RESPONDENT

D1.4 – Ethical Considerations

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Lead Beneficiary	CARR		
Authors	Benjamin Moore (CARR)		
Co-authors	Linda Henriksson (CARR)		
Reviewers	Dorleta García Melero (VICOM), Ane Miren Florez Tapia (VICOM)		

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PROJECT PARTNERS

Partner	Country	Short name
FUTURE INTELLIGENCE EREVNA TILEPIKINONIAKON KE PLIROFORIAKON SYSTIMATON EPE	Greece	**FINT**
FUNDACION CENTRO DE TECNOLOGIAS DE INTERACCION VISUAL Y COMUNICACIONES VICOMTECH	Spain	**VICOM**
CARR COMMUNICATIONS LIMITED	Ireland	**CARR**
KIEFER TEK ETAIREIA PERIORISMENIS EFTHYNIS	Greece	**KIEFER**
GREENESCO ENERGEIAKI ANONYMI ETAIREIA	Greece	**GREEN**
ESTABANELL Y PAHISA ENERGIA SA	Spain	**EPESA**
FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATALUNYA	Spain	**IREC-CERCA**
ELECTROTECNICA DEL URUMEA SL	Spain	**EUSKABEA**

LIST OF ACRONYMS

Acronym	Definition
AI	Artificial Intelligence
ECHR	European Convention on Human Rights
ECHR	European Court of Human Rights
GDPR	General Data Protection Regulation
GHG	Greenhouse Gas
HLEG	High-Level Expert Group
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
R&I	Research and Innovation
RRI	Responsible Research and Innovation
UDHR	Universal Declaration of Human Rights

Executive Summary

Deliverable *D1.4 – Ethical Considerations* provides the ethical and legal framework applicable to the RESPONDENT project to ensure that all research activities conducted are legally compliant, ethically acceptable, and socially desirable.

In this document, the initial approach to identifying the ethical considerations of the project has been presented by establishing the relevant regulations and principles that exist within the EU. Specific focus and discussion was then given to artificial intelligence (AI) and personal data (Sections 2 and 3), recognised as being most applicable to RESPONDENT in terms of the ethical considerations and as identified in the Ethical Summary report that was generated prior to the inauguration of the project.

Section 4 of the document then outlines in detail how AI and personal data are present within the project's current and future research and activities, as well as how it will be ensured that the use of such datasets will be both ethically and legally compliant.

It is recognised, however, that a review of the potential ethical considerations present within the project should not be a one-time measure, but rather a continual process that must be cognisant of any new datasets/information that may emerge throughout the lifecycle of the project and have the potential to present ethical issues. Should any such issues arise, they can be disclosed during periodic reporting of the project's progress amongst the Consortium partners.

Table of Contents

1 Introduction

Renewable energy sources (RES), such as solar, wind, and hydropower, and their increased uptake will be crucial if Europe is to achieve its aspiration to transform to a climate-neutral economy. However, in order to fully utilise the power-generation capabilities of these resources, and to ensure that they can be effectively integrated and monitored throughout the bloc, issues pertaining to RES power generation forecasting, demand forecasting and smart power grid monitoring and supply/demand balancing must be addressed.

To this end, the EU-funded RESPONDENT project intends to develop and introduce an AI/ML RES power generation forecasting algorithm, exploiting both Copernicus EO and site-specific weather data, along with renewable energy power conversion models and an AI/ML – multiphysics model for power demand of certain communities. Lastly, RESPONDENT will build a Galileo-enabled PMU and develop a monitoring module, in order to test and verify the advantages offered from the Galileo timing and synchronization services in smart grid monitoring, power balancing and overall operation.

1.1   Purpose of the document

Given the scope and multi-faceted nature of the project, ethical considerations will play a crucial role in all aspects of research, development, and evaluation in the RESPONDENT project throughout its lifecycle and beyond. This deliverable is therefore focused on providing a clear overview of the identified ethical considerations within RESPONDENT that are present (or expected to be) within the project, and have been identified by the Consortium partners at this stage.

