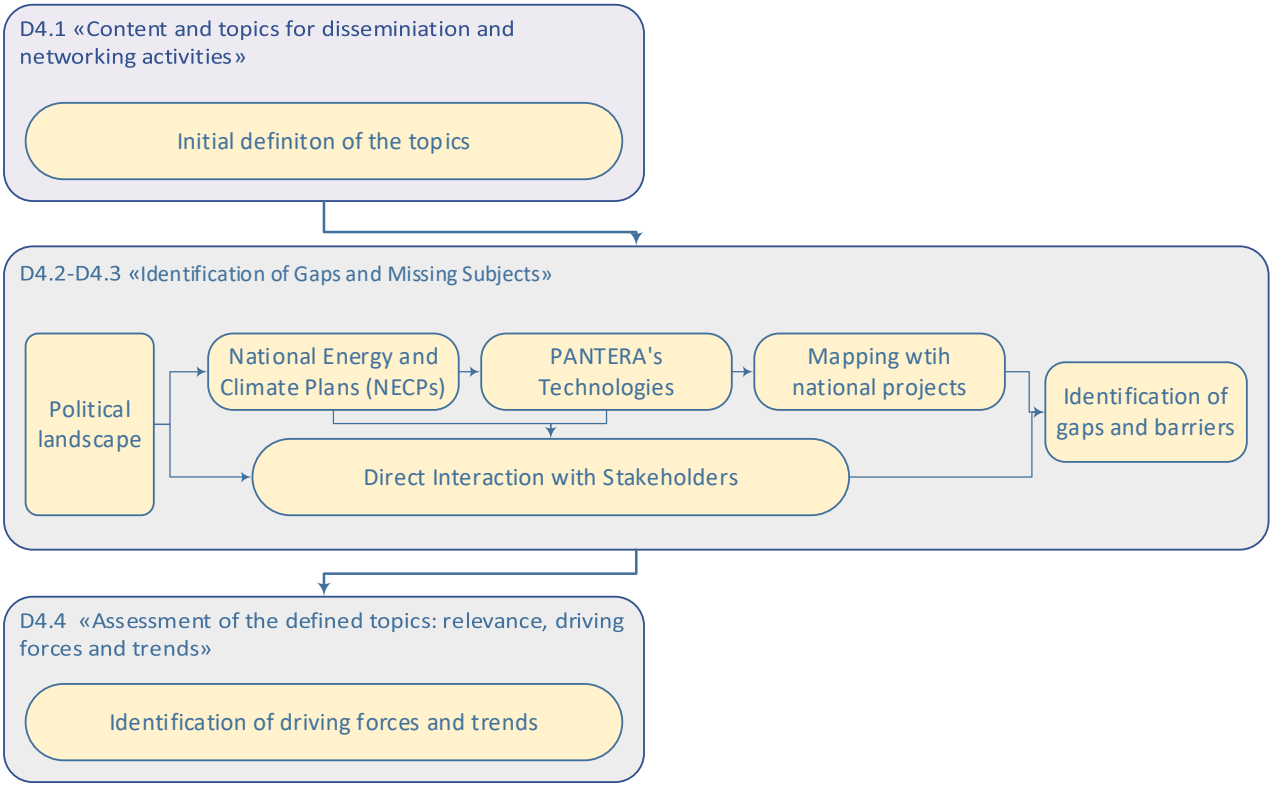


Figure 36: Workflow in "Key topics and content management" activity

During the time interval 37-54 months of the project the following results were achieved per task

T4.2: Identification of gaps and missing subjects (IERC)

During the reporting period T4.2 followed the same approach for identification of gaps and barriers, which was initially established in the task (see the central part of Figure 36).

The process started with reference to the Pan-European Political landscape, defining the main R&I priorities and political targets for the Member States. This part was particularly important for the reporting period, since 2022 unfortunately brought an unexpected political and economic turmoil caused by the outbreak of the war in Ukraine, which resulted in unprecedented energy crises with extremely high prices for electricity in Europe. Furthermore, dry summers in Central and Southern Europe worsened the situation, limiting output from the nuclear power plants. The severity of the situation called for several immediate actions from the

European Commission, which issued a Communication (2022/230) REPowerEU Plan.

The activity was further divided into two parallel streams:

The upper stream: Assessment of the technical domain of Smart Grids, storage and distributed generation

The upper stream was essentially dedicated to the technical domain of Smart Grids, storage and distributed generation. For analysis of the target countries the task applied dedicated RICAP (R&I status and Continuous gAP analysis) methodology developed within PANTERA project RICAP (R&I status and Continuous gAP analysis) process, and the details of this can be obtained in D3.1 deliverable. This process started with an assessment of the National Energy and Climate Plans (NECPs) in the target countries, based on the PANTERA's taxonomy of technologies in order to identify national technical priorities. These priorities were further mapped towards national projects in the target countries. RICAP was applied for analysis of outcomes from multiple projects, in which the countries have participated and that have been considered for this study (see Figure 37).

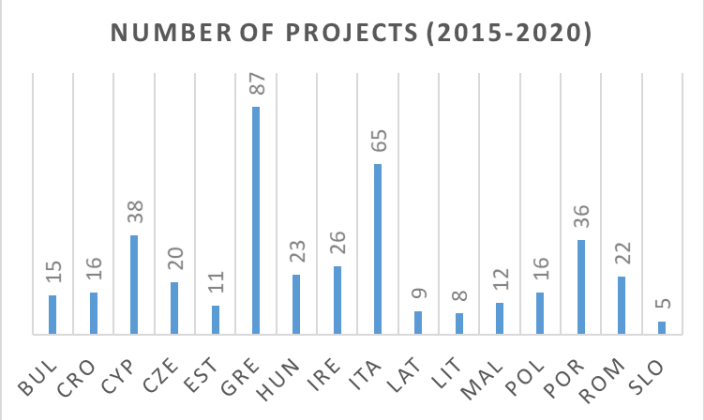
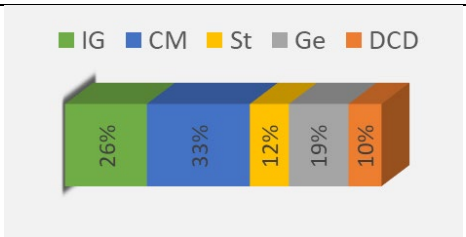


Figure 37: Number of the analysed project per country.

Table 4 shows an example of such assessment for Greece, where 87 projects were analysed.

Table 4 R&I status for Greece

Number of Projects: 87 **IG – Integrated Grid** **CM – Customers and Market** **St – Storage** **Ge – Generation** **DCD - Digitalisation, Communication and Data**	
Highly focused technologies	
IG	**IG8 - Equipment, sensing, monitoring, measuring for analysis and solutions and control.** **IG11 – Smart metering infrastructure**
CM	**CM12 - Distributed flexibility, load, forecasting, management & control and demand response, including end devices, communication infrastructure and systems.** **CM18 – Electricity Market**
St	**St19 – Electric Storage**

	St20 – Thermal Storage
Ge	**Ge24 - Flexible generation** **Ge25 - Solar, including PV & Concentrated Solar Power** **Ge26 - Wind**
DCD	**DCD30 - Communication networks, including devices and systems for signals and data connectivity and solutions.** **DCD33 - Data and cyber security, including repositories**

Based on the outcome of the analysis, general overall gaps were identified in the technology implementation. Furthermore, technological gaps were identified pr. each target country, clustered under the corresponding regional desks (RD1-RD3).

The lower stream: Identification of gaps through workshops and individual interview process

The parallel lower stream in Figure 25 had a broader holistic nature based on direct interaction with stakeholder structures around both technical and non-technical areas. The interactions were made as semi-formal interviews complying with GDPR requirements, where the topics were modified according to any changes in the technical stream. This stream resulted in the definition of the main barriers and gaps whenever it was possible. The feedback from the interviews was specifically applied to selecting topics for case studies and Best Practices in the activity "Collaboration Working Groups" (WP6).

Throughout the project, interviews with 32 stakeholders from the target countries were accomplished (see Figure 38). The interviews included persons representing key stakeholders such as DSOs, TSOs, vendors, academia, citizens energy communities (CECs) and aggregators. It was also observed that several respondents had previously worked in several types of organisations throughout their carrier and accumulated different experiences and thus tended to present a consolidated view rather than representing the most recent affiliation.

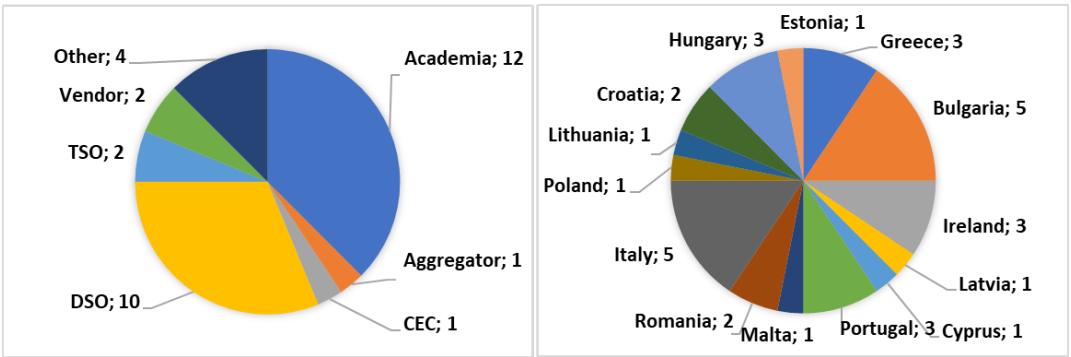


Figure 38: Overview of the interviews accomplished within the project.

Arranging the interviews proved to be quite time-consuming with fairly high drop-off rate from the candidates. In addition, to maintain high quality of the outcomes, the project group cancelled interaction with some of the candidates, which were not qualified for the task.

The following deliverable had been released under the above-mentioned task:

- D4.3 "The Final Report on Identification of gaps and missing subjects"

T4.3: Assessment of the defined topics; relevance, driving forces and trends (SINTEF)

The final task summarised the work done throughout the activity and provided the final conclusions. In order to verify the outcomes, the preliminary conclusions were presented to the stakeholders and discussed at

Round Table sessions at two physical workshops in Hungary and Lithuania. Furthermore, the main outcomes were presented to and supported by a member of the PANTERA Advisory Board in a dedicated interview.

The activity identified the main challenges requiring implementation of Smart Grids Technologies in the focus countries, where the most important were:

- Massive introduction of distributed Renewable Energy Sources (RES)
- Electrification of transport, Electric Vehicles (EVs)
- Growing necessity for consumers' empowerment and engagement
- Economic challenges
- Growing quantity of data from different sources

Despite several similarities as the introduction of RES and the forthcoming electrification of transport, some countries may have specific challenges related to their legacies in configuration of power systems, their geographic locations or some other properties. Smart Grids is a powerful tool combining multiple technologies and the study has emphasised the importance of a harmonised deployment of the technologies in a correct sequence in order to maximise the positive effects and minimise costs related to stranded assets.

When it comes to priorities for implementation of Smart Grid Solutions, several stakeholders indicated three main areas:

- Advanced Metering Infrastructure (AMI)
- Enabling observability and controllability functions for DSOs
- Enabling flexibility and Big Data technologies for enhancing the planning and operation of the grid

Among the nontechnical barriers for more activities in the Smart Grids the study discussed several points, including:

- The role of National Contact Points and potential revision of these
- National Energy and Climate Plans
- Several aspects related to funding procedures for R&I Projects
- Issues related to national regulations.

The document discussed two specific trends, which were identified within the activity:

- Slow transposition process of the European Directives in the target countries, which may gradually bring several unfortunate consequences for some of the Member States, and result in decoupling of the Pan-European R&I needs and priorities with the national. The challenge is that the emerging gaps may grow even bigger due to ever increasing environmental goals from one side and self-accelerating stagnation on the other side.
- Limited interest for regional cooperation among the target countries. Based on experience from other countries, especially the Nordic countries, regional cooperation is an important tool supporting introduction and replication of new technologies. Regional cooperation was also chosen as one of the main principles for creation of EIRIE platform. Therefore, the issue of regional cooperation was discussed during the interviews and workshop interactions, and apparently this practice seems to be more or less unknown in the target countries i.e. no previous experience exists, including lack of bilateral contacts between the decision-makers. Establishing regional cooperation is not impossible, but rather difficult and probably will require specific efforts for creation of such cooperation coming directly from the national governments.

Further the study presents organisation of and results from the Technological Gap Identification Process (RICAP), which made an overview of 409 projects in total, mapping their activities to the different Smart Grid

Technologies and defined prevailing focus areas and gaps. The study concludes that these in general comply with the outcomes from direct interactions with the stakeholders, and therefore advises implementation of RICAP functionality into the EIRIE platform, the main outcome of the PANTERA project.

The following deliverable has been released under the above-mentioned task:

- D4.4 “Assessment of the defined topics: relevance, driving forces and trends”.

2.4.4 Progress achieved under WP5

The objective of WP5 was to organize workshops and interactive meetings with stakeholders beyond the steering committee and working groups members, thus reaching a wider range of stakeholders and initiatives through these actions. WP5 is led by DERlab and supported by all project partners.

WP5 breaks down in three different tasks:

- Task 5.1: Workshop format, planning and reporting [M1-M6]
- Task 5.2: Regional Workshops [M1-M54]
- Task 5.3: Pan-European and Global Workshops [M1-M54]

During the time interval 36-54 months of the project the following were achieved per task.

Task 5.2: Regional Workshops in 2022-2023

The PANTERA consortium organised 11 regional workshops during the final period of the project. A list of regional events is presented below:

	Title	Location	Date
1.	PANTERA & SUPEERA joint Riga workshop: International research collaboration opportunities fostering EU Clean Energy transition in Baltic States	Riga (LV)	27 April 2022
2.	SUPEERA & PANTERA joint Bulgaria workshop: International research collaboration opportunities fostering EU Clean Energy transition in Bulgaria	Sofia (BG)	25 May 2022
3.	SUPEERA & PANTERA joint Cyprus workshop: “International research collaboration opportunities fostering EU Clean Energy transition in Cyprus”	Nicosia (CY)	1 June 2022
4.	IEEE MELECON 2022 conference, Italy: “The EIRIE platform enabling R&I activities and investment in smart grids”	Palermo (IT)	14 June 2022
5.	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
6.	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
7.	SUPEERA & PANTERA Budapest joint workshop: “International research collaboration opportunities: fostering EU Clean Energy transition in Hungary”	Budapest (HU)	26 October 2022
8.	MEDPOWER 2022, Malta: “Boosting the R&I of Smart Grids,	Valletta (MT)	8 November 2022

	Storage and Energy communities"		
9.	CANDO EPE IEEE conference, Hungary: "Boosting the R&I activity on Smart Grid Technologies"	Budapest (HU)	21 November 2022
10.	SUPEERA & PANTERA joint Romania workshop: "International research collaboration opportunities fostering EU Clean Energy transition in Romania"	Bucharest (RO)	23 March 2023
11.	SUPEERA & PANTERA joint Lithuania workshop: "International research collaboration Opportunities - fostering EU Clean Energy transition in Lithuania"	Vilnius (LT)	27 April 2023

A detailed explanation of the objectives of the regional workshops are as follows.

1. Hosted in **Riga, Latvia**, PANTERA and SUPEERA projects jointly organised a workshop to discuss and raise attention on gaps and barriers that limit the R&I activities in the energy sector in the Baltic countries, facilitate knowledge exchange and showcase best practices of how international networking and cooperation between national stakeholders and key international associations and organisations can be beneficial for establishing long-lasting interactions and fostering joint R&I activities.

2. The SUPEERA and PANTERA Projects jointly organised a second workshop in **Sofia**, **Bulgaria** with the aim of sharing best practices in the field of the Clean Energy Transition and fostering the engagement of non-EERA stakeholders towards EERA activities and the SET-Plan. It gathered experts mainly from the research sector and local organisations active in R&I activities.
3. The SUPEERA team with PANTERA Project, organised a workshop, in **Nicosia, Cyprus**, aimed at sharing best practices in the field of green energy and at fostering the engagement of external stakeholders in EERA activities and towards the implementation of the SET-Plan.
4. The PANTERA and the Joint Programme on Smart Grids of the European Energy Research Alliance (EERA JP SG) jointly organized a workshop at the MELECON 20221 conference, in **Palermo, Italy**, aimed to present the EIRIE multifunctional platform and to discuss with local stakeholders about the topics of storage and electromobility.
5. The PANTERA nano workshop focused on the Capacity Building on R&I in Smart Grids, Storage and Local Energy Systems was held within the program of the 22nd International Scientific Conference on Electric Power Engineering (EPE) in **Kouty nad Desnou, Czech Republic**. The workshop was attended by the Czech Republic stakeholders who are active in universities/research institutes, industry, and small SME's. The aim was to collect feedback from the regional stakeholders on the status of Smart Grids activities in the region.

