The PARITY project has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No 864319

PARITY

Project Acronym:	**PARITY**
Project Full Title:	**Pro-sumer AwaRe, Transactive Markets for Valorization of Distributed flexibilITY enabled by Smart Energy Contracts**
Grant Agreement:	**846319**
Project Duration:	**42 months (01/10/2019 – 31/03/2023)**

DELIVERABLE D1.1
Ethics Manual

Work Package:	**WP1 – Ethics**
Task:	**T1.1 – Ethics Management**
Document Status:	**Final v1.0**
File Name:	**PARITY_D1.1_Ethics Manual_R1_V1.0_CERTH.docx**
Due Date:	**31.03.2020**
Submission Date:	**31.03.2020**
Lead Beneficiary:	**CERTH**

Dissemination Level	
Public	X
Confidential, only for members of the Consortium (including the Commission Services)	

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Version History

Version	Author	Date	Status
0.1	Dimosthenis Ioannidis, Stylianos Zikos, CERTH	January 7, 2020	Initial draft (TOC)
0.2	Dimosthenis Ioannidis, Stylianos Zikos, CERTH	January 21, 2020	Refinement of the sections
0.5	Stylianos Zikos, CERTH	February 14, 2020	Content added to all sections
0.8	Stylianos Zikos, CERTH	February 25, 2020	Minor additions
0.9	Dimosthenis Ioannidis, Stylianos Zikos, CERTH	March 6, 2020	Final draft for internal review
1.0	Dimosthenis Ioannidis, Stylianos Zikos, CERTH	March 30, 2020	Final version addressing comments from partners
1.0	Dimosthenis Ioannidis, CERTH	March 31, 2020	Submission to the EC

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Executive Summary

The objective of this document is to provide a manual for the ethics related guidelines to be followed within the duration of the PARITY project. Data collection and processing will take place within several activities of the PARITY project, such as surveys and questionnaires that will involve end users and stakeholders, measurements from smart meters and other IoT devices and sensors, energy consumption and generation monitoring data, forecasted energy flexibility data, transactions of prosumers in the local flexibility market, and other. The project consortium is aware that the protection of personal data is of utmost importance and the research activities have to comply with legal and ethical rules. Therefore, the necessary measures that need to be taken to protect the privacy of the participants involved, are presented in this manual.

The main topics covered in the document are the presentation of the Ethics management methodology (ethics framework), the identification of the ethical and legal issues as well as ethical risks relevant to the project, and the identification of EU and national legislation and directives of the countries where the data collection will take place. Finally, the PARITY Ethical Advisory Board that has been formed, will monitor all activities with regard to ethics and legislation, and will provide the proper directions in order to ensure the protection of personal data.

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List of Acronyms and Abbreviations

Term	Description
DPIA	Data Protection Impact Assessment
DPO	Data Protection Officer
DSO	Distribution System Operator
EAB	Ethical Advisory Board
EC	European Commission
EEA	European Economic Area
EGE	European Group on Ethics
EU	European Union
EV	Electric Vehicle
GDPR	General Data Protection Regulation
IoT	Internet of Things
NDA	Non-Disclosure Agreement
SGTF	Smart Grid Task Force
WP	Work Package

1. INTRODUCTION

Data privacy and protection of sensitive information are crucial and they will be addressed by PARITY, as the project will engage end-users and stakeholders during the design and evaluation phases of the solutions that will be developed.

Even though there are no critical ethical issues relevant to the project, data collection and processing will take place within several activities of the PARITY project. For example, some of them are the surveys and questionnaires that will involve end users and stakeholders, measurements from smart meters and other IoT devices and sensors, energy consumption and generation monitoring data, forecasted energy flexibility data, and transactions of prosumers in the local flexibility market based on smart energy contracts.

Main challenges that need to be overcomed is the management of data belonging to different stakeholders, i.e. prosumers, aggregators, and DSOs, as well as data collection from meters and IoT sensors installed at prosumers' households. Especially for the latter case, special attention will be given on data privacy. Authorized access and anonymization are two indicative measures to be applied to protect confidentiality of collected data.

As far as legislation is concerned, project's activities including data collection will be performed in accordance with relevant EU and national laws, which will be presented in this document. Possible restrictions in the application of novel technologies and concepts, such as flexibility markets and blockchain transactions in the energy domain will be investigated. Particularly for blockchain, as it is a new and continuously evolving technology, related legislation constraints have to be identified [1].

1.1 Scope and Objectives of the Deliverable

The present ethics manual document describes the ethical and legal issues that may arise within the PARITY project, along with the methodology that will be used to collect, store and process the data. It is the initial output of Task 1.1 - Ethics Management, which belongs to WP1.

The main objectives of the ethics manual are to:

- Establish an ethics management methodology, which takes into account the ethical requirements of all demonstration activities in the 4 pilot sites of the project.
- Outline current European and national legislation in pilot sites, and assure compliance.
- Describe the role of the PARITY Ethical Advisory Board.
- Present potential ethical risks.
- Provide a template for consent forms.

1.2 Structure of the Deliverable

The document is structured as follows: Section 2 presents the Ethics Management methodology, which includes several phases. EU and national legislation and directives related to the countries where the data collection will be performed, are outlined in section 3. Section 4 presents ethics management issues, such as the formulation of the Ethical Advisory Board, ethical risks and guidelines, as well as other topics. Section 5 provides a summary of the conclusions and closing remarks. Finally, useful templates (e.g. consent form) are provided in the ANNEX.

1.3 Relation to Other Tasks and Deliverables

Main inputs that were utilized for preparing this document are the PARITY Grant Agreement document and online sources for retrieving information about the EU General Data Protection Regulation and legislation of countries where the pilot sites are located.