1.2   Intended readership

RESPONDENT's Ethical Considerations deliverable includes information about the types of data that have been identified by the Consortium partners by M4, as well as how such considerations will be in line with relevant EU legislation. The deliverable serves as an essential informative document, helping to increase the visibility and transparency of RESPONDENT's work, research, and activities by the Consortium members throughout the duration of the project and beyond.

In addition to members of the Consortium, this deliverable will also be of interest to external stakeholders and end-user beneficiaries of the RESPONDENT integrated solution who may wish to know how certain aspects of the project had been reviewed for any potential ethical or legal discrepancies prior to their utilisation and introduction and implementation in the European Union. As a public deliverable, it will also be accessible to anyone through the RESPONDENT website.

2 RESPONDENT Ethical Framework

2.1 EU Ethics Research Framework

The RESPONDENT Consortium will abide by the highest ethical standards, principles, and good practices of open research ethics as described in the European Code of Conduct for Research Integrity [1]. Thus, all the research activities foreseen within the project should be conducted in strict compliance with the general **principle of integrity.** This principle entails that research activities should be conducted according to the highest standards of practice and minimising risks of adverse/harmful results of consequences. As a complement to the integrity principle, the following ethical principles should also be observed by the RESPONDENT partners:

- **Reliability** entails ensuring the quality of the design, the methodology, the analysis, and the use of resources in the research.
- **Honesty** involves developing, undertaking, reviewing, reporting, and communicating the research in a transparent, fair, full, and unbiased way.
- **Respect** implies carrying out the foreseen research activities with respect for research colleagues, research participants, society, ecosystems, cultural heritage, and the environment.
- **Accountability** entails being accountable in several aspects of the research, such as publication, management and organisation, training activities, supervision, and for its wider impacts.

Furthermore, the RESPONDENT Consortium will fully adhere to the EU Ethical Responsible Research and Innovation Framework (RRI), which aims at anticipating and assessing the impact on society and the environment of technological developments and ensuring that it responds to and aligns with individual and societal values, needs, and expectations [2]. A myriad of definitions and approaches to RRI exist [3]. According to the most well-known definition of RRI developed by René von Schomberg, RRI is "a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability, and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)." [4]

The RESPONDENT Consortium should, therefore, follow the principles of RRI, namely:

- **Diversity and inclusion:** Be sensitive to research biases, avoid discrimination and stigmatisation, and strive for representativeness and diversity. Include diverse voices and make results beneficial to the wider community. Diverse actors need to be involved and listened to in the early stages of research and innovation. Enhancing and widening participation by promoting an interdisciplinary approach and engaging with stakeholders.
- **Anticipation and reflection:** Assess the purposes, benefits, and risks of the research, as well as its outcomes, potential unintended consequences, impact on individuals and society, and to plan possible strategies and methods.
- **Openness and transparency:** Be open to society in a meaningful and honest way. Share objectives, methods and, whenever possible and appropriate, results, and inform about potential conflicts of interests.

- **Responsiveness and adaptive change:** Be responsive to changes and external inputs, adapting the research to changing social values, needs and expectations, and emerging knowledge and new insights.

As the concept of RRI is relatively broad, it is therefore crucial to operationalise the principles of RRI and translate them for the purposes of the RESPONDENT project. The aim of RRI is to encourage societal actors to work together during the research and innovation (R&I) process to better align R&I and its outcomes with the values, needs, and expectations of society. Moreover, the R&I process should involve relevant stakeholders [5], requiring diversity and equality for gender which should also be anticipatory and reflexive [6]. Additionally, the policy-makers emphasise the importance of science literacy, science education, and open access to scientific knowledge [7].

2.2 AI Ethical Principles applicable to RESPONDENT solutions

This section describes the Artificial Intelligence (AI) ethical principles that should be embedded into the RESPONDENT solutions. These principles encompass the AI ethical principles that have been established by the High-Level Expert Group on Artificial Intelligence (AI HLEG) [8] and by the Institute of Electrical and Electronics Engineers (IEEE) [9]. They have been adapted to the context of RESPONDENT research activities from a practical perspective to identify the ethical challenges that RESPONDENT may uncover.

2.2.1 Prevention of Harms

The principles of prevention of harms means that AI-enabled technologies should not cause harm nor have detrimental consequences for individuals.