6. PANTERA was present at the IEEE Smart Cities Conference 2022, hosted in **Paphos, Cyprus**, bringing the stakeholders together to enlighten the conference on the activities pursued in strengthening the energy transition process. The workshop is more focussed on the R&I activities in the field are weak calling for more national and European support to raise opportunities, bring closer to the wealth of EU knowledge and offer the means to address local needs with the support of the industry and broader communities.
7. Hosted in **Budapest, Hungary**, SUPEERA and PANTERA projects jointly organized this workshop aiming to enhance collaboration in R&I activities in Hungary, facilitate knowledge exchange, and showcase best practices of how international networking and cooperation between national stakeholders and key international organisations can be beneficial for establishing long-lasting interactions in R&I activities.
8. The PANTERA workshop organized in **Valletta, Malta**, concerned in achieving carbon neutrality and brought together stakeholders in the field of smart grids, storage and local energy systems. It also tried to pave the way forward for helping the country to move faster toward the much-wanted energy transition to the low carbon economy.
9. The PANTERA project participated in the CANDO EPE IEEE conference that has been held in **Budapest, Hungary,** by giving a keynote speech in the plenary session and through the organisation of a parallel session. The keynote and the session entitled "strengthen of regional activity in R&I facilitated by the European EIRIE platform".
10. SUPEERA and PANTERA joined forces with the objective to enhance collaboration in R&I activities in **Bucharest, Romania**. The workshop offered a detailed overview of the European policies, strategies, EU funding programmes and collaboration opportunities at the disposal to the research community of Romania with the aim to bringing them closer to the R&I activities of Europe and get active with the SET Plan process.
11. On April 27th, 2023, the final workshop in **Vilnius, Lithuania**, jointly organised by SUPEERA and PANTERA. The event brought together experts from academia, industry, and government sectors in a hybrid format. The participants shared valuable insights and experiences, contributing to a fruitful exchange of knowledge. The workshop is focused to discuss about the less involved countries in research and innovation (R&I) activities and the realisation of the European Union's Strategic Energy Technology (SET) Plan Implementation Plans.

Task 5.3: Pan-European and Global Workshops

The PANTERA consortium organised 4 pan-European events during the final period of the project. A list of Pan-European events is presented below:

1. The EU Sustainable Energy Week (EUSEW) 2022, online, 25-29 October 2021
2. Enlit Europe 2022: Digital EU Projects Zone & physical presence, Frankfurt (DE), 30 November – 2 December 2022.

Figure 39: Project officer, Szilvia Bozsoki, during her speech in the final event

3. Final event of the PANTERA Project – EIRIE Platform, on the 19th of June 2023, between 13:00 – 20:00 CEST, under the title of "Strengthening research collaboration opportunities Fostering EU Clean Energy transition".

4. PANTERA and EERA JP Smart Grids Joint Webinar on EIRIE, June 28, 2023

The summary for the PANTERA workshops, webinars and events are available on the PANTERA website[7].

The following deliverables have been released under the above activities in Brussels.

Figure 40: Participants in final event in

- D5.3: Report on the outcomes of regional workshops (final)
- D5.5: Report on the outcomes of Pan-European and Global workshops (final)

The deliverables for WP5 are publicly available on the PANTERA website[8].

The PANTERA workshops, webinars and events supported the PANTERA consortium to introduce the EIRIE platform to the R&I community. Furthermore, it helped to get feedback on the EIRIE platform and the PANTERA process, which helped in updating and improve the EIRIE platform and the PANTERA process.

2.4.5 Progress achieved under WP6

The objective of WP6 is to provide organisational support to establish regional stakeholder desks in the target regions, as vehicles to ensure wide participation and involvement of market actors and stakeholders throughout the project and to create local networks. WP6 is led by IPE (Institute of Physical Energetics, Latvia).

WP6 breaks down in three different tasks.

- Task 6.1. Review of EU strategic priorities and relevant policy developments. [M1-M9]
- Task 6.2. Analysis of the national projects, findings in the target regions. [M9-M46]
- Task 6.3. National cross-case comparisons and conclusions. [M44-M54]

During the time interval 37-54 months of the project the following were achieved per task. Note that All WP6 tasks' activities form a core of regional dimension and are fully aligned with Desks timeline.

Task 6.2. Analysis of the national projects, findings in the target regions.

Task 6.2 mainly focuses on establishing and continuously guiding the activities of Regional Desks, including:

- engaging stakeholders to interact with PANTERA.
- inviting stakeholders to participate in PANTERA interviews conducted within WP4.
- identifying local events and supporting organisation of dedicated workshops.
- advertising PANTERA through local channels.
- identifying and creating country specific case studies.

The above-mentioned activities will create a basement for further work within Task 6.3.

To achieve this, the PANTERA consortium has devised a Desk approach, grouping target countries into six operational Desks, with an additional Best Practice Desk.

[7] https://pantera-platform.eu/events/
[8] https://pantera-platform.eu/resources/

The main results of this work are presented in the D.6.5.

D6.5 provides a comprehensive summary of all activities undertaken under the various Desks, with particular emphasis on case studies. Desk 1 focused on investigating the organization of regional R&I calls, using the Baltic Research Programme as an example. The aim was to identify ways to strengthen national R&I activities in the smart grid domain and streamline call procedures, leading to better research project quality. Key recommendations from this case study include aligning call objectives with national R&I priorities, promoting closer cooperation with applicant agencies, and simplifying administrative requirements.

Desk 2 covered the countries of Bulgaria, Greece, and Romania. The case studies explored reasons behind Bulgaria's low R&I activity in EU-funded projects, with a focus on laboratory infrastructure challenges. Greece showcased its potential to become a leader in R&I in novel power systems with micro and nanogrids based on its successful experience in autonomous island power systems. Romania demonstrated promise in Low Voltage DC networks, requiring active participation in EU and LVDC expert groups.

Desk 3 collaborated with Cyprus and Malta, also involving experts from Bulgaria and Portugal. The case study emphasized building R&I collaborations for common themes and issues, facilitating access to research infrastructure, and fostering research interest within these countries through the EIRIE platform.

Desks 4 and 5 performed literature reviews on smart meter roll-out in Poland, clean energy policy in Czechia, Croatia, Italy, and Hungary, and financing opportunities in Slovakia. The report derived guiding principles for these countries to strengthen their R&I presence in Europe, such as participating in international collaboration, setting clear energy technology RD&D priorities, and creating comprehensive investments for energy efficiency.

Desk 6 focused on data issues, with a case study from Ireland revealing the significance of authenticated high-quality data for reliable research. The report highlighted the importance of data sharing agreements, meaningful Data Management Plans, and regulatory sandboxes to incentivize innovation in clean energy R&I.

The Regional Corner activity of the PANTERA project also presented through the EIRIE platform, plays a pivotal role in fostering collaboration among various regions and countries involved. As highlighted in previous deliverables, EIRIE is a crucial deliverable of the project, serving as a comprehensive platform for knowledge sharing and collaboration. Within EIRIE, the Regional Corner pages are specifically designed to facilitate teamwork, knowledge creation, and regional activities.

To effectively harness the collective work spirit, the Confluence platform is utilized. Confluence serves as a dynamic team workspace, enabling seamless collaboration, idea generation, and project organization. Through this platform, the EIRIE team and stakeholders can come together to contribute their expertise and insights, creating a rich knowledge base for the regions to flourish.

In conclusion, this report showcases the progress made by the PANTERA project in enhancing R&I activities in smart grids and local energy systems throughout Europe. The collaboration among various stakeholders and the exploration of case studies and best practices have contributed to the success of the project, enriching the EIRIE platform and promoting sustainable energy transition across the target regions. The lessons learned and recommendations derived from these case studies are essential to guide future R&I initiatives in the field. The active engagement of stakeholders through the EIRIE platform has led to meaningful outcomes, fostering knowledge exchange and driving innovation in the smart grids, storage, and local energy systems domain.

Task 6.3. National cross-case comparisons and conclusions.

Task 6.3 mainly focuses on conducting national cross-case comparisons and deriving conclusions from the country-specific policy analysis, including:

- a specification of potential solutions to overcome acceptance barriers for each country.
- guidance for national, regional, and local policy makers on how to support Smart grids deployment.

The main results of this work are presented in the D.6.4

D6.4 summarizes the common activities and individual work performed under each Desk while discussing pathways to facilitate the deeper involvement of low activity countries. The project has demonstrated that collaboration in various dimensions is the key solution to promoting R&I activities:

Communication between national representatives and the EC: Establishing open and effective lines of communication between national representatives and the European Commission (EC) is crucial for promoting alignment between national policies and European objectives. Regular dialogue ensures that national policies are in harmony with the broader European framework, allowing countries to actively contribute to the European agenda while addressing their specific national interests.

Regional cooperation: Collaboration among countries in a region fosters development, progress, and prosperity beyond individual efforts. By joining forces and working towards common goals, countries can achieve greater success and representation at the EU level, benefiting all participants.

Close cooperation with EU-level initiatives and organizations: Engaging closely with EU-level initiatives and organizations enhances national stakeholders' visibility and influence at the EU level. Active participation enables national stakeholders to have a say in decision-making processes, influence policy developments, and forge partnerships with European counterparts.

Effective communication between national bodies and researchers: Facilitating effective communication channels between national bodies and researchers supports proposal preparation and improves research proposal quality. Clear and timely communication enables national bodies to guide researchers, provide necessary resources, and support proposal presentation, leading to the submission of high-quality proposals.

Cooperation between researcher groups: Collaboration between researcher groups at various levels facilitates the exchange of ideas, knowledge, and lessons learned. Leveraging collective expertise enhances proposal quality and increases the chances of success in funding calls, thus bolstering the recognition and position of organizations within the EU landscape.

Collaboration between science and business sectors: Effective science-business cooperation is vital for translating research outcomes into practical applications and commercializing scientific discoveries. Leveraging the strengths of both sectors enhances a country's innovation performance.

Finally updated PANTERA country profiles are meticulously presented, offering a comprehensive and insightful view of each country's current status and involvement in smart grids, storage, and local energy systems. These profiles have been diligently curated to capture the latest developments, challenges, and opportunities for research and innovation (R&I) activities in the respective nations.

2.4.6 Progress achieved under WP7

The objective of WP7 is to deliver a concrete methodology and plan for the future sustainability of the PANTERA platform, beyond the duration of the project. In this sense the WP will deliver a robust exploitation strategy for the PANTERA platform, while analyzing future costs for the operation and expansion of the Platform and identifying possible financing mechanisms and instruments at European and Regional level to cover any financing gaps. WP7 is led by Suite5.

WP7 breaks down in 4 different tasks:

- Task 7.1 Exploitation Strategy (M6 - M42)
- Task7.2 R&I Recommendations for future Smart Grids and Promotion to Relevant Stakeholders (M18 - M54)
- Task 7.3 Mapping of funding mechanisms for post-project activities continuation (M18 - M54)
- Task 7.4 Sustainability Planning and Business Development Activities (M24 - M54)

During the time interval 37-54 months of the project the following were achieved per task.

Task 7.1 Exploitation Strategy

Task 7.1 within the PANTERA project focused on defining the exploitation strategy, to secure the long-term viability, of the EIRIE Platform, positioned as the reference platform for reporting, analysing, and feeding knowledge, information, and data to the EU R&I community. DG ENER / BRIDGE, JRC, and ETIP SNET recognized its significance, designating it as the future reference for coordinated activities.

Collaborating with JRC, the PANTERA consortium ensured the platform's hosting under the europa.eu domain, with SPRING project taking over content population and maintenance post-PANTERA. Integration with various platforms enriched content and functionality.

The EIRIE Business Model Canvas (BMC) served as the foundation for the exploitation strategy, emphasizing the platform's role as a one-stop-shop and advanced collaboration space for stakeholders, setting a clear direction for success.

Aligned with the BMC, three key principles guided EIRIE Platform exploitation:

- **EIRIE Platform Sustainability:** Ensuring uninterrupted operation through efficient and scalable infrastructures hosted under a trustworthy entity (europa.eu domain), fostering stakeholder engagement and trust.
- **Stakeholder Engagement:** Prioritizing interaction, collaboration, and constant content updates. Integrating with existing platforms and engaging experts, policymakers, and market stakeholders to foster knowledge creation and facilitate collaborative R&I activities.
- **EIRIE Platform Viability Planning:** Securing adequate funding for smooth operation, service expansion, content enrichment, and stakeholder engagement through workshops and webinars.

The EIRIE platform's designation as the reference platform for EU R&I community underscores its importance, backed by JRC's hosting supervision and SPRING project's support. The project has already met minimum viability requirements but remains dedicated to enhancing platform visibility and engaging new stakeholders.

The following deliverables have been released under the above activities:

D7.1: Exploitation Strategy and Plan (M42)

Task 7.2 R&I Recommendations for future Smart Grids and Promotion to Relevant Stakeholders

Task 7.2 in the PANTERA project aimed to promote mid-term Research and Innovation (R&I) priorities for smart grids. To achieve this objective, Task 7.2 involved several key steps. Firstly, a methodological approach was developed to define future R&I priorities and research areas in Smart Energy Systems. This approach incorporated insights from ETIP SNET WG5 Working Teams and the priorities set in the National Energy and Climate Plans (NECPs) of member states addressed through the PANTERA project.

Based on the insights gathered from Work Packages 3 and 4, as well as from stakeholder interactions in Work Packages 5 and 6, a comprehensive list of R&I recommendations and market reform suggestions was fine-tuned and documented. The intention behind this effort was to facilitate the advancement and promotion of innovation in Smart Grids at a pan-European level. The ultimate goal was to maximize the benefits of smart grid technologies for achieving a decarbonized energy system, encouraging active citizen participation, enhancing energy security, and bolstering system resiliency.

Furthermore, Task 7.2 addressed mid-term regulation barriers, emphasizing the importance of aligning EU regulations and standards with smart grid technologies through the EIRIE platform. By doing so, it aimed to create an environment conducive to innovation and overcome hindrances in the field.

The comprehensive list of R&I recommendations and market reform suggestions, developed under Task 7.2, provided valuable insights and strategic guidance to the R&I community, fostering the promotion and advancement of innovation in Smart Grids.

The following deliverables have been released under the above activities:

D7.2: Report on the promotion of Key Mid-term R&I Priorities for Smart Grids (M54)

Task 7.3 Mapping of funding mechanisms for post-project activities continuation

During the reporting period, Task 7.3 of the PANTERA project focused on identifying funding mechanisms to support the continuation of project activities beyond its duration. The consortium partners conducted a comprehensive analysis of pan-European, regional, and national R&I support instruments, documenting the prerequisites and requirements for securing the necessary resources.

In the relevant deliverable, "Report on Appropriate Funding Instruments to ensure Project Sustainability" (D7.3), the consortium presented their findings, including relevant EU-wide funding programs and calls that the PANTERA consortium or individual partners could apply for to sustain project activities. Additionally, the leaders of the PANTERA Regional Desks explored funding opportunities at the national and regional levels, listing calls and topics for potential resource acquisition.

The activities carried out in Task 7.3 provided valuable input for the Sustainability Planning activities in Task 7.4. By identifying suitable funding sources, the PANTERA project aimed to ensure the long-term success and continuity of its initiatives beyond the official project conclusion.

The following deliverables have been released under the above activities:

D7.3: Report on Appropriate Funding Instruments to ensure Project Sustainability (M48)

Task 7.4 Sustainability Planning and Business Development Activities

In Task 7.4 of the PANTERA project, the primary objective was to secure the project's long-term sustainability, with a special focus on the EIRIE platform. The Sustainability and Business Development Plan (Deliverable D7.4) outlined strategies to achieve this goal, including the comprehensive analysis of existing EU instruments and initiatives related to Smart Energy Systems (conducted in the context of T7.3).

Following extensive discussions involving DG ENER, SPRING, and PANTERA project representatives, SPRING was entrusted with the responsibility of maintaining and creating content for the EIRIE platform. To ensure the platform's financial sustainability, a customized service contract was established under the governance of DG ENER, with SPRING offering operational support.

To further guarantee the platform's long-term viability, the PANTERA consortium developed a clear structure outlining the roles and responsibilities of the entities involved in EIRIE's operation. Moreover, a comprehensive cost analysis was conducted to estimate the resources required for the platform's sustainability in the future, emphasizing its critical significance for the project's overall success. The detailed cost breakdown analysis identified the necessary resources to sustain the platform for the next three years. The consortium also prioritized relevant funding programs and planned to submit applications to secure the necessary funds for the continuous operation of the platform. The thorough cost breakdown analysis provided a comprehensive understanding of the financial obligations for maintaining and operating the platform, thereby ensuring its future viability.

In case the acquired funding proved insufficient, SPRING's internal budget and a new EC contract supporting EIRIE would cover the expenses.

In tandem, Deliverable D7.5 focused on proactive business development activities. The Regional Desk leaders were requested to utilize a provided spreadsheet to summarize their business development activities related to securing funding for post-project activities. This spreadsheet served as a valuable tool for documenting their participation in submitted proposals and outlining their plans for upcoming proposals. The main purpose was to streamline and organize their efforts in obtaining funding and support the long-term sustainability of the PANTERA project.

The following deliverables have been released under the above activities:

D7.4: Sustainability and Business Development Plan (M51)

2.4.7 Progress achieved under WP8

The **objective** of WP8 is to communicate and disseminate project activities to facilitate the flow and exchange of information to the stakeholders and broader audience, and within the platform. This work package deals with two different types of activities:

- Dissemination activities, aiming at disseminating the PANTERA project outcomes and achieving the highest possible impact and visibility of its work.
- Communication activities, aiming at reinforcing the interaction between stakeholders and initiatives related to smart grids development.