The methodology and procedures provided in this ethics manual will be utilized as input in the following tasks and deliverables:

- *T3.1 Elicitation and analysis of business/use cases and requirements for the PARITY tool suite* and *T3.2 Ex-ante surveys of pilot infrastructure & equipment installation planning*, to support organisation of surveys.
- *T8.2 Community engagement, pilot participant recruitment and integration into local flexibility market* and the corresponding deliverable D8.2.
- *D2.2 Data Management Plan* (M6), where project's datasets will be presented along with data privacy measures.
- *T3.4 PARITY Privacy & Security Framework Specifications* and the corresponding deliverable *D3.4 Report on specifications to ensure privacy and security*.
- *D1.2 Ethics Management Report*, which will present the ethics management actions during the project duration and will be submitted on M42.

2. PARITY ETHICS MANAGEMENT METHODOLOGY

This section presents the PARITY ethics management methodology. Initially, ethical issues and requirements of the project are identified. The methodology framework provides guidelines that have to be followed, from data collection phase to pilot evaluation and exploitation, in accordance with the ethical requirements.

2.1 Ethical Issues and Requirements

PARITY consortium members will consider the following actions / guidelines (ethical requirements) when performing an activity that involves data collection from end-users.

1. Provide informed consent forms for the participation of humans
2. Provide information about data management process: collection, storage, protection, retention, handling and destruction, according to national and EU legislation.
3. Provide Non-Disclosure Agreements to be signed among consortium members to ensure proper information exchange within PARITY activities (ANNEX B).
4. Acquire confirmation by the Data Protection Officer and/or obtain authorization or notification by the corresponding National Data Protection Authority (according to GDPR and national laws).
5. Provide reasonable justification for collecting and processing personal data.
6. Prior to both pre-piloting phase and pilot deployment, all involved end-users must agree and sign informed consents.
7. Prior to final integration and piloting, all foreseen NDAs will have been signed by the involved consortium members.
8. All personal data will be held private and will be pseudo-anonymised as soon as possible during data processing.
9. The acquired personal data will under no circumstances be used for commercial purposes.

2.2 Methodology and Guidelines

The ethics management methodology defines four phases that need to be followed to support the pilots' activities from the ethical and legislation point of view. Figure 1 depicts the main phases of the ethics management methodology, which are the following: Planning, Ethics Management Principles, Data Management Plan, and Pre-validation and Pilot Activities.

Planning: During the planning phase, the ethical requirements are defined according to EU and national legislation that applies to each location. Furthermore, preparation of necessary documents, such as the Informed Consents, is taking place.

Ethics Management Principles: Based on the output of the planning phase, the procedures and guidelines that will be followed are defined in the ethics management phase. Privacy and security risks are identified and mitigation measures are established.

Data Management Plan: This phase involves the implementation of the Data Management Plan, which describes the procedures for ensuring that the data management process complies with EU and national legislation. Policies for data collection, data storage, data retention and destruction are specified along with the description of datasets. More details about the Data Management Plan can be found in the respective deliverable D2.2.

Pre-validation and Pilot Activities: During the pre-validation and pilot activities phase, the recruitment of participants is performed in compliance with GDPR and national laws. Informed Consents are signed by the participants beforehand, as well as agreements regarding data access and exchange among project partners.

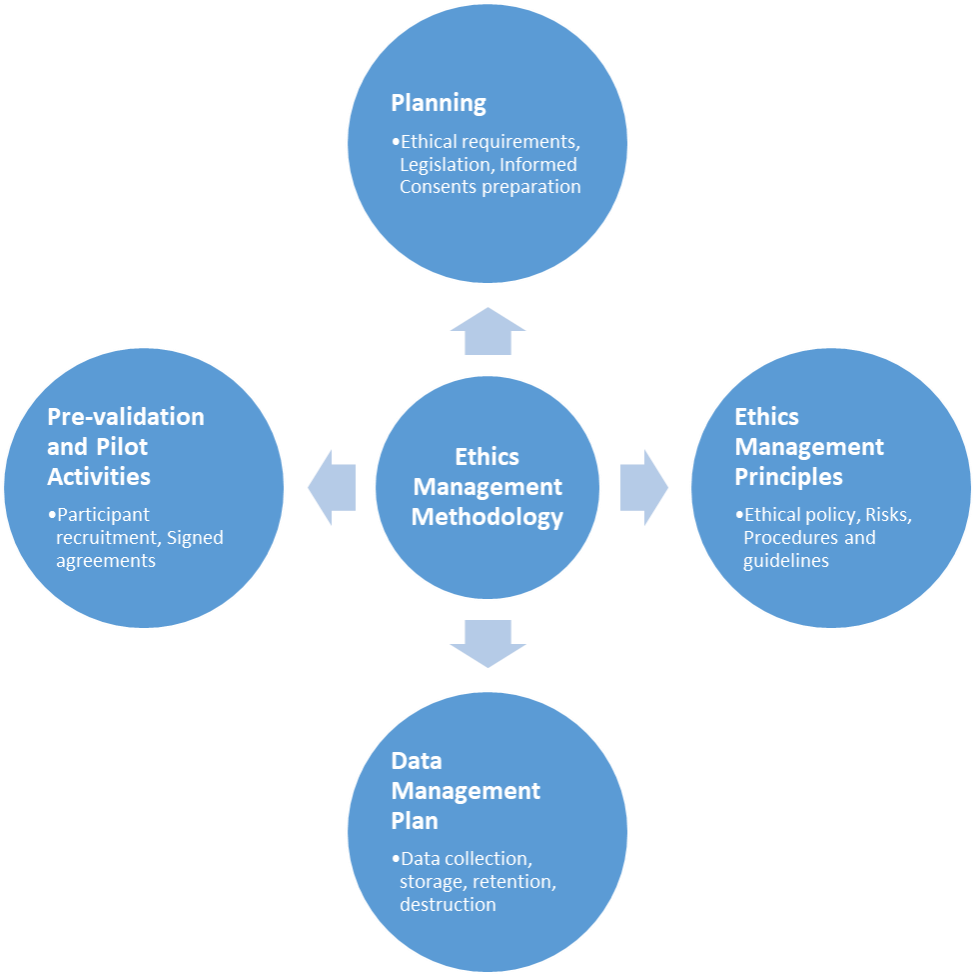

Figure 1. Ethics Management Methodology.