The potential harms that can be caused by AI-enabled technologies require addressing: i) the technical robustness and safety of the technology; ii) privacy and data governance concerns; iii) societal and environmental well-being.

Firstly, AI-enabled technologies must be robust, resilient, secure, safe, accurate, reliable, and reproducible. Technical robustness and resilience should be ensured to prevent the exploitation of vulnerabilities by third parties and misuse [10]. Therefore, the existence of potential security risks must be evaluated at the design, development, and deployment phases, and mitigation measures must be implemented in accordance with the magnitude and likelihood of the risks.

AI-enabled technologies must also be accurate. Accuracy rates should be particularly high when such systems can directly affect individuals, as is the case with workers whose integrity may be compromised. Accuracy must be monitored on an ongoing basis and procedures to mitigate and correct potential risks must be implemented.

Secondly, the prevention of harms to privacy and data protection is paramount given the potential risks that AI-enabled technologies pose to these fundamental rights through the processing of personal data. These rights can also be at stake because personal information can be inferred from non-personal data [11]. Respect with regards to privacy and data protection must be ensured by complying with the General Data Protection Regulation (GDPR) and by aligning with existing standards or widely adopted protocols. Oversight mechanisms must also be put in place to ensure data quality (e.g., representativeness in the dataset) and integrity that

minimises the risks of being biased, inaccurate, or compromised datasets. Therefore, processes and datasets must be scrutinised and documented throughout the system's lifecycle. The accompanying Data Management Plan of the project can thus be updated accordingly should emerging data be recognised and/or uncovered during the project's activities and disclosed during periodic reporting of the project's progress.

Lastly, the use of AI-enabled technologies should aim at benefitting society and the environment. AI systems must be designed, developed, and deployed with sustainability and environmental friendliness in mind. Therefore, the ecological impact of the system should be evaluated throughout the system's lifecycle, and measures to reduce such impact should be encouraged. The social impact of the system should be regularly assessed both at the individual and societal level.

2.2.2   Fairness

The principle of fairness entails equality, diversity, and the prevention of discrimination and stigmatisation against individuals and groups. Fairness can be achieved by: i) promoting diversity, inclusion and non-discrimination; ii) fostering societal and environmental well-being while reducing potential harms; and, iii) adopting accountability measures [13].

Firstly, diversity and non-discrimination can be enhanced with oversight processes that identify, examine, address, and test biases in the datasets and at the design and development phases [14]. From a design perspective, technology should be understandable and accessible to all regardless of age, abilities, or characteristics. In this regard, the participation of relevant stakeholders and potential end-users with diverse backgrounds and viewpoints at the different stages is highly encouraged to ensure that diversity is embedded into the system [15].

Secondly, as pointed out above, AI-enabled technologies should be designed to strive for social and environmental well-being. Concerning the principle of fairness, the social impact of the system should be evaluated in terms of causing or exacerbating discrimination, stigmatisation, or marginalisation.

Lastly, accountability requires the implementation of appropriate technical and organisational measures to report the system's performance and provide effective remedy and redress to the greatest extent possible. Such measures include the assessment of the design process, the underlying technology and the datasets used, which allows for the auditability of the system. Auditability involves reporting the negative impacts of the system, identifying appropriate mitigation measures, and feeding them into the system [16]. These negative impacts can be identified and assessed through comprehensive impact assessments that must be conducted regularly [17]. Accountability also includes providing explanations of the system's outcomes and the ability to seek redress.

2.2.3   Explicability

The principle of explicability requires transparency of the system – including the datasets, the inner workings of the system and the business model – which ultimately enables human oversight [18]. For systems to be transparent, traceability measures must be implemented. This requires that datasets and the technology that underlies the system should be documented, e.g. the methods used for designing and developing the system, the methods used to test and validate it, and the outcomes of the system. Given that traceability allows for

the identification off the reasons behind systems' outcomes, it enables explain-ability. Explain-ability means the ability to explain the outcomes made by the system intelligibly [19].

2.2.4   Awareness of Misuse

Awareness of misuse requires that technological developers be sensitised to the risks associated with the misuse of AI systems and other technologies to endeavour to prevent their potential misuse. Misuse and associated risks include, but are not limited to: i) hacking; ii) misuse of data; iii) system manipulation; and, iv) exploitation of vulnerable groups [20].