WP8 is led by DERlab and supported by all project partners to increase PANTERA's reach and impact among the R&I community in the energy field in Europe.

WP8 is organized in three different tasks that run continuously throughout the project:

- **Task 8.1. PANTERA Collaboration Platform: Pan-European Hub for Smart Grids [M1-M48]**
- **Task 8.2. Presenting PANTERA Activities in Special Events [M1-M48]**
- **Task 8.3. Project visual identity, website, and media coverage[M1-M48]**

Within M37-54, the following progress has been achieved per task:

Task 8.1. PANTERA Collaboration Platform: Pan-European Hub for Smart Grids

This task was about the creation of the interactive multi-functional platform that stands for European Interconnection for Research Innovation & Entrepreneurship, EIRIE, which was officially launched in July 2021.

The key objective of the EIRIE platform was to connect and bring together the European Union's Research & Innovation community in one place, to enable collaboration, increase wider interest and give access to all the resources needed to play an active role within the European research community. The EIRIE platform aims at strengthening the participation of all Member States in support of the fifth pillar of the Energy Union (Research, Innovation and Competitiveness) and energy transition mentioned in *"A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy"*.

Supported by the JRC, the EIRIE platform users can get an easy access to information on potential funding and consortium building, projects data collection (results and outcomes, best practices, reports and deliverables, etc.), references to standards and regulations, all of these searchable via an easy-to-use search tool, to help bridging the gaps that currently exist in the energy field in Europe between Member States.

Furthermore, to ensure the success and sustainability of the platform, the PANTERA consortium was working closely with JRC (EC Joint Research Centre), under the guidance of DG Energy of the European Commission, to develop EIRIE as a linked extension of their Smart Energy Systems platform. The platform will also be serving the needs of ETIP SNET (ETIP Smart Networks for Energy Transition) and be in close collaboration with well-known platforms in Europe such as the ERA-Net SES (ERA-Net Smart Energy Systems), DERlab and Mission Innovation.

Task 8.2. Presenting PANTERA Activities in Special Events

This task was about increasing the awareness about PANTERA and disseminating the results by supporting and encouraging the active participation of project partners in relevant European events. For this purpose, the project partners were informed about relevant events within the European framework, promoting PANTERA's presence in the selected events and informing the stakeholders about them. The information obtained in each of these events has been reported, followed-up and acted upon.

During the project period of 2019-2021, the COVID-19 pandemic affected the PANTERA workshops. To tackle

the post COVID-19 challenges in 2022-2023, the main objective of the PANTERA was to reach the as many stakeholders of the EU countries within the project duration. To expedite the PANTERA deliverables, PANTERA consortium joined its forces with EERA to organise maximum workshops in the EU region. It also gave us a broad spectrum to reach EU research community. The SUPEERA and PANTERA projects jointly organised a series of 10 workshop as part of a series of events dedicated to the EU-13[9] countries, mentioned extensively in deliverable 5.3.

In the paragraph below, the events to which PANTERA partners took part to disseminate the project results and raise awareness about the project can be found:

- The PANTERA project participated in the **CANDO EPE IEEE** conference that has been held in Budapest, Hungary. The keynote and the session entitled "strengthen of regional activity in R&I facilitated by the European EIRIE platform".
- The **EU Sustainable Energy Week (EUSEW)**, 2022, (physical presence)
- PANTERA was present at the IEEE Smart Cities Conference 2022, hosted in **Paphos, Cyprus**, bringing the stakeholders together to enlighten the conference on the activities pursued in strengthening the energy transition process.
- The PANTERA and the Joint Programme on Smart Grids of the European Energy Research Alliance (EERA JP SG) jointly organized a workshop at the **MELECON 2021 Conference**, in Palermo, Italy, aimed to present the EIRIE multifunctional platform and to discuss with local stakeholders about the topics of storage and electromobility.
- **Enlit Europe** 2022, Frankfurt, Germany, (physical presence at EU project Zone)
- The PANTERA nano workshop focused on the Capacity Building on R&I in Smart Grids, Storage and Local Energy Systems was held within the program of the **22nd International Scientific Conference on Electric Power Engineering (EPE**) in **Kouty nad Desnou, Czech Republic**.

Task 8.3. Project visual identity, website and media coverage

This task was about developing a project visual identity to present the external identity of the project in a consistent way, which is already completed during the initial phase of the project. Additionally, the task also included the maintenance of the public project website, suitable for different levels of interest and expertise. To maximise the dissemination of the project activities and results to the wide public, several activities were performed including press release issuing, promotion in important European energy publications, project website, conference websites and promotion, social media (e.g., dedicated professional LinkedIn account, Twitter, Facebook, YouTube channel), DERlab public activity report and dedicated newsletter, detailed explanation in deliverable D8.4. The figure below is the website activity report of the PANTERA website for the period of 2022-2023, as a running project, PANTERA website had a quite reasonable response. A mature website with the multifunctionality, EIRIE as a service, would increase the share of returning visitor.

To summarize the activities undertaken under WP8, and make them more visible, the project website has been set up and running since 2019 and is regularly updated with project news and relevant information, a detailed description of the websites is mentioned in deliverable 8.4. All workshops are announced, and the outcomes are uploaded as well on the website, including the presenters' slides, the workshop summary, and links to watch the workshop on demand. Social media channels (Facebook, Twitter, LinkedIn, Research Gate and YouTube) have been set up and are managed by WP8 leader DERlab, with the collaboration of all project partners. Regular updates were made to engage the audience increase interaction. Internal communication channels such as emails, Slack tool, Microsoft Teams tool and OnlyOffice platform are also used to ensure a smooth internal communication. Slido, a Q&A and polling platform, was also purchased to make the increase user interaction while conducting workshops, seminars, and webinars.

[9] https://www.supeera.eu/meet-the-eu-13.html

PANTERA has also been promoted in the DERlab Public Activity Report 2021-2022, which is available online and has been sent to the DERlab member's network. The project will also be featured extensively (over 10 pages) in the DERlab Public Activity Report 2020-2021 (entitled *"Pan-European Technology Energy Research Approach")* [10] to promote the project achievements so far, in particular the EIRIE platform. The edition gave special overview and the potential of the EIRIE platform to the EU research community. The later section also includes the "Repository search Tool", a service on the EIRIE platform, which is a joint effort from JRC and DERlab to create a repository search tool for the Smart Grid research infrastructure. In the DERlab general assembly, in April 2023, the EIRIE platform is successfully promoted among the DERlab members.

PANTERA was also featured (July 2023 edition) in the *Open Access Government Journal*, titled "*Bridging the Gap Between Researchers and the Entrepreneurs*" [11], Open Access Government is a digital publication that provides an in-depth perspective on key public policy areas from all around the world, including health and social care, COVID-19, research and innovation, technology, government, environment and energy. The feature included a overview of the project, the mission, objectives and achievements, as well as the EIRIE platform.

PANTERA has also been presented in many scientific (online and/or hybrid) events and conferences (see a list of the main events in task 8.2) by project partners, which allowed key interactions with stakeholders and gathering relevant feedback on the promoted solutions of the project and the EIRIE platform.

To keep track of the promoted work of the PANTERA project, through correct and effective communication channels and targeting the right audience, we have been monitoring different sets of Key Performance Indicators (KPIs). The KPI visualization of PANTERA's activities is presented in detail in the Annex.

Deliverables

The following deliverables have been released under the above activities, available on the PANTERA resources page of the website[12] .

- **D8.3. PANTERA Collaboration Platform: European Hub for Smart Grids.**
- **D8.4. Report on Dissemination and communication Activities.**

Contribution to the PANTERA process

WP8 has played a significant role in supporting the objectives of the PANTERA process by actively contributing to the following areas:

- Leading Role in EIRIE Platform Development: WP8 has been at the forefront of all consortium discussions, taking a leading role in developing and approving specifications for the EIRIE platform. Their valuable input has been instrumental in shaping the platform's functionalities.
- Content Management and Updates on EIRIE Platform: After the successful launch of the EIRIE platform, WP8 has continued to play a crucial role in regularly providing content and updating news and events on the platform, ensuring its relevance and usefulness.
- Communication and Dissemination: The primary objective of WP8 is to effectively communicate and disseminate project activities, facilitating the flow of information to stakeholders and a broader audience. In pursuit of this objective, WP8 has achieved several tangible outcomes:
    - Support and Alignment with the European Commission (EC): WP8 has worked towards aligning the EC with PANTERA's objectives, securing the platform's hosting by the EC, and giving it the official name "EIRIE – European Interconnection for Research Innovation & Entrepreneurship."
    - Establishing Project Visual Identity and Dissemination Material: WP8 has successfully developed

[10] https://der-lab.net/ar2021-2022//
[11] **https://doi.org/10.56367/OAG-039-10929**
[12] https://pantera-platform.eu/resources/

the project's visual identity and dissemination materials, contributing to a strong and consistent image of the PANTERA project.

- Public Website and Social Media Channels: WP8's efforts have resulted in the creation and management of a public website and social media channels, enhancing the project's online presence and engagement with the audience.
- Stakeholder Interactions and Engagement: WP8 has conducted various activities, including mailing campaigns, social media posts, website articles, newsletters, webinars, and workshops, effectively engaging stakeholders. These efforts complement the work done through regional desks and assist in activating stakeholders in the PANTERA process.
- PANTERA's online presence, along with participation in events and conferences, has effectively facilitated project awareness, promotion, and engagement with stakeholders.

Through the continuous and dedicated work, WP8 has significantly contributed to achieving the project's communication and dissemination objectives, fostering greater awareness and participation in the PANTERA initiative.

In the next table the contribution of each individual package against the overall objectives of the project is summarized.

Table 5: *The WPs contribution against the overall project's objectives.*

Objectives	WP2	WP3	WP4	WP5	WP6	WP7	WP8
Identify and establish communication links with R&I stakeholders active in the fields of smart grids, storage and local energy systems including policy makers, standardisation bodies and experts in both research and academia representing the EU-27 energy system	Deep involvement of PANTERA partners in several international initiatives i.e: **Mission Innovation**, **International Smart Grid Action Networks** (ISGAN), **ETIP SNET** and **EERA JP4SG.**						
Develop an innovative top-down and bottom-up approach for effectively identifying the key challenges in accelerating R&I activities in low spending countries		**RICAP process** establishment **Network/grid codes, regulations and standards for SG** analysis **Policy barriers** in					

		relation to empowering energy citizens and their active participation analysis					
Formalize a governance structure capable of delivering targeted objectives that will bring under the same umbrella all active entities / stakeholders in the field of smart grids / storage and local energy systems to leverage synergies and maximize benefits					**PANTERA 6+1 approach in regional activity**		
Develop enhanced knowledge-sharing mechanisms that help identify, discuss and structure the key R&I challenges		The **RICAP process**	**Several topics** identification critical for **increasing of SG activities** in the target countries				The **EIRIE platform** promotion and support
Build a pan-European multi-functional collaborative platform through which dedicated tools will facilitate the collection of real data / results from on-going projects, build a useful shareable data repository (a virtual stakeholders hub, termed as ViSor-Hub developed), capable of supporting case	Collaboration area facilitated further through Confluence	Confluence area of **knowledge creation**. The **system maturity identification** tool. **Data base** creation for shareable data and info	**Content creation** through the topics of interest		The **EIRIE regional corner** creation and operation	Supporting the sustainable continuation of **content creation**	The **Heat map** project data analytics

studies of exploitable results, scenario building and local energy system analysis accessible by all stakeholders							
Members of R&I community in collaboration with already on-going activities aiming to wider participation, strengthen objectives and extent impact of achieved results				**Workshops** and engaging events organization continuation			
Develop working groups/teams consisting of stakeholders depending on evolving R&I needs and topics identified in the project for generating results, reports, white papers and offer support where needed					**PANTERA 6+1 approach** and the **EIRIE Regional corner**		

3 Anticipated development work to improve services of EIRIE

EIRIE has reached a mature state to offer the planned services to the R&I community. However, the following operational requirements are a must to offer a healthy service to the R&I community and all connected users:

- Manage role of every user to be responsive to the authorized status on EIRIE
- Update the operating system to the most updated version and modify operational manual as required.
- Back up data every day to safeguard the integrity of the system and the data recited there-in.
- Constantly keep updated list of events and posted material on EIRIE.
- Modify as required the automated processes for updating data, information and knowledge coming from other platforms.
- Update the static data in all pages to be updated to the latest versions.

Additionally, following the recommendations of members of the advisory board the following future enhancements will further complement and enrich the services offered by the EIRIE platform and should be pursued through the planned service contract:

- Incorporating features like user recommendations, personalized notifications, or project matchmaking to enhance user engagement and facilitate relevant connections.
- Implementing a quality assurance process to validate and maintain the accuracy and consistency of metadata across content items.
- Allowing users to provide feedback or rate the quality and usefulness of content, helping to prioritize resources and improve content recommendations.
- Allowing users to save search queries, set up alerts for new content matching specific criteria, and track their search history for easy reference.
- Implementing user-friendly navigation and filtering options within groupings to enable users to explore content based on their specific interests or needs.
- Exploring the use of data visualization techniques or interactive maps to provide a visual representation of content distribution and aid in data exploration and discovery.
- Integrating AI (artificial intelligence) and ML (machine learning) techniques within EIRIE's architecture can unlock new opportunities to leverage data, improve decision-making, and enhance the overall functionality of the platform. This holds true especially for the living tools as maturity index tool. By harnessing the power of AI and ML, EIRIE can provide users with advanced analytics, personalized recommendations, predictive insights, and continuous learning capabilities, ultimately advancing knowledge and driving innovation in the energy systems domain.

4 Critical assessment of the project progress

4.1 Risks identified and/or foreseen with related mitigation measures

The foreseen risks as identified under the GA are presented in the following table.

Table 6 The foreseen risks for the PANTERA project

Description of risk (indicate level of likelihood: Low/Medium/High)	WPs	Proposed risk-mitigation measures

Losing critical staff or partners at crucial points of the project (Low)	WP1	All changes of staff have been noted and replacements were appointed in time to take over the responsibilities. No serious shortcomings were noted.
WPs resources not well balanced (Low)	WP1	The planned work was concluded with good cooperation between partners even if resource allocation was not foreseen the required level.
Unexpected delays in delivering the project deliverables (Medium)	WP1	All deliverables have been submitted, some with short delays but all to the required quality that were approved by the Project Officer.
European entities do not respond positively (low)	WP2	The good working relations with JRC and DG ENER have helped to overcome any hesitation from third parties. Planned work was completed with good response.
Lack of information and/or co-operation from key stakeholders (Medium)	WP3	Building good collaboration work ethic with JRC, DG ENER, EERA AISBL / SUPEERA, ETIP SNET, BRIDGE and others have helped to conclude all obligations of the project with no shortcomings.
Not cover adequately the needs of stakeholders (low)	WP4	Most of the stakeholders from all targeted countries responded adequately to the planned works with only low participation from the stakeholders of Slovakia. However, with good reaction and support from neighbouring stakeholders, the planned dissemination work reached satisfactory levels.
Workshops are not well attended and do not offer the planned impact (medium)	WP5	Although COVID restrictions inhibited the organization of physical workshops, with good planning and strong collaboration with other projects and entities has allowed the planned workshops to go ahead and achieved results commendable.
Working groups fall low in activity and fail to deliver planned results (low)	WP6	The consortium considers the functioning of thematic working groups as pivotal in the work of PANTERA. With strong and continuous support, planned work progressed to rewarding levels.
Stakeholders are not engaging in exploitation activities (Low)	WP7	The noted response of stakeholders was adequate that was reported in the various outcomes of events and interviews. The regional corners reveal active participation which is a good sign of responsive collaboration work.
Project outputs are not effectively disseminated thus lessening the likelihood of market rollout (Low)	WP8	Plans for preserving a sustainable future to the EIRIE platform and the services offered to stakeholders were reported elsewhere, to be operational with the support of JRC and DG ENER, hence the targeted afterlife of the PANTERA project is on track offering valuable services to the R&I community.
Failure or difficulty in establishing the PANTERA Collaboration Platform (low)	WP8	As already indicated, EIRIE platform is operational with all the planned functionalities with JRC and DG ENER supporting its operation in life after the PANTERA project, hence the impact of the project can be considered high.

Possible unforeseen risks identified for M37 until the end of the project were all addressed with no negative side effects to the targeted objectives of the project. Mostly, are related to the above identified and reported risks that were handled effectively by the consortium. The project has been completed without any serious shortcomings. Minor difficulties like the low response of stakeholders from Slovakia have been adequately addressed with the support of the partners and stakeholders from other regions.

4.2 Impact and Progress in relation to the internal Key Performance Indicators

The list of the ad hoc indicators as defined in the GA have been enriched as follows:

- More indicators have been added to address the project's needs.
- These indicators are re-distributed following the three main functions of the project and not under the objectives as initially defined. This was decided as an important step forward in giving a more coherent approach to the work of the PANTERA project and following the three enriched areas of work: platform, regional desks, and workshops. This change is fully aligned with the objectives while it offers an improved monitoring process of the actual related activities and an improved working environment with the stakeholders.

Based on these assumptions, the following table is presented which was developed in *D8.1 Dissemination, communication, and cooperation plan*[13] and shows the KPIs that were chosen to monitor the performance of the project's social media channels and newsletters.