The methodology described above has to be followed in order to ensure that:

- All activities of PARITY project regarding data management comply with EU and national laws and directives.
- The end-users and stakeholders are fully aware about the data that will be collected and the reasons for collecting them.
- No sensitive data will be shared to external parties.
- Data collected will not be sold or used for any other purpose that is not relevant to the PARITY project.
- Only necessary data to accomplish the research will be collected (data minimisation principle).

3.LEGISLATION

PARITY project involves data collection at the pilot sites in order to evaluate the technology solutions, as well as data collection at selected buildings for initial technology testing during the pre-validation phase. To this end, human participants will be involved in activities related to data collection and monitoring of several parameters at their premises, as well as participation in surveys and interviews. Since these activities can raise privacy and data protection issues, data collection and processing will be carried out in full compliance with European and National legislation and directives relevant to the country where they are taking place.

3.1 EU Legislation

All activities related to data management will be performed in full compliance with the following EU legislation and directives:

- The Universal Declaration of Human Rights and the Convention 108 for the Protection of Individuals with Regard to Automatic Processing of Personal Data
- General Data Protection Regulation & Directive 2002/58/EC of the European parliament regarding issues with privacy and protection of personal data and the free movement of such data

The General Data Protection Regulation (GDPR) [2] is a privacy and security law which was drafted and passed by the European Union (EU), and imposes obligations onto organizations anywhere, as long as they target or collect data related to people in the EU. The regulation was put into effect on May 25, 2018. With the GDPR, Europe is signaling its firm stance on data privacy and security at a time when more people are entrusting their personal data with cloud services and breaches are a daily occurrence.

Privacy and Electronic Communications Directive 2002/58/EC on Privacy and Electronic Communications, also known as ePrivacy Directive, is an EU directive on data protection and privacy in the digital age. This directive deals with the regulation of a number of important issues such as confidentiality of information, treatment of traffic data, spam and cookies. The full text of the directive is accessible at [3].

Regarding GDPR, Article 4 presents the list of the definitions that are used for the purposes of the regulation. Indicatively, 'personal data' are defined as

> *"any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person;"*

Furthermore, data 'controller' and 'processor' are defined as follows:

> *"controller means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of such processing are determined by Union or Member State law, the controller or the specific criteria for its nomination may be provided for by Union or Member State law;"*
>
> *"processor means a natural or legal person, public authority, agency or other body which processes personal data on behalf of the controller;"*

A GDPR checklist [4] for data controllers is provided in ANNEX A. The checklist includes basic statements and actions that can help a data controller to limit exposure to regulatory penalties.

In Article 5.1-2 of GDPR, 7 **protection and accountability principles** related to processing of personal data are outlined. These principles must be considered before and during the data processing phase:

- Lawfulness, fairness and transparency - Processing must be lawful, fair, and transparent to the data subject.
- Purpose limitation - Data must be processed for the legitimate purposes specified explicitly to the data subject when they were collected.
- Data minimization - Only as much data as absolutely necessary for the purposes specified should be collected and processed.
- Accuracy - Personal data must be kept accurate and up to date, where necessary. Every reasonable step must be taken to make sure that inaccurate personal data, having regard to the purposes for which they are processed, are erased or rectified without delay.
- Storage limitation - Personally identifying data may be stored only for as long as necessary for the specified purpose. Personal data may be stored for longer periods insofar as the personal data will be processed solely for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1).
- Integrity and confidentiality - Processing must be done in such a way as to ensure appropriate security, integrity, and confidentiality (e.g. by using encryption).
- Accountability - The data controller is responsible for being able to demonstrate GDPR compliance with all of these principles.

Special attention should be paid during the project to processing of special categories of personal data, as described in Article 9 of GDPR:

> *"Processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation shall be prohibited."*

These types of personal data are not related to the scope of PARITY, therefore collection and processing of such data will be avoided.

A **Data Protection Impact Assessment** (DPIA) is a process aimed to evaluate risks to the rights and freedoms of individuals, in particular the risks' origin, nature, particularity and severity. Moreover, it analyses measures, safeguards, controls and mechanisms to address these risks, in order to protect personal data.

GDPR foresees the DPIA as a key instrument to enhance data controllers' accountability as it helps them build and demonstrate compliance. The DPIA supports data controllers in establishing the rules for collecting personal data with regard to proportionality of collection to the purpose of processing and legal basis. DPIA facilitates data protection by design and complements risk management processes. According to the GDPR, DPIAs should be carried out in order to evaluate the origin, nature, particularity and severity of a risk to the rights and freedoms of natural persons. A DPIA is mandatory in case:

- Special categories of data (e.g. sensitive data) are processed on a large scale
- A new technology will be deployed and tested
- A profiling operation is susceptible to affect people in a significant manner

The Smart Grid Task Force (SGTF) provide a DPIA template for smart grid and smart metering systems [5], in order to formulate the data protection concept within the smart grid framework and measure the impacts of secure data handling. The DPIA template is addressed to smart grid operators such as DSOs, energy generators and suppliers, metering operators and energy service companies, who collect and use personal data, e.g. household consumption data, and are therefore subject to GDPR obligations. The DPIA template is not compulsory; however, it can be used as an evaluation and decision-making tool that will support smart grid operators in GDPR compliance. The DPIA

promotes a common methodology for adequate personal data processing for smart grid operators and shall be considered as complementary to an overall risk assessment process. It is not limited to simply presenting data protection risks, but also describes measures to deal with the risks identified.