Following the RRI principle of anticipation and reflection, technical developers should anticipate and reflect on the potential intended and unintended misuse of AI-enabled technologies and plan strategies and methods to minimise the opportunity for such instances. Awareness training on these issues and the development of accountability measures could significantly help to mitigate possible misuse and the risks it may pose to individuals and the society.

2.2.5   Competence

This principle entails that prior to the deployment of the technologies, the knowledge and skills required for safe and effective use must be specified and only users that have the necessary knowledge and skills should be able to use the technology. It can be argued that the principle of competence is implicitly included in most of the described ethical principles.

A proactive approach must be adopted to ensure that users have such knowledge, skills, and the necessary information to use the technologies safely and appropriately towards the ends they were designed for. For instance, in addition to training sessions, policies could be developed to provide information about the AI system, its capabilities and limitations, to establish how the AI system should be used, the training and the knowledge and skills required to properly use them, among others.

3 RESPONDENT Legal Framework

3.1 General Framework

This section provides an overview of the general legal framework applicable to RESPONDENT, particularly as it relates to personal data and data protection provisions that may be encountered during future communication, dissemination, and stakeholder activities. This chapter summarises the main regulations and basic concepts of the EU legal framework that RESPONDENT will adhere to. The general legal framework focuses on: i) the international and the EU Human Rights framework; ii) the EU Data Protection framework; and, iii) the EU non-personal data framework.

In addition, for any personal data external to the consortium partners that is gathered for the purposes of communication or dissemination of the project's work, such as through photos, videos, audio etc., a consent sheet will be provided, and can be viewed in Annex 1 (A1) of this document.

3.1.1 The International and European Human Rights Framework

3.1.1.1 United Nations Human Rights Treaties

A range of legal rights are articulated or enshrined in United Nations documents and treaties. These documents and treaties recognise or confer, with significant international consensus, the rights of individuals grounded in their humanity. The most notable of these documents is the Universal Declaration of Human Rights (UDHR) 1948, an aspirational document which outlines the inviolability of human dignity and articulates a comprehensive range of human rights. This document forms the foundation of international human rights law that followed it, including the rights to freedom from discrimination and privacy.

Following the UDHR were two major international and legally binding United Nations treaties that enshrined a range of rights, the International Covenant on Economic, Social and Cultural Rights (ICESCR) 1966, and the International Covenant on Civil and Political Rights (ICCPR) 1966. Such treaties function to prohibit arbitrary interferences in the freedoms of individuals, as well as create positive obligations to help individuals realise their rights. Human rights primarily structure the relationship between state and subject and impose duties upon states with respect to their citizens or others subject to their authority.

Nevertheless, it is incumbent upon private individuals and organisations to adhere to the principles of human rights law as it is both an ethical duty and an indirect legal requirement as states are required to operationalise international human rights law in domestic legislation (therefore not respecting human rights will often have direct legal implications).

The consequence of the human rights framework with respect to the research activities of the RESPONDENT Consortium is that project partners are enjoined to refrain from actions in the development and testing of RESPONDENT tools that violate the rights of research participants and pilot site employees, or would tend especially towards disadvantaging or excluding vulnerable groups and individuals. Research and development activities should therefore be inclusive, safe, and respectful of privacy.

3.1.1.2   European Convention on Human Rights

The European Convention on Human Rights (ECHR) is a legally binding human rights treaty that was drafted by the Council of Europe in 1950. Where infringements are alleged to have occurred in signatory states, the cases against the signatory state are heard in the European Court of Human Rights (ECHR) in Strasbourg.

Although it is anticipated that personal data will only be gathered for the purposes of future communication, dissemination, and stakeholder activities, RESPONDENT Consortium partners will nevertheless be required to respect the principles and spirit of the case law of the European Convention on Human Rights in the processing of any personal data that occurs during the project's life-cycle.

The ECHR enshrines a non-autonomous right to data protection mainly through Article 8 **right to respect for private and family life**, which states:

1.   Everyone has the right to respect for his private and family life, his home, and his correspondence.

2.   There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety, or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedom of others.