PANTERA activities on social media seek the following impacts:

- make the project visible online, disseminating news about project activities and achievements.
- Attract stakeholders who want to share their opinion and views and collaborate with PANTERA.
- ensure effective reporting of events.
- support the project networking.

Table 7 The indicators list for monitoring the project and measures to be taken 2022-2023

Ad-hoc indicator	Target	Actual performance
Number of newsletters	≥4 per year, i.e 16 in total	7(compared to 8 in the previous reporting period), total 15 newsletters for the duration of the project
Newsletter subscriptions/subscribers (cumulative)	>100	191(compared to 197) cumulative
Number of tweets	> 50 per year, i.e 200 for the duration of the project	78 (compared to 68 in 2019-2021), total 146 tweets for the duration of the project
Number of Twitter followers (cumulative)	> 100	538(compared to 531), cumulative
Number of LinkedIn followers (cumulative)	> 50	310(compared to 166), cumulative
Target number of events in which PANTERA is presented. (cumulative)	≥4 per year, i.e 16 for the duration of the project	15 (compared to 10), cumulative 25 for the duration of the project

13 https://pantera-platform.eu/wp-content/uploads/2020/07/D8.1.Dissemination-communication-and-cooperation-plan.pdf

Overall improvements	Reasons/measures for improvements
Higher number of newsletter subscriptions following workshops	It is easier to attract newsletter subscribers once they have attended a PANTERA workshop and understand the project. Thanks to the registration forms online, the participants can always choose to subscribe to the newsletter as well.
Important increase in the number of followers/subscribers of our social media channels	Increased activity on the social media channels, especially Twitter and LinkedIn. More interactions have taken place with other projects, stakeholders, etc.
PANTERA was presented in more events	After the COVID-19 restrictions PANTERA consortium organized many workshops in the EU region and participated in the global events I.e., Enlit Europe and EUSEW.

Overall shortcomings	Reasons for shortcomings appearing	Other comments if any
Number of newsletters	All activities were presented through well designed newsletters. Attempts were made to meet the target set through the contract and we have managed to be just one short of the overall objective of publishing 16 newsletters throughout the project.	No other specific reason for falling short of the project target.
No increase in the PANTERA newsletters subscriptions	PANTERA is an EU project with limited audience within the research community. With EIRIE going live, this activity will pick up as well as more and more stakeholders link with EIRIE.	It is essential that the Service Contract allocates resources to follow the logistics of the news column to raise interest among stakeholders.
Number of tweets	The number of tweets is short of the targeted ones through the contract. It is partly affected by the low physical activity during the COVID restriction period. 146 tweets over the period of the project, is a substantial number but still short of the target.	The importance of tweets has been underestimated by the consortium and hence the 25% less tweets issued during the project duration.

In the Annex, more KPIs and analysis of the performance of the PANTERA site and the dissemination channels are presented.

4.3 Update of the plan for exploitation and dissemination of result

Based on the recommendation of the Project Officer (PO), the PANTERA process was presented and communicated in energy related brokerage events too. Potential operators, industries and academic/research institutes that are active in the field of smart grids, storage and local energy systems are attending since they look to this kind of events for potential collaboration in R&I initiatives. It was interesting to promote EIRIE the multifunctional collaborative platform and PANTERA project itself, attracting new users among the stakeholders attending the planned events.

4.4 Use of resources

Table 8 summarizes effort applied to the project in terms of person-months, sub-contracted work, travelling, workshops, webinars, publications and other expenses and overheads. Overall, the comparison of actual versus work completed shows that the total level of effort matches the budget of the partners with partners FOSS and UCD with notable reduction in claimed budget for the following reasons:

- FOSS: An important senior researcher with continuous contribution to the project PANTERA, did not charge the project for internal reasons of the University of Cyprus. This did not limit work contribution at the right level of competence to meet the objectives of the project. The team of FOSS was managed smoothly, and this was reflected to the overall management of the project since FOSS was the coordinator of the project with all the responsibilities entailed through the Grant Agreement and the Consortium Agreement. Additionally, the COVID restrictions limited travel expenses and this has reflected to less funds required. For the reasons already indicated, the actual average personnel cost for the duration of the project is 73.2% of the declared one, that is attributed to the fact that the senior researcher of FOSS was not charging any cost to the project for internal reasons of the university of Cyprus.
- UCD: A senior researcher has faced serious health problems for long periods of the project, and less experienced researchers have been appointed to cover the responsibilities of UCD in the project. All expected contributions were fulfilled, and the related deliverables submitted in time and approved. It is confirmed that no serious shortcomings were noted, and the project run smoothly meeting all targeted objectives. Similarly, COVID restrictions limited travel expenses for UCD as well. For the reasons already indicated, the actual average personnel cost for the duration of the project is 80.6% of the declared one, that is attributed to the fact that the senior researcher of UCD with health problems was not charging any cost to the project.
- IERC: Following extensive re-organization of the university of IERC, the personnel used for completing the works of the project were less senior to the ones originally planned for the project. This has reflected in a lower monthly average personnel cost, amounting to 65,5%. This has not affected the quality of final deliverables since the senior representative of the university was in post from day 1 giving the maturity required in managing the allocated responsibilities through the project.
- TUS RDS has taken due care over the project duration with strong budget control and has managed to complete all responsibilities within the project with exactly the budget allocated through the grant agreement. Careful evaluation of all costs incurred reveal this exact budget expenditure and we can confirm the claim made is fair and valid.

Overall, the consortium has managed to complete satisfactorily the project with a budget used of €3.627.174 which is less by 6.7% the amount allocated for the reasons indicated above. It is our firm opinion that objectives have been achieved and deliverables were of the anticipated quality, meeting the expectations of the stakeholders involved in the project.

Within the project, work packages dedicated to actual work of organizing and running workshops, developing the EIRIE platform, building the regional desks and organizing / running the working teams have received more attention than other activities.

Along these lines, we can assure, that we had extensive discussions in managing the work of the project and actual contribution of partners was noted to be at satisfactory level all through the project addressing responsively the planned activities. Work was re-adjusted as indicated in previous paragraphs due to the COVID restrictions. With positive contribution from the partners, objectives of the project have been achieved with notable success as is reflected in detail in the deliverables submitted and already approved by the Project Officer.

DERlab subcontracted work to BILBOMATICA

As indicated in the respective paragraphs, the EIRIE platform was designed and developed by the contractor BILBOMATICA through a public procurement process. The contract was well managed with a smaller task force supported by experts from FOSS, SUITE5 and DERlab. All the planned functionalities were delivered following an exhaustive testing phase. Where additional work was identified by the consortium of the PANTERA project following requests coming from users, this was planned in detail by the task force and appropriate extension of the contract was implemented using the internal processes of the Grant Agreement and the Consortium Agreement.

FOSS: Subcontracted specialised work

Within the scope of the PANTERA project expert work in the field of power systems that is related to **smart grids / microgrids, systems and emerging technologies was included.** This required work was planned to be undertaken by a suitable sub-contractor covering the following fields:

- Support the development of the multi-functional collaborative platform with the required scenarios and case studies in the specialised field of smart grids / microgrids including protection and operation of systems through the advance features of the international standard IEC 61850, populate them with responsive field data and make them functional.
- Gap analysis of projects – methodology, data repository, generation of reports.
- Development of on-line training of experts of projects in performing gap analysis with emphasis in the field of the integrated grid using smart grid / microgrid infrastructure and solutions.
- Support the work of the Gap analysis Working Team planned through the PANTERA project in the field of smart grids / microgrids including electrical protection design and operation.

Following public procurement procedures in line with the strict requirements of the University, the expert was identified signing a short-term contract to deliver the required work within the time frame required by the project PANTERA. Work progressed satisfactorily and corresponding period cost is reported through the SyGMa portal as required.

In addition to the above, we have discussed with all partners if any further justification is required but all partners consider their financial reports are fully aligned with the previous reviews, hence no further clarifications are required.

4.5 Declarations: Financial statement of partners and total receipts

All partners have reported their financial status at the end of the project and confirmed the following:

- the information provided is full, reliable and true;
- the costs declared are eligible meeting the requirements of the grant agreement;
- the costs incurred and declared are substantiated by adequate records and supporting documentation, available for inspection in accordance with the requirements of the grant agreement;
- the total receipts of partners have been declared and all fall within the eligible categories of the grant agreement. Hence, total receipts are confirmed to be with zero profit for all partners.

Table 8: The summarized efforts and spent resources for the project compared to allocated budget

Partner name	Personnel actual spent	SME actual spent	Sub-contracting actual spent	Travel + Other goods and services	Indirect costs 25%	Total declared costs	Average personnel costs per Month declared	Actual personnel used in Months	Average personnel costs per month Actual (=B/I)	% of average personnel costs: Actual to declared (=J*100/H)	Total Budget	Percentage of spent budget to allocated grant (=G*100/L)
FOSS	199,795.10	0.00	54,502.08	23,610.41	55,851.38	333,758.97	4,600.00	59.37	3,365.37	73.2%	427,875.00	78.0%
DERlab	448,227.00	0.00	206,178.73	87,712.29	133,984.82	876,102.84	5,755.00	78.26	5,727.41	99.5%	925,493.75	94.7%
RSE	279,562.97	0.00	0.00	19,895.72	74,864.90	374,323.59	6,800.00	45.60	6,130.51	90.2%	371,500.00	100.8%
SINTEF	255,231.39	0.00	0.00	16,484.72	68,313.10	340,029.21	12,914.42	21.655	11,786.26	91.3%	375,075.00	90.7%
IPE	264,548.65	0.00	0.00	17,236.31	70,446.24	352,231.20	4,800.00	55.11	4,800.37	100.0%	350,000.00	100.6%
Suite5	212,146.51	4,510.40		20,784.64	59,360.39	296,801.94	6,359.05	30.34	7,140.97	112.3%	297,000.00	99.9%
UCC-IERC	286,746.12	0.00	0.00	11,613.97	74,590.02	372,950.11	7,200.00	60.81	4,715.44	65.5%	400,000.00	93.2%
NUID UCD	243,142.67	0.00	0.00	6,038.24	62,295.23	311,476.14	7,835.25	38.52	6,312.12	80.6%	371,895.00	83.8%
TUS RDS	279,000.00	0.00	0.00	16,600.00	73,900.00	369,500.00	4,500.00	62.00	4,500.00	100.0%	369,500.00	100.0%
Totals						**3,627,174.00**					**3,888,338.75**	**93.3%**

5 Discussion and Conclusions

The main objective of this deliverable is to present the progress of the PANTERA project within the period of M36 to M54 of implementation including a final evaluation of the use of the budget by all partners in relation to what was allocated through the Grant Agreement. The main challenge is to present not only the progress made based on the expected deliverables, milestones or outcomes but also highlight the impact that this CSA project has managed to achieve by meeting the set objectives.

Based on this fundamental need, the management (WP1) of the project has continued its activities by introducing the PANTERA process that has three main "arms". Through them, the process -as a whole- impacts and promotes the designed activities in favour of the low spending countries for leveraging the R&I smart grids investments.

All work packages and their activities are contributing to these three arms as detailed below, in addition to the coordination responsibilities that WP1 has undertaken, led by the team of the coordinator:

- PANTERA platform: WP2, WP3, WP7, WP8, WP5
- PANTERA Regional Desks: WP2, WP4, WP6, WP5
- PANTERA Working Teams: WP2, WP3

Under this approach, all deliverables, milestones, and foreseen outcomes have been successfully completed whereas any risk (foreseen or unforeseen) has been effectively addressed. The fulfilling performance of the project is seen also through the metrics of KPIs that are continuously tracked.

The main success stories of this project- that also secures its sustainability-in relation to the identified needs amalgamated through the adapted process are the following:

- Development and launch of the EIRIE interactive multifunctional platform under the auspices of DG ENER and its initiatives that will re-enforce its winning character of being a single point of reference for the whole R&I community and hosted by the JRC. Development work has matured to a functional platform already delivering valuable services to the R&I community of Europe.
- Strengthen and develop further the regional desks and related regional activities in cooperation with RIS3 Smart Specialization Platform of the Commission cooperation and connected local stakeholders under the continuous guidance and support of the partners of the PANTERA project.
- Provide support and engage energy experts of ETIP SNET to continuously nurture the Working Teams' activities as a means of supporting the R&I Community of Europe and the targeted interactive and multifunctional platform with exploitable knowledge, information, and data.

Regarding the overall financial resources spent, the partners are within tolerable deviations from the contracted budget with convincing justifications where small deviations have been recorded. Justifications are also given from the partners that have used personnel with lower average earnings from the declared average. Quality of final work is commendable and thus these minor deviations are noted but as justified, not affecting the final deliverables submitted and approved.

6 Annex

6.1 List of Figures

6.2 List of Tables

6.3 PANTERA KPIs general visualisation

6.3.1 Overall improvements and shortcomings

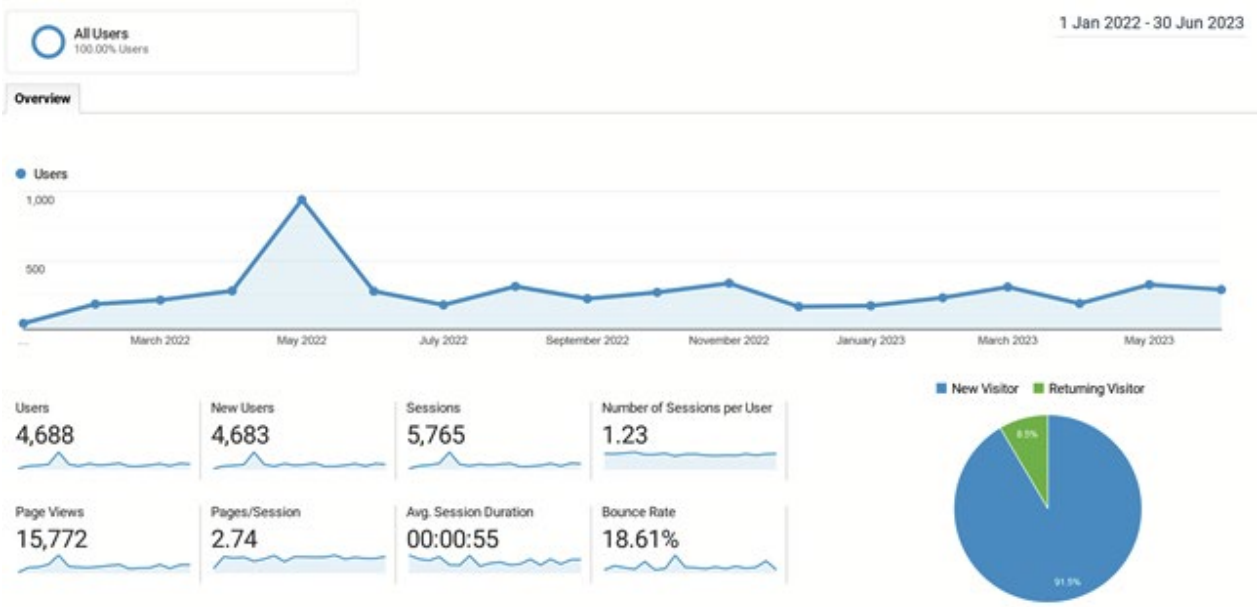
The website and social media channels are regularly updated and have grown in terms of followers.	The website is regularly updated with events, workshops, news and resources (approved public deliverables, published papers, workshop presentations and agendas, project promotional materials, etc.) After the COVID situation, PANTERA consortium again attended the workshop and promotional events in the physical form and interacted with many R&I stakeholders in the EU region. ENLIT, Europe and EUSEW also attended by the members to promote the EIRIE platform among the research community. The project website and social media channels continue to be regularly updated and have grown in terms of audience, especially the Twitter channel. The YouTube channel has been also more used as all videos of the workshops have been uploaded in the channel.
Analytics	In terms of analytics, we can see an important increase in terms of users on the website and page views (number of pages the users visit) increased from 2,237, in 2021 to 10,669, in 2022. In 2023, till 30 June, there was 5,103 pages view on the PANTERA website
International audience	Following the promotion of regional workshops, analytics show a lot of users come from the targeted regions (US, China, Netherlands, etc.). The working language of the website is English, but it is the ambition to attract stakeholders with other languages as well especially in the targeted regions, therefore links to publications from our partners in other languages can be found on the website as well.

Increased online presence of the project and promotion of the EIRIE platform	PANTERA has been widely promoted in many different online events, which enabled more visibility and interactions with the stakeholders, as well as promotion of the EIRIE platform and dissemination of the project results.

Analytics – Bounce rate. Through the monitoring of the website analytics on Google Analytics, we have noticed a very low bounce rate and it is decreased during 2023 (the percentage of visitors to a particular website who navigate away from the site after viewing only one page). PANTERA's average bounce rate in 2022 was 19.67% and 16.23% in 2023. Limited to the EU research community, the bounce rate is very impressive, only the interested and purposeful users have shown their presence on the PANTERA website.

6.3.2 Website analytics

Number of website visitors per year (2022-2023)



In 2022, the number of visitors on the PANTERA website increased from 1,130 to 3,263, compared to 2021, i.e., an increase of 65%. In 2023, till 30 June, the number of visitors was 1,420, which is a quite decent number for only 6 months.