The PARITY consortium will monitor ongoing work of regulatory bodies and relevant data protection recommendations, such as the SGTF and its Experts Groups in the field of the regulatory environment for privacy, data protection and information security, to ensure adaptation and conformance. Moreover, PARITY aims to actively contribute to ongoing work of regulation bodies and experts groups.

In PARITY, data collection and processing at the pilot sites will take place within system integration and impact assessment (WP8), when the system will be fully deployed as well as during development under the Living Lab approach. In the four pilot sites in Switzerland, Spain, Greece, and Sweden, data from the residential and commercial buildings will be collected by the system. Data will be related to energy consumption and generation, the usage of appliances and EVs, estimated flexibility, occupancy patterns, comfort preferences, etc., therefore their processing may result in customer identification. The data that will be generated from the activities at the four pilot sites will be pseudo-anonymized prior to their storage in the system database. PARITY consortium members are committed to treat the data anonymously.

In relation to data handling activities, the pilot site partners CUERVA, URBENER, AEM, BFS, CWATT and E.ON will act as controllers, while the partners that will process and analyse the data will have the role of processors. The controllers will follow certain steps to ensure compliance with the GDPR, such as (a) the engagement of **Data Protection Officer** (DPO) for each pilot site, and (b) ensuring that only the anonymous data will be shared with the processors. The DPO will monitor compliance with GDPR and internal policies, and will provide advice on the necessity and implementation of DPIAs. In case a company or organisation is not required to employ a DPO, the corresponding Ethical Advisory Board member will be employed instead. Moreover, the controller will be responsible for compliance with the Article 30 of GDPR – Records of processing activities [6], where the following statements are included among others.

> *"Each controller and, where applicable, the controller's representative, shall maintain a record of processing activities under its responsibility. Each processor and, where applicable, the processor's representative shall maintain a record of all categories of processing activities carried out on behalf of a controller. The controller or the processor and, where applicable, the controller's or the processor's representative, shall make the record available to the supervisory authority on request."*

3.2 National Legislation

This section outlines the legislation related to data protection, and provides information about the data protection authorities of the four countries that are directly involved in the pilots.

3.2.1 Spanish pilot site

Protection of individuals with regard to the processing of personal data is a fundamental right protected by Article 18.4 of the Spanish Constitution. A document of consolidated Spanish legislation on data protection, personal security and digital rights (Law 3/2018) can be found at https://www.boe.es/buscar/pdf/2018/BOE-A-2018-16673-consolidado.pdf. The Act consists of ninety-seven articles structured in ten titles, twenty additional provisions, six transitory provisions, one repeal provision and sixteen final provisions.

The supervisory data protection authority of Spain can be reached at https://www.aepd.es/es, where practical information on data protection rights and obligations, as well as answers to frequent questions are provided.

3.2.2 Swiss pilot site

Even though Switzerland is not a member of the EU or the EEA, GDPR does affect organisations in this country. In any of the following cases, GDPR does apply to an organization and the data stored about European individuals [7]:

- An organization offers services or goods to individuals in the EU.
- An organization processes or participates in processing of personal data of EU individuals.
- An organization monitors online behaviour of users based in the EU.
- An organization analyses the activities of EU users when they are using the organisation's app or browsing its website.

The Swiss Federal Act on Data Protection of 19 June 1992 aims to protect the privacy and the fundamental rights of persons when their data is processed (https://www.admin.ch/opc/en/classified-compilation/19920153/index.html). It applies to the processing of data pertaining to natural persons and legal persons by:

a. Private persons;
b. Federal bodies.

Additionally, the Federal Act on Data Protection has as its central goal (a) the maintenance of good data file practice and (b) the facilitation of international data exchange by providing a comparable level of protection [8]. To accomplish the latter goal, it regulates the transborder transfer of data in those cases when there is a need for the protection of privacy. Transfers may be prohibited if, for example, the recipient's country cannot provide an adequate level of data protection. Both, private individuals and federal bodies who may be involved in cross-border data disclosure, are subject to the duty of due care. The transfer of data files abroad has to be notified in case of a lack of adequate protection. In the absence of such protection, data may only be disclosed abroad if other safeguards, in particular contractual clauses or rules within the same legal person, guarantee protection.

The national supervisory data protection authority in Switzerland is the Federal Data Protection and Information Commissioner (https://www.edoeb.admin.ch/edoeb/en/home.html), which is appointed by the Federal Council and supervises the compliance of Federal authorities with the Federal Act on Data Protection. Lastly, details about Swiss law on research innovation, which includes ethical aspects, can be found at https://www.admin.ch/opc/en/classified-compilation/20091419/index.html.

3.2.3 Greek pilot site

The national supervisory data protection authority in Greece is the Hellenic Data Protection Authority (https://www.dpa.gr/). Data protection law grants the data subjects, i.e. individuals, certain rights and imposes certain responsibilities on data controllers, i.e. anyone who keeps personal data in a file and processes it.

Information about the legal framework in Greece can be found at [9]. Apart from the GDPR and the EU directive 2016/680, the most recent national laws are the following:

Law 4624/2019 - Hellenic Data Protection Authority (HDPA), measures for implementing Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data, and transposition of Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 and other provisions.

Law 3471/2006 - Protection of personal data and privacy in the electronic telecommunications sector and amendment of law 2472/1997.

3.2.4 Swedish pilot site

The Swedish Data Protection Authority (https://www.datainspektionen.se/) is a public authority with the goal to protect the individual's privacy in the information society. It works to prevent encroachment upon privacy through information and by issuing directives and codes of statuses.