Additionally (and broadly), the right to data protection also arises from Article 9 **freedom of thought, conscience and religion**; Article 10 **freedom of expression**; Article 14 **prohibition of discrimination**; Article 1 of Protocol No. 1 **right to peaceful enjoyment of possessions**; and Article 2 Of Protocol No. 4 **freedom of movement,**

Following the relevant case law of the ECHR with respect to interferences with Article 8 rights, where personal data is processed it should be:

- Minimised to only what is legitimate and necessary in achieving the project's goals.

- Kept accurate and up to date.

- Retained for no longer than necessary to achieve the project's goals (or as long as required support third party audits by relevant authorities).

- Limited only to the purposes for which they were collected/processed.

- Transparency of data processing procedures for access to personal data.

Furthermore, understanding that case law of the Court has enshrined particular rights of data subjects, the RESPONDENT project should uphold these rights by:

- Providing data subjects access to their personal data.

- Allowing them to amend or rectify any of their personal data.

- Deleting their data upon their request where this is possible.

The exercise of these rights should be facilitated through the provision of contact details of data controllers where research data collection is taking place, to data subjects, and a central point of contact on the project's website for example.

3.1.1.3   Charter of Fundamental Rights of the European Union

The Charter of Fundamental Rights of the European Union specifically enshrines the right to data protection in Article 8 **protection of personal data**, which states:

1. Everyone has the right to the protection of personal data concerning him or her.

2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified.

The relevant ends of data protection are similarly enshrined in Article 1 **human dignity** and Article 7 **right to private and family life.**

3.1.2   The General Data Protection Framework

All RESPONDENT projects partners will adhere to the requirements of the General Data Protection Regulation while processing personal data.

Personal data is defined in the GDPR Article 4(1) as:

> 'personal data' means 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.

Whilst processing is defined in the GDPR Article 4(2) as:

> 'processing' means any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction.

This section will outline the relevant legal bases of data processing, as well as the responsibilities of RESPONDENT Consortium partners.

3.1.2.1   Purposes and Legal Bases of Processing Personal Data

For envisioned future communication, dissemination, and stakeholder activities, the legal basis for gathering any personal date will primarily be consent forms, although legitimate interest may also apply to the acquisition of contact details of relevant interested persons. Mailing list subscribers, for example, should be

informed of how their personal data will be processed, as well as their rights and how to exercise them, including how to unsubscribe from the mailing list or newsletter. A legitimate interest assessment should be conducted ahead of sending any newsletter or communications to persons whom the partners decide may be interested. Such persons should be free to opt out of communications through clearly indicated means.

The rights of all data subjects must be safeguarded through appropriate organisational and technical measures, including through techniques such as anonymisation and pseudonymisation, and in accordance with the requirements of data minimisation

3.1.2.2   Data minimisation, storage, and retention

Personal data collection should be restricted to no more than what is strictly necessary to achieve the objectives and goals of the project, which is to say that only data that is adequate, relevant, and limited to what is needed for the completion of tasks. Any personal data that is collected and which is not necessary for the completion of tasks should be destroyed as soon as possible.

Personal data should be stored only for as long as necessary to achieve the goals and objectives of the project, and stored personal data should be reviewed by Data Controllers annually with a view to determining its ongoing relevance to current and future tasks. We note that some personal data may be required for a period of time after the project finishes in order to comply with European Commission auditing requirements. Personal data should be reviewed with an eye towards determining its relevance to any such audit and deleted where it is unlikely to be needed.

3.1.2.3   Rights of individuals in relation to their personal data and how they can assert them

The GDPR recognises and enshrines a number of rights that can be exercised by the data subject and as such confers corresponding duties upon data controllers. RESPONDENT Consortium partners must execute their duties in adherence with the requirements of the GDPR.

The right to be informed: Article 13 of the GDPR requires data controllers to inform data subjects about the processing of their personal data at point of collection. Article 14 requires the controller to inform the data subject about the processing of their personal data where it was collected by an entity other than the controller. Data subjects must be informed, as required by the GDPR, at point of data collection, through informed consent forms or other means (e.g., website privacy policies) of the purpose of data processing, retention periods or criteria, and with whom the data will be shared. Where controllers use data that were collected by another entity, they should make reasonable efforts to contact the concerned data subjects and provide them with the required information. Appropriate safeguards should be implemented where this is not possible, and the use of any such data should be publicised on the project website.