Top 10 languages of the users in 2020

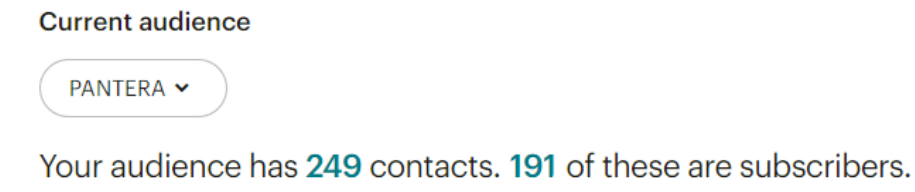
	Language	Users	% Users
1.	en-us	2,344	49.97%
2.	en-gb	517	11.02%
3.	zh-cn	331	7.06%
4.	de-de	139	2.96%
5.	it-it	126	2.69%
6.	en	115	2.45%
7.	es-es	114	2.43%
8.	de	60	1.28%
9.	fr-fr	58	1.24%
10.	el-gr	42	0.90%

6.3.3 Number of users on the website and user countries

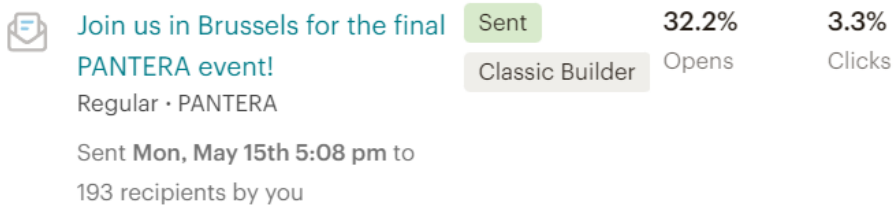
Jan 2022 – June 2023

	Country	Users	% Users
1.	United States	740	15.65%
2.	Germany	370	7.83%
3.	China	359	7.59%
4.	Netherlands	219	4.63%
5.	Finland	170	3.60%
6.	Italy	160	3.38%
7.	France	155	3.28%
8.	United Kingdom	139	2.94%
9.	Spain	134	2.83%
10.	Belgium	123	2.60%

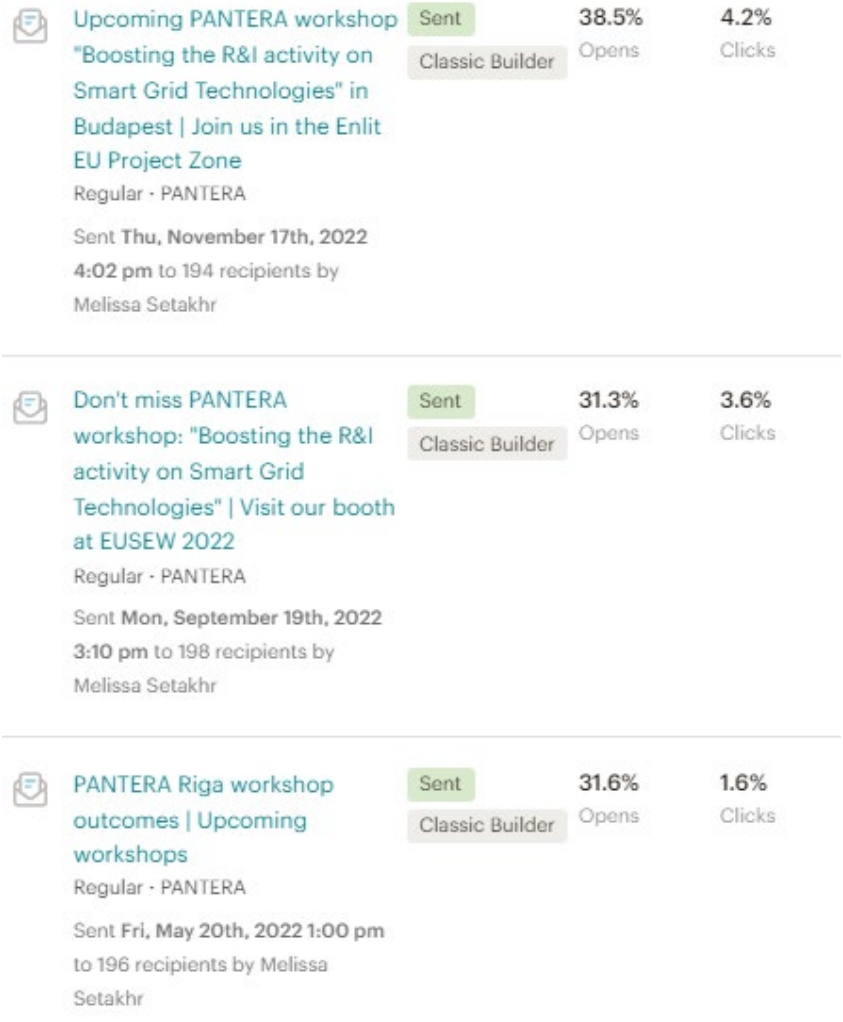
6.3.4 Newsletter analytics

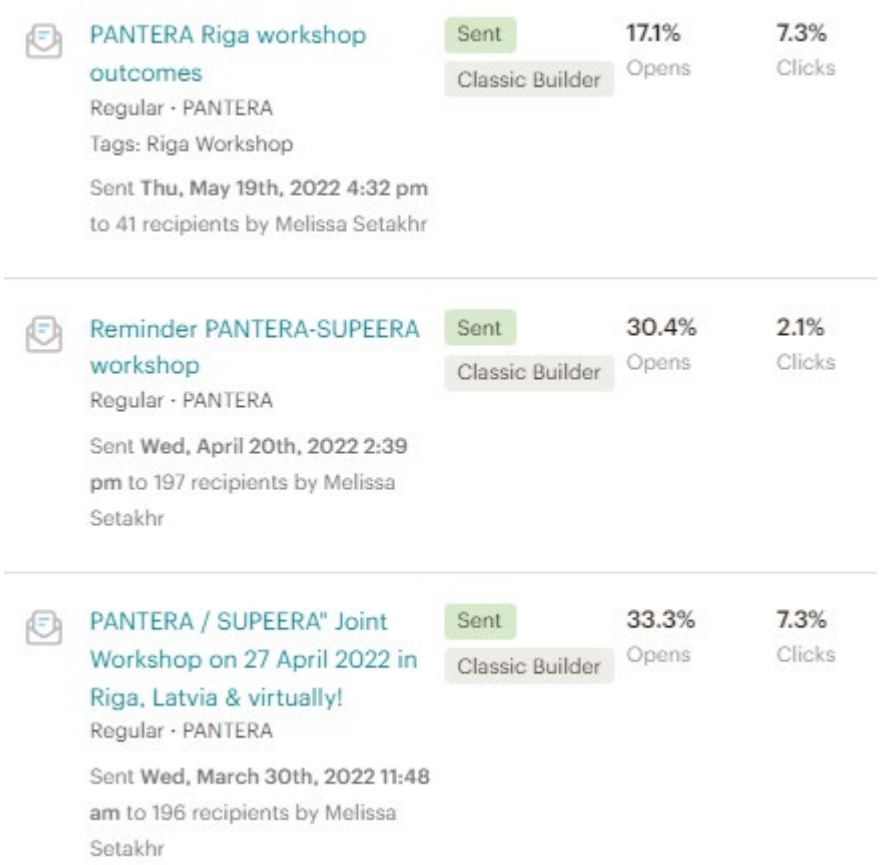


Newsletter response in 2023



Newsletter response in 2022





6.3.5 Social media analytics

Twitter

PANTERA has an official Twitter account (@PanteraPlatform). Currently, the account has 762 followers, including: researchers from international universities, H2020 projects, research organizations and industries from the energy field, EU actors and stakeholders, etc.

Impressions: Number of times users saw a tweet on Twitter
Engagement: Number of times a user has interacted with a tweet (like, click, retweet, etc.)
Engagement rate : Engagement/impressions

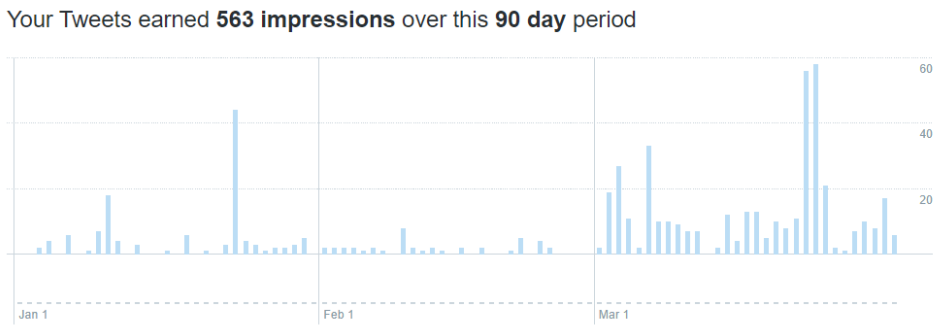
PANTERA EIRIE Platform
@PanteraPlatform

funded #H2020 PANTERA aims to bring together the #energy community in one place, via an integrated multifunctional #panEuropean R&I platform called EIRIE.

Europe pantera-platform.eu Joined January 2019

538 Following **762** Followers

Impressions, Engagement and Engagement Rate
Jan 2023 – March 2023



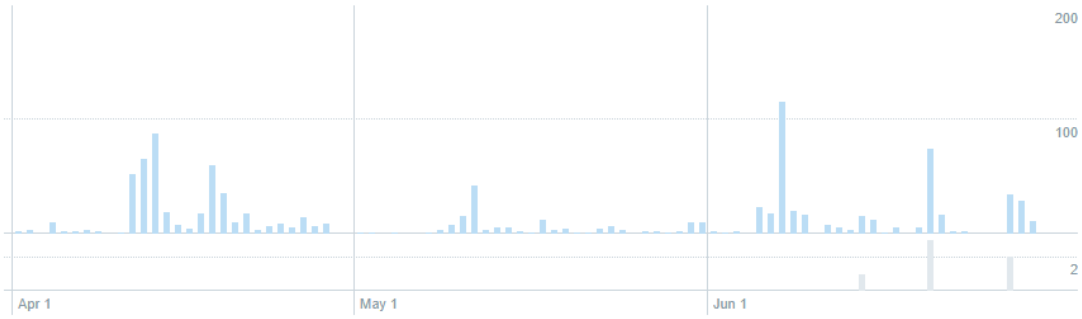
Tweets | Top Tweets | Tweets and replies | Promoted

	Impressions	Engagements	Engagement rate
PANTERA EIRIE Platform @PanteraPlatform · Mar 23 Register to "Fostering EU Clean #EnergyTransition in Lithuania", a #SUPEERA-#PANTERA joint #workshop aimed at empowering EU-13 countries' research activities in the EU CET framework. 27 April 2023 Vilnius, Lithuania bit.ly/409kQjv #H2020 #CleanEnergy #EU pic.twitter.com/3mcgiGdf4N View Tweet activity	59	8	13.6%
PANTERA EIRIE Platform @PanteraPlatform · Mar 22 Don't miss the #PANTERA-#SUPEERA Joint Workshop "International research collaboration opportunities fostering EU Clean Energy transition in Romania " tomorrow! 13:00 – 17:00 EET (12:00 – 16:00 CET) Join online: bit.ly/3FDUqOj More info bit.ly/3JYdzNx pic.twitter.com/Koe2Ca1E9d View Tweet activity	65	2	3.1%
PANTERA EIRIE Platform @PanteraPlatform · Mar 22 On 20-22 March, in Rio de Janeiro, takes place the preparatory meeting of the @MICleanEnergyRD 8th Mission Innovation Ministerial (#MI) and @CEMSecretaria's Clean Energy Ministerial (#CEM), which will be held in July (Goa, India). More info mission-innovation.net View Tweet activity	31	0	0.0%
PANTERA EIRIE Platform @PanteraPlatform · Mar 22 On 7 March, @EERA_SET Joint Program "Smart Grids" SP5 "Flexible Transmission Networks" held a #workshop aimed at presenting #H2020 #FlexPlan project's methodology, regional cases and regulatory reflections. More info bit.ly/3YAP7pN View Tweet activity	42	7	16.7%
PANTERA EIRIE Platform @PanteraPlatform · Mar 8 In its #JointRoadmap, the #GPFM identified the top #innovation priorities across the following three technical areas: Affordable and Reliable #VRE System #Flexibility and Market Design Data and #Digitalisation for System Integration Read more ->bit.ly/3yggzOF pic.twitter.com/WvnIs9HFcd View Tweet activity	17	0	0.0%
PANTERA EIRIE Platform @PanteraPlatform · Mar 2 Next joint #PANTERA #SUPEERA #workshop "International research collaboration opportunities fostering EU Clean Energy transition in Romania " 23 March 2023 13:00 - 17:30 CET Bucharest bit.ly/3IMLMhk #HorizonEurope #EUfunded #cleaenergy #jointworkshop #EU pic.twitter.com/kLxg531vgy View Tweet activity	137	10	7.3%

Impressions, Engagement and Engagement rate

April 2023 – Jun 2023

Your Tweets earned **1.0K impressions** over this **90 day** period



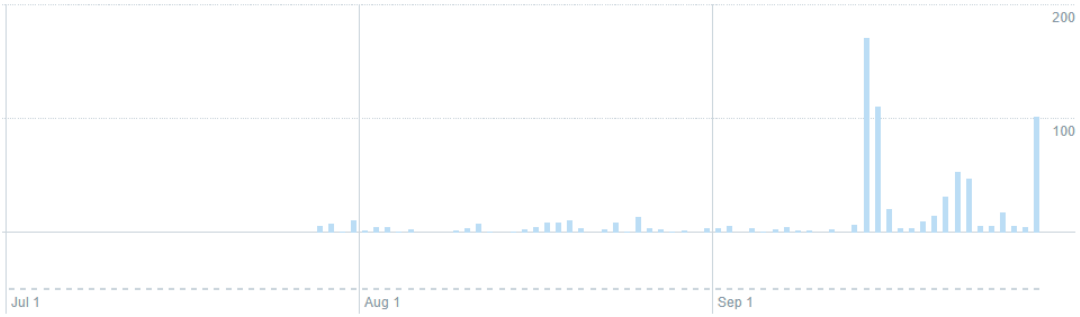
Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
PANTERA EIRIE Platform @PanteraPlatform · Jun 27 Join us tomorrow on the webinar: EIRIE a knowledge collaborative platform in support of R&I by the PANTERA EU project and EERA JP on Smart Grids. Wed 28.06.2023 at 14:00-15:30 CEST shorturl.at/nBLNO More info attached. pic.twitter.com/ppnyfs2Uqh View Tweet activity				46	11	23.9%
PANTERA EIRIE Platform @PanteraPlatform · Jun 20 EIRIE aims at connecting the R&I community of EUto enhance collaboration, strengthen the participation of all Member States in support of the Energy Transitionand improve the participation of low-spending countries in R&I activities in Smart Energy Systems. View Tweet activity				17	2	11.8%
PANTERA EIRIE Platform @PanteraPlatform · Jun 20 During the webinar the EIRIE multifunctional platform, developed by the PANTERA EU project, will be presented and its main functionalities will be described in detail. View Tweet activity				20	3	15.0%
PANTERA EIRIE Platform @PanteraPlatform · Jun 20 The PANTERA EU project and EERA JP on Smart Grids jointly organisethe webinar: EIRIE a knowledge collaborative platform in support of R&I We invite all those interested to join! Wed 28.06.2023 at 14:00-15:30 CEST shorturl.at/nBLNO View Tweet activity				66	9	13.6%
PANTERA EIRIE Platform @PanteraPlatform · Jun 7 On 27 June, the #ESP Stakeholder Forum is organising a knowledge dissemination forum to promote the adaptation of #innovativetechnologies to the developing countries' needs with regards to #decarbonization and achieving the #climategoals bit.ly/3Ccu5or #ESMAP pic.twitter.com/foUiuxbUk1 View Tweet activity				80	7	8.8%

PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Jun 6 Luciano Martini (@RSEnergetico, PANTERA partner) is attending the Special Event "Powering the Future: Leveraging digitalisation for efficiency, resilience and decarbonisation", organized by @IEA and 3DEN from June 6-8 ➡ bit.ly/43qDXXV pic.twitter.com/e31cTIHOVp View Tweet activity	73	8	11.0%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Jun 5 D-14 to PANTERA's final event "Strengthening research collaboration opportunities Fostering EU Clean Energy transition"! 19 June 2023 NH Brussels EU Berlaymont More info and registration ➡ bit.ly/43qhWZo #HorizonEurope #H2020 #EU #finalevent #EUProject #EIRIE pic.twitter.com/77F2IrreKz View Tweet activity	93	5	5.4%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · May 10 Have you secured your place to join us on the 19 June in Brussels for our final event? Don't miss "Strengthening research collaboration opportunities Fostering EU Clean Energy transition", which is also an #EnergyDay within #EUSEW2023 ! #EUSEW #EU bit.ly/3NYk7y5 pic.twitter.com/wWQ217DQCS View Tweet activity	79	4	5.1%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Apr 18 MI-8 will be held in Goa, India on July 21, 2023, alongside #CEM14 and the #G20. It will represent an important opportunity for #cleanenergy leaders to help advance the acceleration and deployment of clean energy globally. #MissionInnovation #CEMMIBRAZIL #netzero #innovation View Tweet activity	22	0	0.0%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Apr 18 MI-8 will be held in Goa, India on July 21, 2023, alongside #CEM14 and the #G20. It will represent an important opportunity for #cleanenergy leaders to help advance the acceleration and deployment of clean energy globally. #MissionInnovation #CEMMIBRAZIL #netzero #innovation pic.twitter.com/ZmA6dzTjYP View Tweet activity	25	1	4.0%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Apr 18 🔑 Read "EIRIE for your R&I needs to support your endeavors to lead the energy transition" in the Spring 2023 edition of @EuroEnergyInn magazine. ➡ bit.ly/40gnaEC #EIRIE #H2020 #HorizonEurope #research #innovation #EU #energy #energytransition #cleanenergy #smartgrids pic.twitter.com/AUBvYSkhO3 View Tweet activity	77	8	10.4%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Apr 11 🔔 Join us for the final event of the #PANTERA project: "Strengthening research collaboration opportunities Fostering EU Clean Energy transition"! 19 June 2023 NH Brussels EU Berlaymont More information and registration here ➡ bit.ly/43qhWZo #H2020 #EU #finalevent pic.twitter.com/PGwoGTKKQc View Tweet activity	261	20	7.7%