In Sweden, the national regulation is called *SFS 2018: 218 Law*, also known as Data Protection Act [10], and provides supplementary provisions to the EU Data Protection Regulation. The Data Protection Act is subsidiary in relation to deviating provisions of another law or regulation that regulates the processing of personal data. This means that the provisions of the law should not be applied if there are deviating provisions in other laws.

Another relevant regulation, the Personal Data Act, came into force in 1998 and has been aimed at protecting people from violating their personal integrity when processing personal data. However, it has now been replaced by the GDPR. Lastly, a summary of the law for research ethics can be found at [11].

4.PARITY ETHICAL MANAGEMENT

PARITY consortium is aware that the protection of personal data is of utmost importance and it will ensure that all necessary measures will be taken to protect the privacy of the data subjects involved. This section presents the measures that will be taken by the consortium towards complying with the EU and national legislation outlined in the previous section.

4.1 Ethical Advisory Board

The Ethical Advisory Board (EAB) will provide ongoing support concerning ethical and legal issues to the consortium, including support on privacy issues related to data collection in pilot sites. Moreover, it will provide guidelines and recommendations to consortium partners involved in the development of PARITY tools, as well as to end users in the pilot sites. The EAB will monitor and oversee the pilots, validation and evaluation of PARITY results in terms of ethics, security and privacy requirements. In particular, EAB will warrant that all technical activities, trials, data management and data processing will be carried out in an ethical way that respects privacy and regulatory constraints. The EAB is composed of persons from 10 different partners of the PARITY project, including persons from all pilot partners. If necessary, external experts will be appointed to assist the EAB members. The synthesis of the PARITY EAB is shown in Table 1. The EAB coordinator will supervise the activities and provide directions to the board. One person will be nominated per pilot site as responsible for following the provided recommendations as well as the national legislation. This person can be for example the data protection officer of the company/organisation where the pilot takes place. In this way, it will be ensured that the national legislation will be taken into account at each pilot.

Table 1. Ethical Advisory Board.

Partner Short Name / Company	Person Name	Email
CERTH	Dimosthenis Ioannidis (Coordinator)	djoannid@iti.gr
HIVE	Davide Rivola	davide.rivola@hivepower.tech
AEM	Niccolò Poretti	NPoretti@aemsa.ch
MERIT	Nikos Kakardakos	n.kakardakos@meritconsultinghouse.eu
CIRCE	Diego Redondo	dredondo@fcirce.es
URBENER	Ana Villar Monterde	avillar@urbener.com
CWATT	Samuel Wingstedt	samuel.wingstedt@checkwatt.se
SUPSI	Franco Gervasoni	franco.gervasoni@supsi.ch
E.ON	Iulia Minda	iulia.minda@eon.se
BFS	Fotis Manesis	fmanesis@konkat.gr

4.2 Ethical Risks

Privacy and security risks, related to the proposed system, will be investigated within PARITY. In particular, the PARITY Privacy & Security Framework will be defined in Task 3.4 of WP3. The objective of this framework is to identify and reduce the privacy and security risks of the project, in compliance with GDPR. As a result, the risk of causing harm to individuals through the misuse of

their personal information will be reduced as much as possible. Table 2 presents a list of ethical risks, along with mitigation measures, that may need to be addressed.

Table 2. PARITY ethical risks

Risks	Impact	Risk-mitigation measures
Users' concerns regarding sensors and equipment that will be installed on pilot sites, especially at households	High	The partners have the required experience to perform the necessary installations and ensure that the equipment will be installed with minimum intrusion, respecting the legislation of each country. The partners will inform the users about their rights and collected data.
Limited participation of end-users to pilots due to privacy & security concerns	High	For the engagement of end users, proper material explaining data collection and security measures will be distributed. Moreover, informed consent forms will be easy to comprehend. Lastly, specifically assigned persons per pilot site will be responsible to explain PARITY activities.
Inadequate security of data related to personal information, measurements, and energy contracts, may result in data breaches	High	Special attention will be given to provide confidentiality and protection against data breaches in the context of T3.4. If required, additional security mechanisms will be implemented by the partners.
Different laws regarding collection and processing of personal information among the 4 countries of the pilot sites may increase complexity	High	Security and privacy tasks will be considered separately per use case and stakeholder affected. For activities common to all stakeholders, national legislation of all participating countries will be considered.
Hazardous materials (battery storage) handling: Lithium batteries can be regarded as hazardous since classified as Class 9 – Miscellaneous Dangerous Goods.	High	Partners responsible for installation of battery storage are very experienced, therefore, it can be assured that all equipment and installations will comply with the respective regulations minimizing the environmental impact.

4.3 Protection of Personal Data

Certain procedures have been defined for management of personal data, in order to protect individuals and their rights in compliance with EU and national legislation. All used assessment tools, data collection and analysis protocols within the PARITY project will be verified in advance by the EAB.

The consortium will follow the advice of expert committees in the field, such as the European Group on Ethics (EGE) in science and new technologies [12]. The EGE is an independent advisory body of the President of the European Commission, which provides high quality, independent advice on ethical aspects of science and new technologies in relation to EU legislation or policies. In addition, all national legal and ethical requirements of the Member States where the research is performed will be

fulfilled. Any data collection and storage involving humans will be strictly held confidential at any time of the research. The following procedures will take place:

- All participants will be informed and given the opportunity to provide their consent to any monitoring and data acquisition process. All subjects will be strictly volunteers and all test volunteers receive detailed oral information;
- No personal data will be centrally stored. In addition, personal data will be pseudo-anonymised, as described in T3.4, in a way that will not affect the final project outcome.

In addition, participants will receive in their own language in conformity with the GDPR:

- A commonly understandable written description of the project and its goals;
- The planned project progress and the related testing and evaluation procedures;
- Advice on unrestricted disclaimer rights on their agreement.