Attention should also be drawn to the requirements of Article 13(2)(f) in particular, which obliges Data Controllers to notify data subjects about the existence of any automated decision-making, including profiling (referred to in Article 22(1) and (4)), and to provide "meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject."

The right of access: Article 15 of the GDPR establishes the right of data subjects to know if their personal data is being processed and grants them the right of access to any such data. This information must be provided subject to the requirements laid out in Article 12.

The right to rectification: Under the provisions of Article 16, data subjects have the right to request the correction of inaccurate personal data, or the completion of incomplete data. RESPONDENT Consortium partners should take seriously their incumbent duty to provide data subjects sufficient access to identify errors and incomplete information, and correct and complete it as necessary.

The right of erasure: Article 17 enshrines a right to erasure of personal data at the request of the concerned data subject, and project partners should endeavour to comply with deletion requests.

The right to restrict processing: Under particular circumstances (for example, whereby the accuracy of the personal data is contested), the provisions of Article 18 grant data subjects the right to restrict processing of their personal data. In the event that RESPONDENT project partners receive a request from a data subject to the effect of invoking this right, they should adhere to the requirements of Article 18(1)(a)-(d) and store the relevant data until the contested issue is resolved, at which point the personal data should be destroyed or processed in a manner that the data subject can and does consent to.

The right to data portability: Article 20(1) grants the data-subject the right to receive their personal data, upon request, in a "…structured, commonly used and machine-readable format" as well as the right to "…transmit those data to another controller without hindrance from the controller to which the personal data have been provided." RESPONDENT Consortium partners must strive to accommodate related requests as required where, in particular, the data was processed on the basis of consent, contract, or by automated means if and where applicable.

The right to object: Article 21 grants data subjects the right to object to the processing of their data. RESPONDENT Consortium partners must obtain consent from data-subjects in advance of data collection and data-subjects must be free to decline to provide consent or withdraw it at any time. Data-subjects must be provided with the ability to unsubscribe from project communication, dissemination, or stakeholder activities.

Rights in relation to automated decision-making and profiling: Article 22 grants that data subjects have the right not to be subject to automated decision-making or profiling which creates legal or similar effects for the data subject. Data subjects can, however, consent to such automated profiling or decision-making. Although it is not anticipated, RESPONDENT Consortium partners must adequately inform data subjects about any such profiling or automated decision-making and obtain their consent before conducting it.

3.1.3   Non-personal Data Framework

Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union [20], applicable as of May 2019, aims at ensuring the free flow of data other than personal data across the European Union. In particular, the Regulation covers the following aspects:

- Prohibition of data localisation requirements, unless they are justified on grounds of public security in compliance with the principle of proportionality (Article 4). Thus, organisations can process and store data anywhere in the EU.
- Data must be made available to competent authorities upon request (Article 5). Competent authorities can request, or obtain, access to data. Such access to data cannot be refused on the basis that the data are processed in another EU Member State.
- Encouragement and facilitation of self-regulatory codes of conduct to enable the switching of service providers and the porting of data based on the principles of transparency and interoperability (Article 6).

In addition to the protection of personal data, the purpose of the GDPR also includes the free movement of personal data within the EU. Therefore, this Regulation on the free flow of non-personal data together with the GDPR provide a comprehensive and coherent legal framework to the free flow of data across the EU.

4 Ethical and Legal Considerations Relevant to RESPONDENT

This section presents a summary of the ethical and legal considerations of RESPONDENT that will be collected and generated during the project, and that the partners have identified at this stage in the project's lifecycle. Successful implementation of the RESPONDENT project and the solutions that it offers to mitigate the drastic effects of climate change will rely heavily on the use of innovative AI algorithms, the applicable ethical framework and appropriate principles for which have been outlined in Section 2 of this document.