Impressions, Engagement and Engagement rate

July 2020 – September 2021

Your Tweets earned **784 impressions** over this **91 day** period



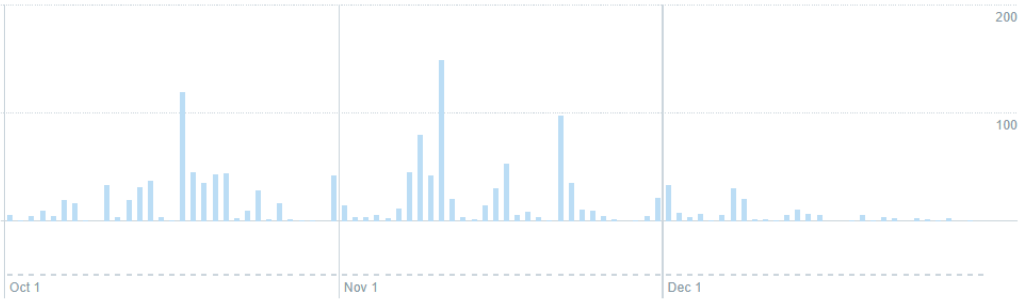
Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
PANTERA EIRIE Platform @PanteraPlatform · Sep 29 Thank you for participating in our **#workshop** "Boosting the R&I activity on Smart Grid Technologies: Empowering Energy Citizens and Communities towards the **#Decarbonisation** of "Energy Island" on 27 September in Paphos (CY). **#Cyprus #sustainable #energy #research #smartgrids** pic.twitter.com/SsNK5tzr7P View Tweet activity				206	27	13.1%
PANTERA EIRIE Platform @PanteraPlatform · Sep 22 D-5 until our **#workshop** "Boosting the R&I activity on **#SmartGrid #Technologies**: Empowering **#Energy** Citizens and Communities towards the **#Decarbonisation** of "Energy Island"! 27 Sept, 14:00 – 17:30 EEST Connect with us bit.ly/3LI8y0D More bit.ly/3RONeDk pic.twitter.com/f5bVvwHxhu View Tweet activity				91	8	8.8%
PANTERA EIRIE Platform @PanteraPlatform · Sep 21 Read about **#PANTERA** and the **#EIRIE** Platform, featured in DERlab Public Activity **#Report** 2021-2022: "Pan-European Collaboration & the Role of Remote Testing in the Recovery Plan" bit.ly/3UrOAFL **#EU #SmartGrids #Energy #collaboration #remotetesting #knowledge** pic.twitter.com/SFUaRo33yn View Tweet activity				42	2	4.8%

PANTERA EIRIE Platform @PanteraPlatform · Sep 15 Don't miss the #PANTERA workshop "Boosting the R&I activity on #SmartGrid #Technologies: Empowering #Energy Citizens and Communities towards the #Decarbonisation of "Energy Island"! Connect with us bit.ly/3Ll8y0D More information bit.ly/3RONeDk pic.twitter.com/LFpexXv5oh View Tweet activity	49	2	4.1%
PANTERA EIRIE Platform @PanteraPlatform · Sep 14 We'll be at the #EUSEW2022 Energy Fair sharing what we've been doing to boost Europe's #EnergyTransition Come and say hello at our stand from 26-27 Sept. and online on 26-30 Sept bit.ly/3S1f9PV #CleanEnergyEU #REPowerEU #CleanEnergy #EUSEW #EIRIE #EU @EU_Commission pic.twitter.com/e2NVHL8kJb View Tweet activity	313	17	5.4%
PANTERA EIRIE Platform @PanteraPlatform · 21 Jul 2022 The EIRIE platform: involvement from all #EU countries to increase successful #collaborations Thanks to your valuable feedback, the platform will effectively reply to your needs. Read about João Peças Lopes' (@INESCTEC) on the #EIRIE platform bit.ly/3cr4te2 pic.twitter.com/xZ74bldSpu View Tweet activity	25	7	28.0%
PANTERA EIRIE Platform @PanteraPlatform · 19 Jul 2022 PANTERA #workshop "Boosting the R&I activity on #SmartGrid Technologies: Empowering #Energy Citizens and Communities towards the #Decarbonisation of "Energy Island"! 27 September 2022, 14:00 – 17:30 EEST @IEEEorg Smart Cities #Conference 2022) bit.ly/3v2ybwj pic.twitter.com/PAKlKQfx0z View Tweet activity	24	8	33.3%

Impressions, Engagement and Engagement rate

October 2022- December 2022

Your Tweets earned **1.5K impressions** over this **91 day** period



Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
PANTERA EIRIE Platform @PanteraPlatform · Dec 7 What a great opportunity it was to present our latest project developments in @Enlit_Europe, at the #EUProjectZone and in 2 roundtables! Have you explored the #EIRIE platform yet? ➡ ses.jrc.ec.europa.eu/eirie/en #h2020 #horizoneurope #Enlit #EnlitEurope #EUproject #smartgrids pic.twitter.com/y8VSePxWpf View Tweet activity				60	8	13.3%
PANTERA EIRIE Platform @PanteraPlatform · Nov 30 Did you visit us at @Enlit_Europe in the #EUprojectzone? Have a talk with PANTERA project coordinator @VenizelosE and partners Dr. Anna Mutule and Yaksh Kumar to learn more about the project! #H2020 #EU #Europe #EnlitEurope #EUproject #smartgrids #EIRIEplatform pic.twitter.com/F58wfzEMB2 View Tweet activity				70	8	11.4%
PANTERA EIRIE Platform @PanteraPlatform · Nov 21 We are happy to announce that we will be present in the digital and in-person #EUprojectzone at @Enlit_Europe, taking place 29 November – 1 December in Frankfurt, Germany! Come and meet us! #EnlitEurope More info ➡ bit.ly/3hPxDWQ pic.twitter.com/98KmhBJ5c5 View Tweet activity				145	10	6.9%
PANTERA EIRIE Platform @PanteraPlatform · Nov 15 🔔 Next #PANTERA #workshop "Boosting the R&I activity on Smart Grid #Technologies: Strengthening of regional activity in R&I facilitated by the #European #EIRIE platform", at CANDO EPE 2022 #conference. 📅 21 Nov. 2022 🕒 14:00 – 17:00 CEST 📍 Budapest ➡ bit.ly/3EAEGfb pic.twitter.com/9VhYf2kMTD View Tweet activity				80	9	11.2%

PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Nov 9 We would like to thank all our speakers and participants for their contribution to another successful joint #PANTERA-#SUPEERA workshop, which took place on November 8th, at the #MEDPower #conference in Malta. ➡ Stay tuned for the workshop outcomes pic.twitter.com/FAQ1vR1Axd View Tweet activity	263	13	4.9%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Nov 7 Join us! 📅 8 November 2022 🕐 from 14:00 to 17:30 CET/ from 15:00 to 18:30 EET More information and agenda ➡ bit.ly/3NJjlxu Attend online ➡ bit.ly/3flGk4B #H2020 #EU #EUproject #energy #energytransition #smartgrids #renewables #malta #energycommunities View Tweet activity	27	5	18.5%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Nov 7 Thanks for joining the #SUPEERA & PANTERA Workshop "Fostering EU Clean Energy transition in Hungary" on 26 Oct.! Don't miss the upcoming #PANTERA and #SUPEERA workshop "Boosting the R&I of Smart Grids, Storage and Energy communities. Country: Malta" on 8 Nov 2022 at MedPower 2022 pic.twitter.com/gizy5ozyZO View Tweet activity	145	15	10.3%
PANTERA	**PANTERA EIRIE Platform** @PanteraPlatform · Oct 31 Don't miss PANTERA & #SUPEERA joint #Workshop "Boosting the R&I of Smart Grids, Storage and Energy communities. Country: Malta" at #MedPower2022 📅 8 November 2022 🕐 14:00 – 17:30 CEST 📍 Valletta, Malta More info ➡ bit.ly/3DnZcxD pic.twitter.com/JDhYQogRG1 View Tweet activity	99	9	9.1%

PANTERA EIRIE Platform @PanteraPlatform · Oct 20 On October 26th, #PANTERA and #SUPEERA will be joining forces to organise the workshop "Fostering EU Clean #Energy transition in Hungary"! 📌 Budapest, Hungary 📅 26 October 2022 🕐 9:00 to 17:00 CEST More info ➡ bit.ly/3gnbG0C pic.twitter.com/iP8rxGm8bK View Tweet activity	72	5	6.9%
PANTERA EIRIE Platform @PanteraPlatform · Oct 19 #ISGAN honored excellence on two themes: "EV Integration in Smart Grid," and "Smart Grid Workforce Development for an Inclusive Energy Transition" View Tweet activity	20	0	0.0%
PANTERA EIRIE Platform @PanteraPlatform · Oct 19 On Sept. 23, 2022 at the #GCEAF took place the 8th Annual @IEA_ISGAN Awards Ceremony, during which excellence in smart grid projects, policies, and programs around the world was recognized. More information ➡ iea-isgan.org pic.twitter.com/onwr5D1POn View Tweet activity	34	6	17.6%
PANTERA EIRIE Platform @PanteraPlatform · Oct 18 This high-level document showcases the main activities of the Mission in the next period and two ambitious flagship projects that will contribute to power system transformation and #decarbonization View Tweet activity	15	0	0.0%
PANTERA EIRIE Platform @PanteraPlatform · Oct 17 More info ➡ bit.ly/3ezedEo #H2020 #Horizon2020 #Thessaloniki #conference #worksho #smartgrids #energytransition #lowcarbon View Tweet activity	19	0	0.0%
PANTERA EIRIE Platform @PanteraPlatform · Oct 17 Join us tomorrow at #SyNERGYMed conference or online for the PANTERA #workshop "Boosting the R&I activity on #SmartGrid #Technologies - Country: #Greece! 📅 18 Oct. 2022 🕐 15:30 – 17:00 EEST (14.30-16.00 CET) 🔗 : bit.ly/3T9CjEL or bit.ly/3CHt4EG pic.twitter.com/bWDnu0kawC View Tweet activity	148	9	6.1%
PANTERA EIRIE Platform @PanteraPlatform · Oct 13 This event showcased the collaboration between two leading MI and CEM initiatives, the #GPFM and the #ISGAN, aimed at accelerating the development, demonstration, and application of innovative solutions to unlock the pathway to flexible power systems 💡 View Tweet activity	17	2	11.8%
PANTERA EIRIE Platform @PanteraPlatform · Oct 12 Did you miss the PANTERA workshop "Boosting the R&I activity on Smart Grid Technologies Empowering Energy Citizens and Communities towards the Decarbonisation of "Energy Island" – Country: Cyprus? Find the workshop outcomes here ➡ pantera-platform.eu/resources/ #workshop #EU #H2020 pic.twitter.com/X3iQ5bMOC5 View Tweet activity	32	3	9.4%

Impressions, Engagement and Engagement rate

April 2022- June 2022

Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
PANTERA EIRIE Platform @PanteraPlatform · 13 Jun 2022 D-1! Don't miss the **#workshop** "The EIRIE platform enabling R&I activities and investment in **#smartgrids**" tomorrow at MELECON 2022! Join us online ➡ bit.ly/3QiOi1H **#EU #H2020 #research #collaboration #workshop @EERA_SET** pic.twitter.com/vNbTj6Ds9K View Tweet activity				5	3	60.0%
PANTERA EIRIE Platform @PanteraPlatform · 9 Jun 2022 D-5 until PANTERA & **@EERA_SET** JPSG **#Workshop** "The EIRIE platform enabling R&I activities and investment in **#smartgrids**" at **@IEEEorg #MELECON** 2022! 14 June 2022 10:30 – 13:00 CEST Palermo (IT) (a link will be provided to attend the workshop online) bit.ly/39iMfKy pic.twitter.com/ywUQ25GTIz View Tweet activity				9	7	77.8%
PANTERA EIRIE Platform @PanteraPlatform · 30 May 2022 D-2 until "International research collaboration opportunities fostering EU Clean Energy transition in Cyprus" PANTERA-SUPEERA Workshop! ➡ Join us online on the 1st of June 2022 at 9.00 – 15.30 EEST! bit.ly/3wVRMP0 pic.twitter.com/edfDFp0h9c View Tweet activity				3	2	66.7%

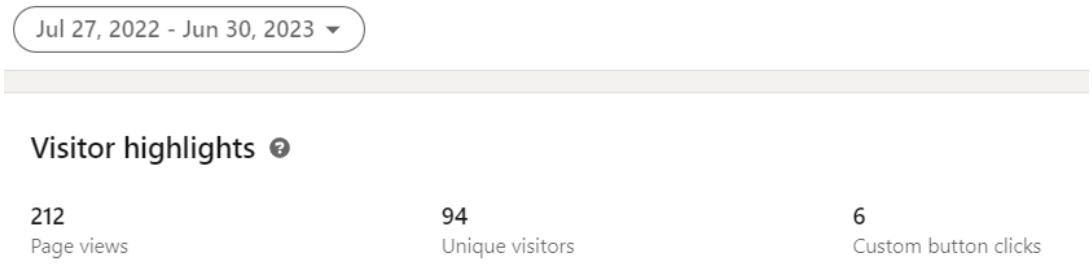
LinkedIn

PANTERA EIRIE Platform

#H2020 EU-funded PANTERA aims to bring the EU #energy community in one place, via EIRIE, a multifunctional R&I platform!

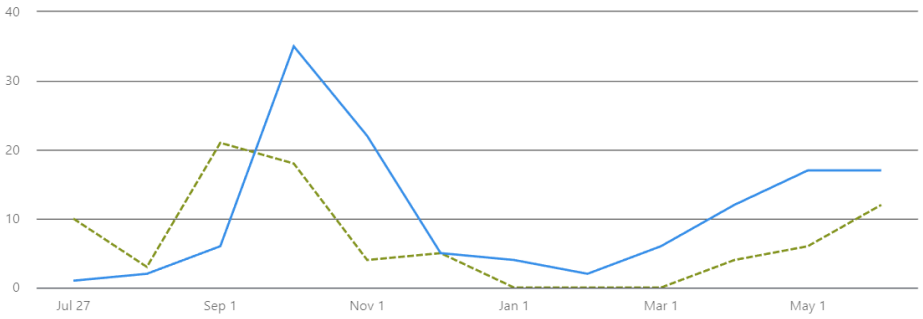
Research Services · 310 followers

Number of visitors in 2022-23



Visitor metrics

Page views | All pages | All filters



Desktop	129
Mobile	83

Visitor demographics

Location

Milan Area, Italy · 24 (11.3%)

Kassel Area, Germany · 15 (7.1%)

Monza and Brianza Area, Italy · 8 (3.8%)

Bremen Area, Germany · 7 (3.3%)

Hungary area · 7 (3.3%)

Brescia Area, Italy · 6 (2.8%)

Würzburg Area, Germany · 5 (2.4%)

Brussels Area, Belgium · 4 (1.9%)

Cardiff, United Kingdom · 3 (1.4%)

Peterborough, United Kingdom · 3 (1.4%)

Visitor demographics

Industry

- Research Services · 70 (33%)
- Higher Education · 51 (24.1%)
- Biotechnology Research · 5 (2.4%)
- Utilities · 5 (2.4%)
- Public Relations and Communications Services · 5 (2.4%)
- Events Services · 4 (1.9%)
- Renewable Energy Semiconductor Manufacturing · 4 (1.9%)
- Software Development · 3 (1.4%)
- Financial Services · 3 (1.4%)
- Construction · 3 (1.4%)

Job function

- Engineering · 40 (18.9%)
- Operations · 25 (11.8%)
- Customer Success and Support · 20 (9.4%)
- Research · 19 (9%)
- Media and Communication · 17 (8%)
- Program and Project Management · 16 (7.5%)
- Business Development · 9 (4.2%)
- Administrative · 7 (3.3%)
- Community and Social Services · 7 (3.3%)
- Human Resources · 6 (2.8%)