The EAB will scrutinise the research to guarantee that no undue risk for the user, neither technical, nor related to the breach of privacy is possible. Thus, the consortium will implement the research project in full respect of the legal and ethical national requirements and code of practice. Whenever authorisations have to be obtained from national bodies, those authorisations shall be considered as documents relevant to the project. Copies of all relevant authorisations shall be submitted to the Commission prior to commencement of the relevant part of the research project.

4.4 Procedures and Criteria for Identification/Recruitment of Research Participants

Volunteer end users will participate in activities related to the use case scenarios that will be evaluated within WP8. These participants will be contacted by the project partners to ensure that they are both relevant and appropriate for the project. Vulnerable participants or minors will not be recruited in experimental activities.

In accordance with Article 43 of the General Data Protection Regulation (GDPR), the recruitment method and informed consent procedures will be particularly stringent to ensure no coercion (not even soft or indirect) is exerted. The specific criteria for the selection of the volunteer participants will be determined for each experimental study (T8.2). According to GDPR, personal data constitutes any information related to a natural person or 'Data Subject', that can be used to directly or indirectly identify the person. It can be anything from a name, a photo, an email address, bank details, posts on social networking websites, medical information, or a computer IP address. As a result, specific measures will be undertaken to protect the volunteer participants from a breach of privacy/confidentiality and potential discrimination. Regarding confidentiality, it should be mentioned that the personal data of all research participants that will be recruited through informed consents will be never revealed in any document. All personal data (requested in the informed consent) will be completely and irreversibly pseudo-anonymised and will be erased after the completion of the project. Upon applying the pseudo-anonymization process, the personal data will be transformed to encrypted personal data. As a result, they will not contain any of the following:

- Name, address, posts on social networking websites, phone/fax. number(s), e-mail address, full postcode;
- Any identifying reference numbers;
- Photograph or names of relatives;
- Medical information;
- Bank details;
- Computer IP addresses.

4.5 Informed Consent Procedures and Guidelines for the Participation of Humans

It is expected that several project activities will imply processing of personal data and therefore fall within the scope of the GDPR. Therefore, informed consent procedures must be implemented for the participation of humans. PARITY will collect and store personal data only if it is absolutely necessary for achieving the project aim and will whenever possible process encrypted personal data only. Research on personal data that has been collected on a legal basis will be carried out on condition that the consent of data subjects exists.

The research participants' consent will be obtained through a two-stage procedure:

- Initially the respective Use Case leader will orally describe the pilot in which people will be involved and will also carefully describe the level of privacy infringement that the pilot involves. In case the person wants to exercise his/her right not to know, he/she will be excluded by the pilot.
- Secondly, after a few days, subjects will be required to read and sign an informed consent form that will explain in plain English and in local language what the experiment leader has already orally explained. Informed consent forms in English and in local language will be sent to the Research Executive Agency and included in the experimental protocol. A consent form template and an example are provided in ANNEX C.1 and ANNEX C.2.

The consortium will take the appropriate actions to exclude that:

1. Data can be collected without the explicit informed consent of people under observation; no person unable to express a free and informed consent for age-related reasons, ongoing medical and/or psychological conditions, mental incapacity, will be participate in Use case activities;

2. Data collected may be sold or used for any different purposes from the PARITY project;

3. Any data, which is not strictly necessary to accomplish the current study, will be collected; data minimisation policy will be adopted at any level of the project and will be supervised by the ethical/privacy component of the project;

4. Any shadow (ancillary) personal data obtained in the course of the observation will be immediately cancelled. However, we plan to minimize as far as possible this kind of ancillary data.

Special attention will be also paid to comply with Council of Europe's Recommendation R(87)15 on the processing of personal data for police purposes, Art.2: "The collection of data on individuals solely on the basis that they have a particular racial origin, particular religious convictions, sexual behaviour or political opinions or belong to particular movements or organisations which are not proscribed by law should be prohibited. The collection of data concerning these factors may only be carried out if absolutely necessary for the purposes of a particular inquiry". Some sessions between technical and ethical components of the project will be devoted to this.

5. CONCLUSIONS

This document presented the ethical requirements and ethics related guidelines to be followed within the duration of PARITY project, and it will serve as an ethics manual. Various types of data will be collected from the four commercial and residential pilot sites located in Switzerland, Spain, Greece and Sweden, involving human participants. Therefore, the necessary measures that will be taken to protect the privacy of the data subjects involved were described. The data management procedures will be performed in accordance with EU and national legislation of the countries involved in the data collection locations. An outline of relevant legislation and regulations was presented in this document. Moreover, an ethics management methodology was defined and presented along with important ethics principles that will be considered. Furthermore, privacy and security risks relevant to the project have been identified and presented along with mitigation measures. The PARITY Ethical Advisory Board has been formed for ensuring that all project measures are performed in compliance with both the EU and national legislation, and will monitor the application of the PARITY ethical framework. Finally, procedures related to the protection of private data, identification/recruitment of research participants, and the delivery of the Informed Consent were presented.

6.REFERENCES

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ANNEX A: GDPR Checklist

GDPR checklist
Lawful basis and transparency
Contact an information audit to determine what information you process and who has access to it.
Have a legal justification for your data processing activities.
Provide clear information about your data processing and legal justification in your privacy policy.
Data security
Take data protection into account at all times, from the moment you begin developing a product to each time you process data.
Encrypt, pseudonymize, or anonymize personal data wherever possible.
Create an internal security policy for your team members, and build awareness about data protection.
Know when to conduct a data protection impact assessment, and have a process in place to carry it out.
Have a process in place to notify the authorities and your data subjects in the event of a data breach.
Accountability and governance
Designate someone responsible for ensuring GDPR compliance across your organization.
Sign a data processing agreement between your organization and any third parties that process personal data on your behalf.
If your organization is outside the EU, appoint a representative within one of the EU member states.
Appoint a Data Protection Officer (if necessary)
Privacy rights
It is easy for your customers to request and receive all the information you have about them.
It is easy for your customers to request to have their personal data deleted.
It is easy for your customers to request to have their personal data deleted.
It is easy for your customers to ask you to stop processing their data.
It is easy for your customers to receive copy of their personal data in a format that can be easily transferred to another company.
It is easy for your customers to object to you processing their data.
If you make decisions about people based on automated processes, you have a procedure to protect their rights.

ANNEX B: Non-Disclosure Agreement

Non-Disclosure Agreement
CONFIDENTIAL DISCLOSURE AGREEMENT

THIS AGREEMENT dated DD/MM/YYYY, by and between [Name of the Data Owner] ("Discloser") and [Name of the PARITY partner] ("Recipient").

WHEREAS, [Discloser] and [Recipient], for the purpose of establishing a cooperative relationship and pursuant to the research related to PARITY project, anticipate that [Discloser] may disclose or deliver to [Recipient] building data and information, energy consumption information, building occupancy information, drawings, data, sketches, specifications, and other materials, both written and oral, of a secret, confidential or proprietary nature, including without limitation any and all information relating to marketing, finance, forecasts, research, prepared or filed by or behalf of by [Discloser], in any jurisdiction, and any amendments or supplements thereto (collectively, "Proprietary Information"); and

WHEREAS, [Discloser] desires to assure that the confidentiality of any Proprietary Information is maintained;

NOW, THEREFORE, in consideration of the foregoing premises, and the mutual covenants contained herein, [Discloser] and [Recipient] hereby agree as follows:

1. Under this Agreement the [Recipient] undertakes: **(i)** to hold in trust and confidence and not disclose, without the express prior written consent of the [Discloser], to any third party (including a Recipient's Affiliates) or others or use for [Recipient]'s own benefit or for the benefit of any third party or others, any Proprietary Information, in any form, which is disclosed to [Recipient] by [Discloser] at any time and **(ii)** to carry out all necessary and appropriate measures to ensure that the Proprietary Information is protected against any access by third parties or others. [Recipient] shall disclose Proprietary Information received under this Agreement to person within its organization only if such persons **(i)** have a need to know and **(ii)** are bound in writing to protect the confidentiality of such Proprietary Information under the same terms as this Agreement. This paragraph 1 shall survive and continue after any expiration or termination of this Agreement and shall bind [Recipient], its employees, agents, representatives, successors, heirs and assigns. In compliance with the European Union's General Data Protection Regulation, the [Recipient] agrees to adhere to the confidentiality expectations as outlined in the EU General Data Protection Regulations (GDPR) and require the same of any subcontractors that perform services in conjunction with this Agreement.

   In the event that the [Recipient] is required by mandatory law or regulation or by order of a court, government department or agency or recognized stock exchange to disclose any Proprietary Information, the [Recipient] shall provide the [Discloser] with prompt notice of such requirement – to the extent that such notice is permitted by law or regulation – so that the [Discloser] may seek a protective order or other appropriate remedy or waive compliance with the provisions of this Agreement. Whether or not such protective order or other remedy is obtained, or whether the [Discloser] waives compliance with the provisions of this Agreement, a [Recipient] shall disclose only that portion of the Proprietary Information, which is legally required to be disclosed based on the advice of the [Recipient].
2. The undertakings and obligations of [Recipient] under this Agreement shall not apply to any Proprietary Information which: **(a)** is disclosed in a printed publication available to the public, or is otherwise in the public domain through no action or fault of [Recipient]; **(b)** is generally disclosed to third parties by [Discloser] without restriction on such third parties, or is approved for release by written authorization of [Discloser]; or **(c)** is shown to [Discloser] by [Recipient], within ten (10) days from disclosure, by underlying documentation to have been known by [Recipient] before receipt from [Discloser] and/or to have been developed by [Recipient] completely independent of any disclosure by [Discloser].
3. Title to all property received by [Recipient] from [Discloser], including all Proprietary Information, shall remain at all times the sole property of [Discloser], and this Agreement shall not be construed to grant to [Recipient] any patents, licenses or similar rights to such property and Proprietary

Information disclosed to [Recipient] hereunder.

4. [Recipient] shall, upon request of [Discloser], return to [Discloser] all documents, drawings and other materials, including all Proprietary Information and all manifestation thereof, delivered to [Recipient], and all copies and reproductions thereof. Unless required otherwise by mandatory law, the [Recipient] shall destroy all copies of any Proprietary Information. Upon the [Discloser's] request the [Recipient] shall confirm compliance by the [Recipient] with the obligations under this paragraph 4 in writing.
5. The Proprietary Information is provided without any representation or warranty, express or implied, as to its accuracy or completeness. Each Party hereby agrees that the [Recipient] will assume full responsibility for all conclusions that the [Recipient] derives from the Proprietary Information. The [Discloser] shall have no liability with respect to the Proprietary Information, errors therein or omissions there from in any manner and on any legal ground.
6. The parties further agree to the following terms and conditions:
   a. The [Recipient] agrees to be fully responsible and liable to the [Discloser] for any actions or failures to act which result in a breach of this Agreement. Any breach by [Recipient] of any of [Recipient]'s obligations under this Agreement will result in irreparable inquiry to [Discloser] for which damages and other legal remedies will be inadequate. In seeking enforcement of any of these obligations, [Discloser] will be entitled (in addition to other remedies) to preliminary and permanent injunctive and other equitable relief to prevent, discontinue and/or restrain the breach of this Agreement.
   b. If any provision of this Agreement is invalid or unenforceable, then such provision shall be construed and limited to the extent necessary, or severed if necessary, in order to eliminate such invalidity or unenforceability, and the other provisions of this Agreement shall not be affected thereby.
   c. In any dispute over whether information or matter is Proprietary Information hereunder, it shall be the burden of [Recipient] to show both that such contested information or matter is not Proprietary Information within the meaning of this Agreement, and that it does not constitute a trade secret.
   d. No delay or omission by either party in exercising any rights under this Agreement will operate as a waiver of that or any other right. A waiver or consent given by either party on any one occasion is effective only in that instance and will not be construed as a bar to or waiver of any right on any other occasion.
   e. This Agreement shall be binding upon and will inure to the benefit of the parties hereto and their respective successors and assigns.
   f. This Agreement is governed by and will be construed in accordance with the law of {COUNTRY}, and the courts of {TOWN}, {COUNTRY} shall be the exclusive forum. (TOWN and COUNTRY is the town and the country of the Discloser respectively).
   g. This Agreement is in addition to any prior written agreement between [Discloser] and [Recipient] relating to the subject matter of this agreement; in the event of any disparity or conflict between the provision of such agreements, the provision which is more protective of Proprietary Information shall prevail.