Content engagement in 2022-2023: Impressions, reactions, and reposts

Post title	Impressions	Views	Clicks	CTR	Reactions	Comments	Reposts
On June 19th in Brussels, the final PANTERA event was held. ✅ 54 months passed and... Posted by Greta Meshi 6/30/2023 Boost	532	-	270	50.75%	23	0	3
Bridging the gap between researchers and entrepreneurs Posted by Greta Meshi 6/22/2023 Boost	40	-	0	0%	0	0	0
D-14 to the PANTERA final event in Brussels! Have you secured your place for... Posted by Melissa Setakhr 6/5/2023 Boost	96	-	0	0%	7	0	0
Have you secured your place to join us on the 19th of June in Brussels for our final... Posted by Melissa Setakhr 5/10/2023 Boost	129	-	6	4.65%	13	0	5
🔔 Today the Head of LINO Office Tadas Tumėnas has participated in the workshop... Posted by Melissa Setakhr 5/8/2023 Boost	69	-	0	0%	0	0	0
🗓️ Today, the last workshop of the joint #SUPEERA and PANTERA series on... Posted by Melissa Setakhr 5/8/2023 Boost	61	-	4	6.56%	0	0	0
➡️ On the 23rd of March 2023, our #PhD#researcher, Mr. Chrysanthos... Posted by Melissa Setakhr 5/8/2023 Boost	42	-	0	0%	0	0	0
PANTERA / SUPEERA joint workshop - International research collaboration... Posted by Melissa Setakhr 5/8/2023 Boost	45	-	0	0%	0	0	0
Read "EIRIE for your R&I needs to support your endeavors to lead the energy... Posted by Melissa Setakhr 4/18/2023 Boost	159	-	9	5.66%	6	0	1

https://lnkd.in/eiJ-658g Posted by Melissa Setakhr 11/30/2022 Boost	175	-	4	2.29%	8	0	0
Did you visit us at Enlit Europe in the #EUprojectzone? Have a talk with PANTER... Posted by Melissa Setakhr 11/30/2022 Boost	537	-	21	3.91%	22	0	1
We are happy to announce that in addition to being present in the digital EU project... Posted by Melissa Setakhr 11/21/2022 Boost	95	-	0	0%	2	0	0
Don't miss the next PANTERA workshop "Boosting the R&I... Posted by Melissa Setakhr 11/15/2022 Boost	114	-	5	4.39%	12	0	2
Thank you for participating in our workshop "Boosting the R&I activity on... Posted by Melissa Setakhr 9/29/2022 Boost	434	-	135	31.11%	19	0	2
Come and say hello to us at #EUSEW Energy Fair in Brussels today and tomorro... Posted by Melissa Setakhr 9/26/2022 Boost	132	-	3	2.27%	7	0	2
It's tomorrow! Dont' miss PANTERA workshop "Boosting the R&I activity on... Posted by Melissa Setakhr 9/26/2022 Boost	130	-	2	1.54%	6	0	0
D-5 until our #workshop "Boosting the R&I activity on #SmartGrid #Technologies:... Posted by Melissa Setakhr 9/22/2022 Boost	128	-	13	10.16%	9	0	6

Join the upcoming PANTERA-#SUPEERA joint workshop "International research... Posted by Melissa Setakhr 3/2/2023 Boost	103	-	6	5.83%	10	0	3
ERIGrid 2.0 Project invites all interested engineers involved in the domains of pow... Posted by Melissa Setakhr 2/7/2023 Boost	229	-	3	1.31%	7	0	0
What a great opportunity to present our latest project developments at Enlit Europ... Posted by Melissa Setakhr 12/7/2022 Boost	209	-	6	2.87%	13	0	1

Facebook

Reach, post clicks and Engagement (Likes, comments, shares) in 2022-23

Overall analytics for the period 2022-23

Content Engagement for 2022

All content — Ads, Published posts and Published stories

Recent content	Type	Reach	Likes and reacti...	Stic
 What a great opportunity to present our lates... Dec 7, 2022	Post	Boost unavailable	30	1
This post has no text Nov 30, 2022	Post	Boost unavailable	41	2
 Did you visit us at Enlit Europe in the #EUproj... Nov 30, 2022	Post	Boost unavailable	220	14
 We are happy to announce that in addition t... Nov 21, 2022	Post	Boost unavailable	132	3
 Don't miss the next PANTERA workshop "Boo... Nov 15, 2022	Post	Boost unavailable	88	2
 In case you missed the workshop, watch it no... Nov 9, 2022	Post	Boost unavailable	21	1
 We would like to thank all our speakers, as w... Nov 9, 2022	Post	Boost unavailable	99	5
 We would like to thank you all for participatin... Nov 7, 2022	Post	Boost unavailable	284	9
 Don't miss PANTERA & #SUPEERA joint #Wor... Oct 31, 2022	Post	Boost unavailable	81	3
 On the 26th of October, PANTERA EIRIE Platf... Oct 17, 2022	Post	Boost unavailable	222	4
 Join us tomorrow at the #SyNERGYMed conf... Oct 17, 2022	Post	Boost unavailable	78	2
 Did you miss the PANTERA workshop "Boosti... Oct 12, 2022	Post	Boost unavailable	268	4
 Thank you for participating in our workshop "... Sep 29, 2022	Post	Boost unavailable	169	4
 It's tomorrow! Don't miss PANTERA worksho... Sep 26, 2022	Post	Boost unavailable	241	8
 Come and say hello to us at #EUSEW Energy ... Sep 26, 2022	Post	Boost unavailable	33	2
 D-5 until our #workshop "Boosting the R&I a... Sep 22, 2022	Post	Boost unavailable	22	0
 🔎Read about PANTERA and the EIRIE Platfor... Sep 21, 2022	Post	Boost unavailable	241	5
 Don't miss the upcoming PANTERA workshop... Sep 15, 2022	Post	Boost unavailable	214	3
 We'll be at the #EUSEW2022 Energy Fair shari... Sep 14, 2022	Post	Boost unavailable	46	1
 As you may already know, we are continually ... Jul 21, 2022	Post	Boost unavailable	89	2
 Be with us for the next PANTERA workshop "... Jul 19, 2022	Post	Boost unavailable	457	7
 📌 D-5 until PANTERA Workshop "The EIRIE ... Jun 9, 2022	Post	Boost unavailable	37	1

	D-2 until "International research collaboratio... May 30, 2022	Post	Boost unavailable	110	1
	Did you miss PANTERA & SUPEERA joint wor... May 19, 2022	Post	Boost unavailable	57	1
	➡️ SAVE THE DATE for the upcoming PANTE... May 18, 2022	Post	Boost unavailable	328	9
	As you may know, the PANTERA consortium ... May 4, 2022	Post	Boost unavailable	63	2
	As you may know, the PANTERA consortium ... May 4, 2022	Post	Boost unavailable	27	1
	Our joint PANTERAA/SUPEERA workshop "Int... May 2, 2022	Post	Boost unavailable	36	3
	We would like to thank all our speakers and p... Apr 28, 2022	Post	Boost unavailable	390	20
	⏰ Only 1 day left! Join us tomorrow for PAN... Apr 26, 2022	Post	Boost unavailable	87	6
	As you may know, the PANTERA consortium ... Apr 20, 2022	Post	Boost unavailable	23	1
	Only 1 week left! Have you already registere... Apr 19, 2022	Post	Boost unavailable	143	1
	Read the article "EIRIE Innovating in Europea... Mar 30, 2022	Post	Boost unavailable	24	0
	➡️ SAVE THE DATE for the upcoming PANTE... Mar 29, 2022	Post	Boost unavailable	158	2
	👉 PANTERA and the #EIRIE platform in the S... Mar 22, 2022	Post	Boost unavailable	268	3
	Did you read #ETIPSNET R&I Implementation... Mar 16, 2022	Post	Boost unavailable	28	0
	As you may already know, we are continually ... Mar 15, 2022	Post	Boost unavailable	162	4
	Join European Sustainable Energy Week #EUS... Feb 24, 2022	Post	Boost unavailable	153	6
	The EIRIE platform is still growing and does n... Feb 17, 2022	Post	Boost unavailable	81	7
	🗓️ On Thursday Feb 3, the PANTERA project ... Feb 7, 2022	Post	Boost unavailable	356	6
	Register now and attend tomorrow the officia... Feb 1, 2022	Post	Boost unavailable	18	1
	Do you want to keep up with what is happeni... Jan 31, 2022	Post	Boost unavailable	20	1
	On January 19, PANTERA project coordinator ... Jan 27, 2022	Post	Boost unavailable	15	1
	We were delighted to be present and to have... Jan 20, 2022	Post	Boost unavailable	66	6
	Are you a #startup or young company workin... Jan 12, 2022	Post	Boost unavailable	19	0
	🆕 EIRIE platform in the news! EIRIE (Europea... Jan 10, 2022	Post	Boost unavailable	165	10

Content Engagement of 2023

All content — Ads, Published posts and Published stories

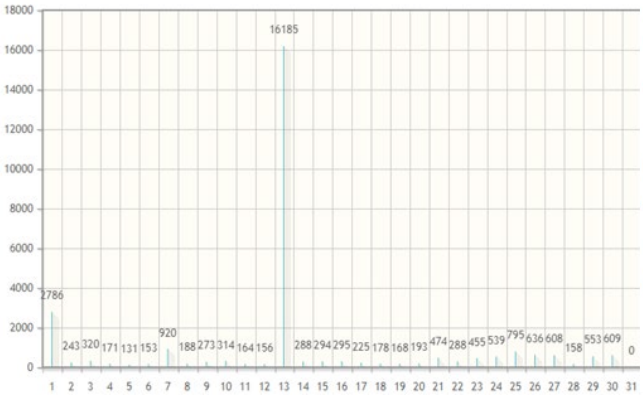
Recent content	Type	Reach	Likes and reacti...	Sticker taps
 Have you secured your place to joi... Wed May 10, 8:41am	Post Boost unavailable	27	1	--
 Read "EIRIE for your R&I needs to s... Tue Apr 18, 2:13am	Post Boost unavailable	263	1	--
 Don't miss the #PANTERA-#SUPEE... Wed Mar 22, 8:36am	Post Boost unavailable	125	0	--
 Join the upcoming PANTERA-#SUP... Thu Mar 2, 9:04am	Post Boost unavailable	460	8	--

6.3.6 Analytics of the EIRIE Platform

As can be seen below there is a growing use of EIRIE by 295 active users of various activities. It is clear from the statistics below that all days of the week and month are used by users and throughout the day. Actual activity is very high, and it is an indication that it will grow as more and more projects are using EIRIE for promoting their work.
In the 17 graphs that follow, the activity of visitors on EIRIE is depicted month by month showing that activity has gradually grown as more and more projects / activities used EIRIE for their endeavours. In January 2022 no activity is recorded since the platform was still at the development stage with no functionalities being operational to offer services to the R&I community. We should remember that, the objective of the PANTERA project was to have available and operational the platform by the 31st of December 2022 when the project was finishing.

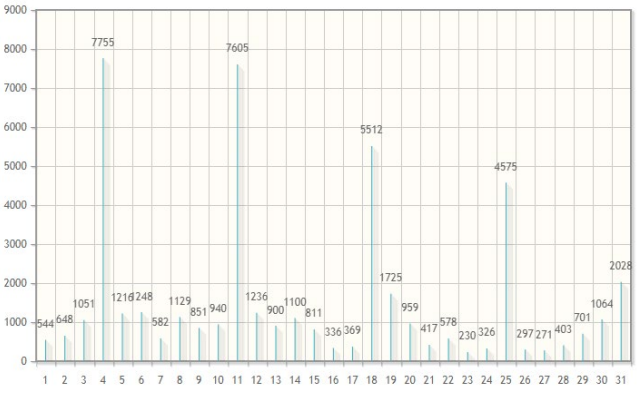
From
Jun 1 2022
To
Jul 1 2022
Choose date range

SAVE



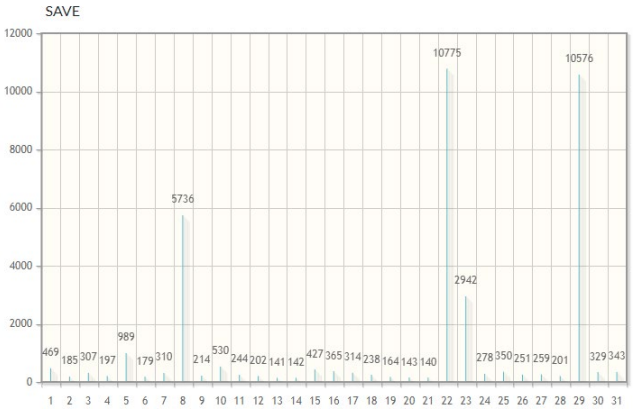
From
Jul 1 2022
To
Aug 1 2022
Choose date range

SAVE



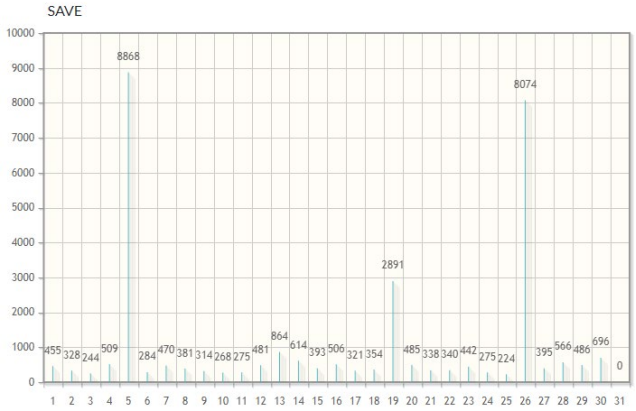
From
Aug 1 2022
To
Sep 1 2022
Choose date range

SAVE



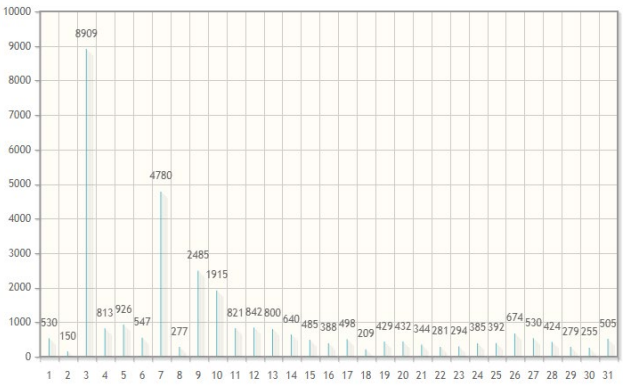
From
Sep 1 2022
To
Oct 1 2022
Choose date range

SAVE



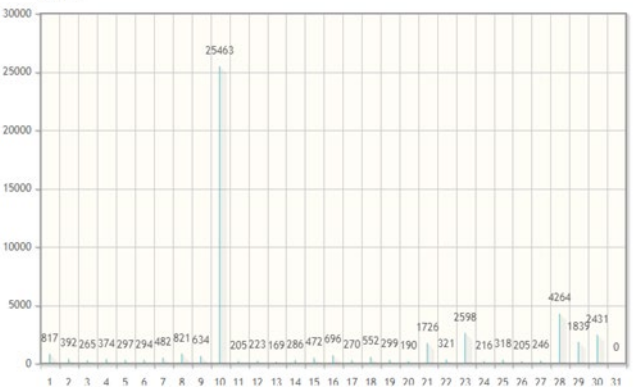
From
Oct 1 2022
To
Nov 1 2022
Choose date range