This Agreement may not be modified, in whole or in part, except by an agreement in writing signed by [Discloser] and [Recipient].

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

[Discloser]	[RECIPIENT]
By: _____	By: _____
Signature	Signature
_____	_____
Printed Name	Printed Name
_____	_____

ANNEX C.1: Consent Form Template

Project Purpose

- A commonly understandable written description of the project and its goals even for people that are not familiar to the project scope (2-3 paragraphs)

Project Progress Schedule

- The progress schedule of the project and the related testing and evaluation procedures (1-2 paragraphs)

Disclaimer Rights

- Advice on unrestricted disclaimer rights on their agreement.

Voluntary Participation Form

1. General Information

- Participant basic information
- ID (reference code) of the participant, which will be used throughout the pilot trial execution

2. Study Information

- Details about the pilot Use Case

3. Participant's Questionnaire

- has been fully informed on the purpose, duration, procedures of the study;
- has been informed on the rights to deny participating or to quit from the study and about the corresponding consequences.
- has been informed on the contact person in case that I have questions and queries about the study.
- had adequate time to make my decision concerning my participation in the study.
- comprehend that he/she can quit from the study at any time without having to justify his/her decision.
- has been informed about potential effects, difficulties and dangers.
- has been informed about the sensors equipment that will be used to collect data.
- has been informed about the security of the study data and results.
- has been ensured about the confidentiality of his/her personal information. Publications of the study results do not allow the personal data recognition, due to the principle of anonymity. Always under the confidentiality principles.

4. Signed Consent to Participate

- A signed consent of the participant allowing the study responsible to examine and inspect the data collected during the study.

ANNEX C.2: Consent Form Indicative Example

Pro-sumer AwaRe, Transactive Markets for Valorization of Distributed flexibilITY enabled by Smart Energy Contracts

This project has received funding from the European Union's Horizon 2020 Research and innovation programme under Grant Agreement: 846319

Purpose of the study

This document was created on behalf of the PARITY project (Grant Agreement N°: 846319), funded by the European Union under Horizon 2020, with the main objective to develop Local Flexibility Markets and Smart Energy Grids through peer-to-peer and decentralized intelligence in a human-centric manner.

PARITY addresses the "structural inertia" of Distribution Grids and aims to enable the set-up and operation of local flexibility markets at the distribution network level. The main objectives are to provide: (1) A DER flexibility ecosystem seamlessly integrating Heterogeneous DER within a Unified Flexibility Management Framework, (2) A Storage-as-a-Service framework which will combine Actual Storage (EVs and batteries) and Virtual Energy Storage (Power-to-Heat), (3) A Smart Contracts Enabled Local Flexibility Market Platform through integration of IoT and Blockchain technologies and (4) Smart Grid monitoring and management tools to enable the DSO to optimally manage the low voltage distribution network. Additionally, PARITY will investigate and contribute to market coupling mechanisms and the definition of Local Flexibility Market actors.

In this context, it is necessary to collect data concerning energy consumption/generation related information from residential and tertiary prosumers that will allow the validation and evaluation of the PARITY envisioned solutions. To this end, you are invited to give your consent to the data collection and monitoring of various parameters, such as energy consumption of the building and of specific assets of your infrastructure (i.e. PV generation, HVAC status monitoring etc.).

The next page contains the consent form for collecting the above data through measurements and records in your place.

Voluntary Participation Form in the PARITY project

1. Participant's Information

Full name	
Reference code	

2. Study Information

Country	
Infrastructure type	
Infrastructure address	
Representative of the pilot	

3. Participant's Questionnaire

I have read the PARITY project information sheet and I have been informed about the purpose, expected duration and procedures of the study.	**Yes**	**No**
I was orally informed about the purpose, expected duration and procedures of the study by the responsible person.	**Yes**	**No**
I was informed of my right to refuse to participate or to leave the study.	**Yes**	**No**
I was notified of the contact person, in the case I have questions and queries about the study or about my personal data being collected.	**Yes**	**No**
I was given a copy of my filled in consent form.	**Yes**	**No**
I had enough time to decide on my participation in the study.	**Yes**	**No**
I understand that I can leave the study at any time, without having to justify it and to require deleting my personal data.	**Yes**	**No**
I have been informed of the recording equipment that will be installed in my environment for the purposes of data collection.	**Yes**	**No**
I was informed about the storage procedures of the study data.	**Yes**	**No**
I was informed about the personal data that will be collected, the processors and the procedures that will take place, as well as my rights according to the General Data Protection Regulation. Publication of study results does not disclose personal data. Always according to the principles of confidentiality, I allow researchers involved in the study and signing respective NDAs can utilize the information for the purpose of the study and only for this.	**Yes**	**No**
I agree to the use of the collected data also after the termination of the PARITY project.	**Yes**	**No**

I agree to participate in the study	**Yes**	**No**

Date: _____ **Signature: _____**