SAVE



From
Nov 1 2022
To
Dec 1 2022
Choose date range

SAVE



From

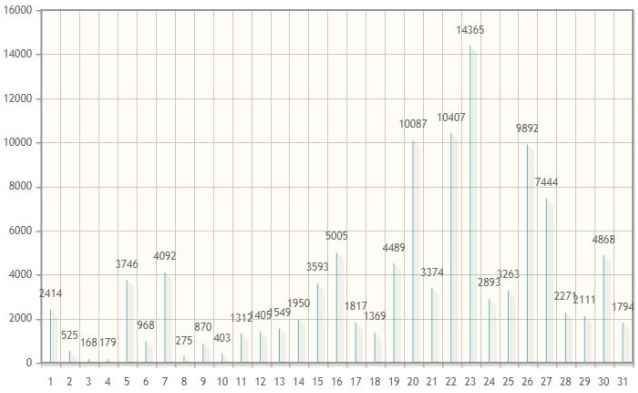
Dec 1 2022

To

Jan 1 2023

Choose date range

SAVE



From

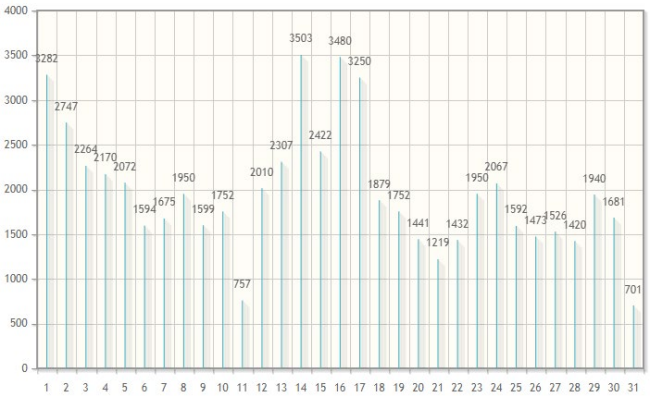
Jan 1 2023

To

Feb 1 2023

Choose date range

SAVE



From

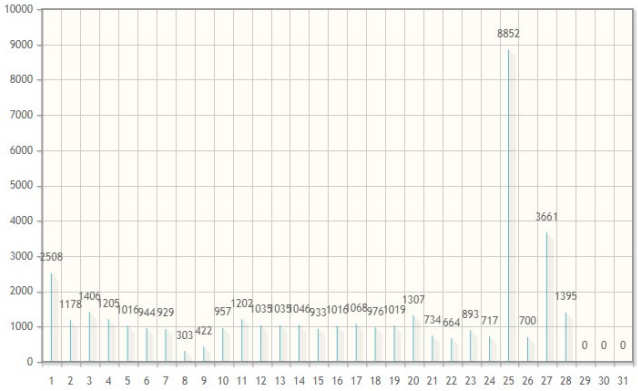
Feb 1 2023

To

Mar 1 2023

Choose date range

SAVE



From

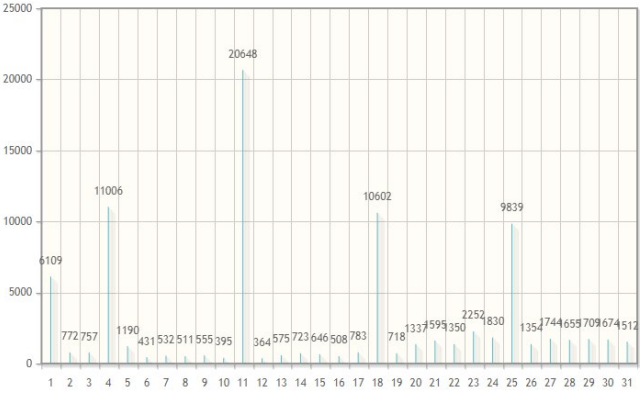
Mar 1 2023

To

Apr 1 2023

Choose date range

SAVE



From

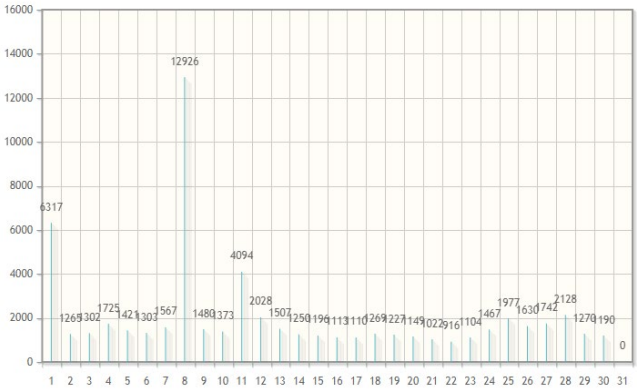
Apr 1 2023

To

May 1 2023

Choose date range

SAVE



From

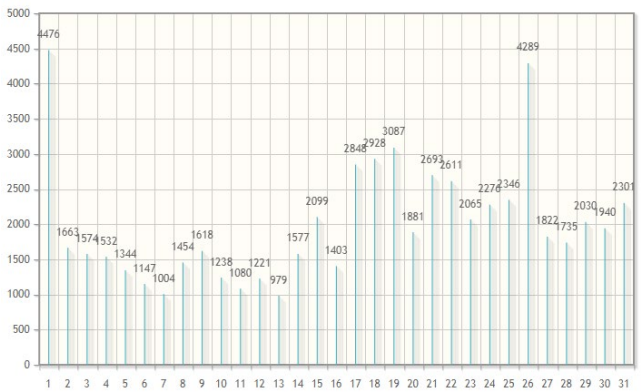
May 1 2023

To

Jun 1 2023

Choose date range

SAVE



From

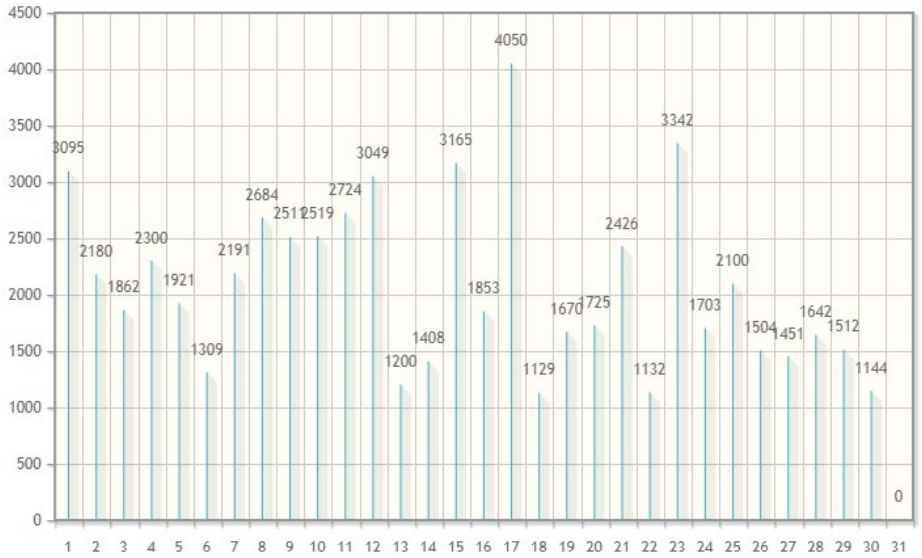
Jun 1 2023

To

Jun 30 2023

Choose date range

SAVE



As can be seen from the monthly visits on EIRIE, use is constantly growing. Started from 134 minimum in February 2022 and risen to 1144 in June 2023. There is a steady rise from February 2022 to end of June 2023 with peaks appearing when development work was in progress from the side of the designers. It is clear that the balanced use of the platform over the last months of the period is an indication of frequent use by actual R&I users using the platform for their needs. Very encouraging growth!

Hours

Date filter

From

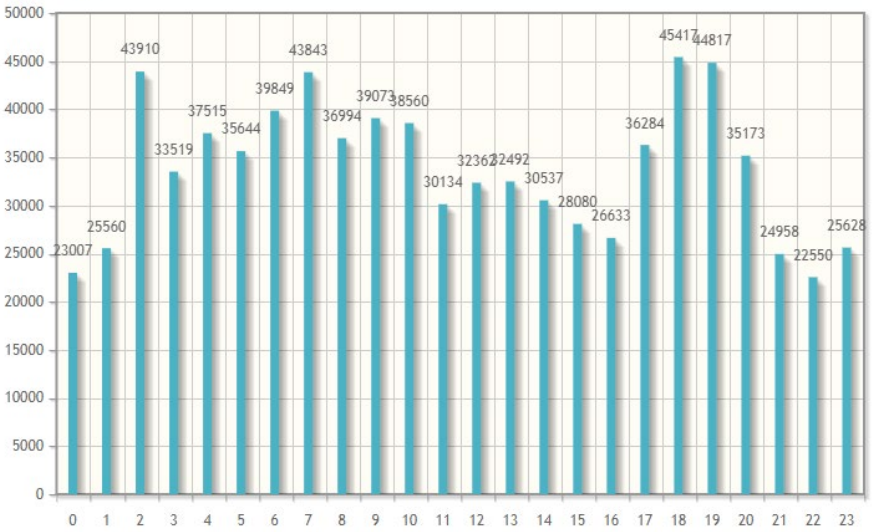
Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE



Days of week

Date filter

From

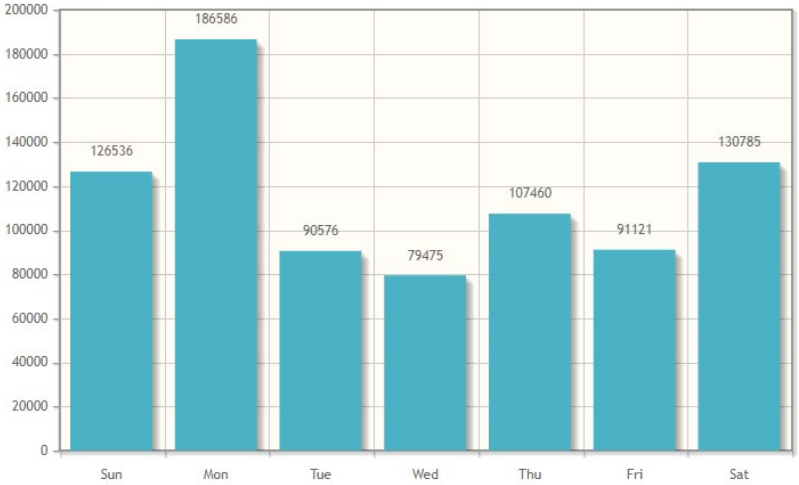
Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE



Days of month

Date filter

From

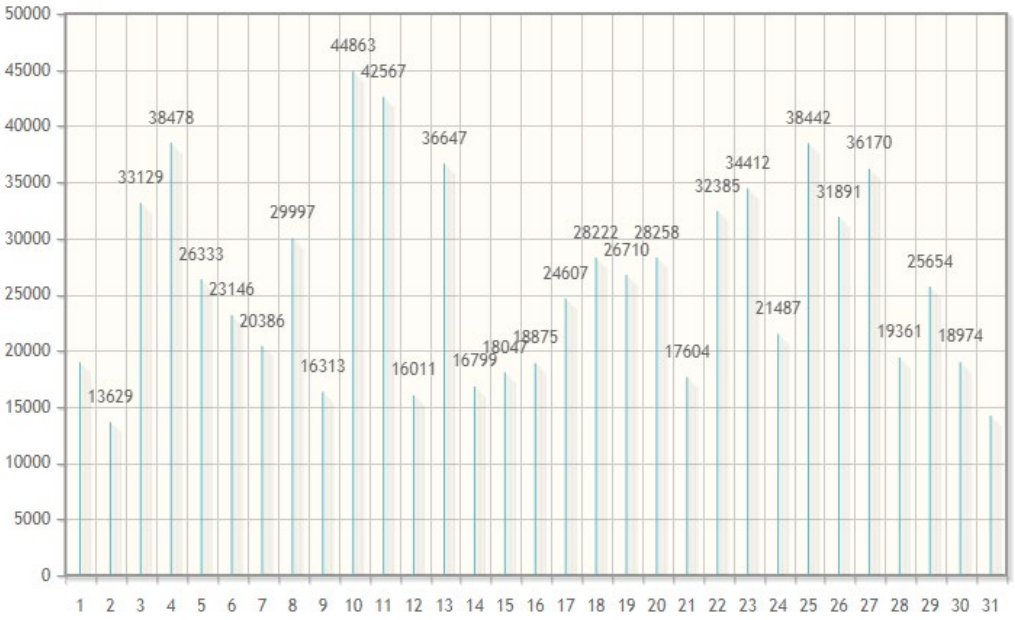
Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE



User activity

Date filter

From

Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE

#	User	Hits	Nodes	Comments
1	Anonymous User	781187	0	0
2	Irina Antoskova	6422	0	0
3	derlab	2552	2710	0
4	inycom	1974	783	0
5	Anna	1283	0	0
6	jaime	1010	0	0
7	Yassamin	949	9	0
8	Lola Alacreu	908	13	0
9	yaksh	769	24	0
10	Eduardo	714	27	0

User activity

Date filter

From

Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE

#	User	Hits	Nodes	Comments
11	n00b8qou	684	0	0
12	Mattia	632	0	0
13	Chrysanthos	587	0	0
14	Melissa	555	88	0
15	Javier Riba	519	198	0
16	Dune Sebilleau	483	13	0
17	Shafi	470	0	0
18	Venizelos	423	0	0
19	Javier Ferreira Gonzalez	370	22	0
20	Alexandre	341	8	0

« ‹ 1 2 3 4 5 6 7 8 9 ... › »

User activity

Date filter

From

Jan 1 2022

To

Aug 4 2023

Choose date range

SAVE

#	User	Hits	Nodes	Comments
291	nparegia	2	0	0
292	n007874m	2	0	0
293	n00a7keq	2	0	0
294	n00azc7f	2	0	0
295	n00cgdbj	1	0	0

« ‹ ... 22 23 24 25 26 27 28 29 30

Referers

Date filter

From

Jan 1 2022

To

Jun 30 2023

Choose date range

Referers type filter

Referer type

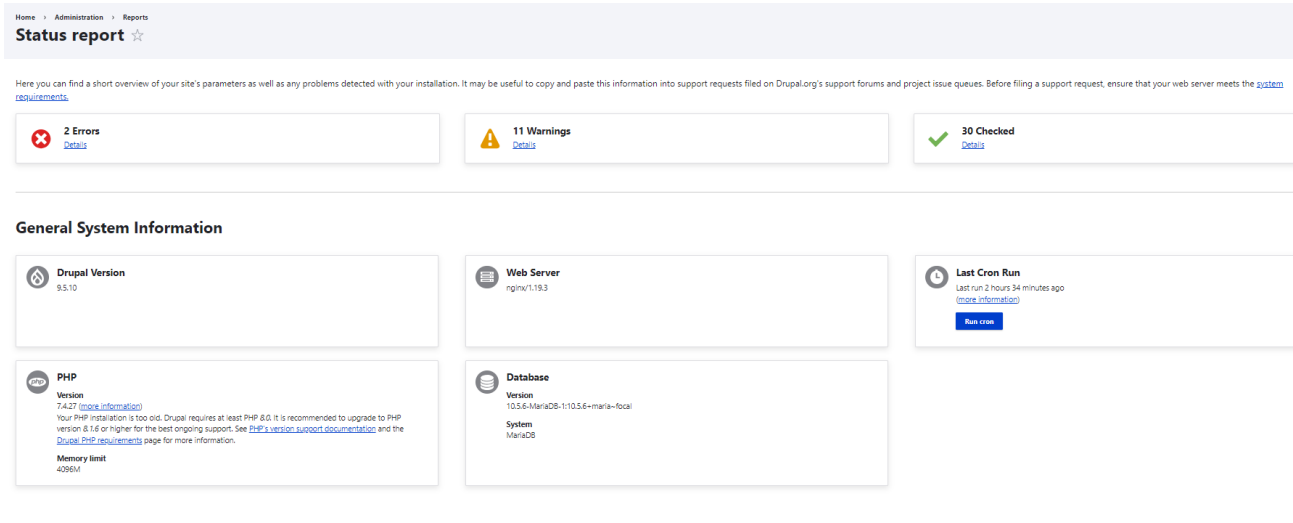
External pages

Choose referers type

SAVE

#	Referer	Count
1	No Referer	430589
2	http://europa.eu	227519
3	https://ec.europa.eu/	9114
4	https://www.google.com/	4133
5	https://www.bing.com/	1861
6	https://duckduckgo.com/	442
7	https://www.ecosia.org/	203
8	http://eirie.eu/eirie/themes/custom/pantera_barrio/logo-CE.png	135
9	http://eirie.eu/eirie/sites/default/files/inline-images/eirie-logo.png	135
10	http://eirie.eu/eirie/sites/default/files/inline-images/eu-flag.jpg	133

1 2 3 4 5 6 7 8 9 ... › »



Top pages

Date filter

From

Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE

#	URL	Count
1	http://ses.jrc.ec.europa.eu/eirie/en/search-area/all	114546
2	http://ses.jrc.ec.europa.eu/eirie/	51612
3	http://ses.jrc.ec.europa.eu/eirie/	47979
4	http://ses.jrc.ec.europa.eu/eirie/en/cookies/consent/callback.json	3997
5	http://ses.jrc.ec.europa.eu/eirie/api/v1/node/regulation_grid_codes_standard	2102
6	http://ses.jrc.ec.europa.eu/eirie/en/views/ajax	1579
7	http://ses.jrc.ec.europa.eu/eirie/en/news-and-events/news	1247
8	http://ses.jrc.ec.europa.eu/eirie/en/casservice?ticket=ST-10132251-fpaq3OVfeET0h7C1zQqzoNIfGPqZrfAeI2Y7brmUARn7bZeDSGIipYrkjg5W5i4gOmyEAeAdbUYuenS1zhHyi3G-yntOf97TTHqLkdaQCMnMgO-FzgYHA4zSfm0Iq2aaE9uDbr4YneIjTwbOaxvcFJICDxzYxVx8UKN7wxfPbe3E9TRAzR7BRvBrgDiL1PZSnx0cQ8	1071
9	http://ses.jrc.ec.europa.eu/eirie/en/history/143810/read	969
10	http://ses.jrc.ec.europa.eu/eirie/en/facets-block-ajax?_wrapper_format=drupal_ajax	902

1 2 3 4 5 6 7 8 9 … › »

Top pages

Date filter

From

Jan 1 2022

To

Jun 30 2023

Choose date range

SAVE

#	URL	Count
21	http://ses.jrc.ec.europa.eu/eirie/en/node/add/use_cases	564
22	http://ses.jrc.ec.europa.eu/eirie/en/community-stakeholders	522
23	http://ses.jrc.ec.europa.eu/eirie/en/taxonomy/term/145	494
24	http://ses.jrc.ec.europa.eu/eirie/es	466
25	http://ses.jrc.ec.europa.eu/eirie/en/access-regional-desks	465
26	http://ses.jrc.ec.europa.eu/eirie/en/history/95/read	461
27	http://ses.jrc.ec.europa.eu/eirie/en/media/550/edit	459
28	http://ses.jrc.ec.europa.eu/eirie/en/search-area/pr-search	458
29	http://ses.jrc.ec.europa.eu/eirie/en/taxonomy/term/164	455
30	http://ses.jrc.ec.europa.eu/eirie/en/node/add/projects	416

Note: Access to regional desks over the review period = 465 times