The appropriate and ethical use of AI within RESPONDENT will follow the guidance provided by the High-Level Expert Group on Artificial Intelligence and by the Institute of Electrical and Electronics Engineers to ensure consistency and adherence to relevant guidelines and principles.

In addition to the concerns surrounding AI that were identified by the partners, an analysis of any potential personal data that could arise throughout the project's lifecycle was deliberated and considered. Although the processing of personal data will not be carried out to achieve the goals of the RESPONDENT project and its solution suite, it was important to note and address in this document that any personal data and subsequent data protection provisions that may be encountered during future communication, dissemination, and stakeholder activities were accounted for.

4.1 Artificial Intelligence

As the leaders of *Work Package 4 – Power Demand Forecasting,* VICOM will cross-compare data provided by EUSKABEA, which consists of anonymised electrical consumption data of their customer companies with publicly available socioeconomic data extracted from public statistic sources. Such information will be compared to gain valuable insights into the purchasing power of the companies involved, enabling VICOM to include such parameters into their forecasting algorithm for gaining greater precision.

The development of RESPONDENT's AI algorithms in the project will be exclusively based on optimising the well-being and financial benefits of the participants, while also seeking to reduce energy consumption and a decrease in GHG emissions in the European Union. As a result, the entirety of the AI's operation within RESPONDENT will be focused on benefiting humanity as a whole, as well as the environment, with the latter having a significant positive effect on peoples' health and quality of life.

The AI-powered virtual grid will operate towards the objective of achieving optimum energy management and efficiency, while also focusing on the exploitation of RES as a major power source and an alternative to traditional energy sources such as fossil fuels. Efficient energy management will consequently reduce energy costs for European citizens while simultaneously incentivising the development of more RES-based installations on European soil, securing grid interaction, supporting the corresponding European industrial

sector, and assisting the promotion of European autonomy against the need to import fossil fuels from external third parties.

All of the developed algorithms within RESPONDENT will have a previous phase of analysis of the region where it will operate, and will take into consideration both the regulatory framework and the end-users' habits and behaviours, as well as their socio-economic circumstances. The developed algorithms will also be continuously learning from new data and its interactions with customers. This will be done in order for the AI to learn from different environments and therefore be robust enough to be able to handle such disparities, and to detect and overcome possible failures or inaccuracies. Fault detection and model-drift algorithms will also be implemented.

With all of the above considerations in mind, the decision-making process of the AI will be solely grounded on achieving optimum energy efficiency while preserving the well-being, the security, and continuity of the energy supply.

As it relates to AI, compliance with the ethical principle of Do No Significant Harm is a de facto doctrine of RESPONDENT, since the project aims to address relevant EU policies for energy use. Specifically, in relation to the environmental objectives of the EU Taxonomy Regulation: climate change mitigation, adaption, and pollution prevention and control are addressed through the objectives of RESPONDENT, striving towards supporting and increasing the Union's reliance on RES versus fossil fuels. Further to this, sustainable investment is promoted, thus directly supporting Regulation 2020/852 (Article 17).

Although this activity will involve the analysis of data, profiling of individual data will not be conducted since no data from individuals will be gathered by either EUSKABEA or VICOM.

An AI algorithm will also be developed and utilised as part of *Work Package 3 – RES Power Generation Forecasting.* However, as this algorithm will not impugn on any of the points outlined in the legal or ethical frameworks as elaborated upon earlier in this document, no ethically related potential issues will arise as a result.

4.2   Personal Data

In addition to the data that we have considered as part of the successful implementation of RESPONDENT's AI algorithms, and as has been mentioned in both earlier sections of this document and in RESPONDENT's Data Management Plan, for any personal data external to the Consortium partners that is gathered for the purposes of communication or dissemination of the project's work, such as through photos, videos, audio etc., a consent sheet will be provided, and can be viewed in Annex 1 of this document under the heading 'Consent Sheet Template'. Respect with regards to privacy and data protection will also be ensured by complying with the General Data Protection Regulation (GDPR).

It is not envisioned that personal data will be gathered and/or processed for any purpose throughout the duration of RESPONDENT other than for communication, dissemination, and stakeholder engagement purposes to promote the work of the project.

5 Conclusions

This deliverable has set out the guiding principles of ethical considerations that will be considered and adapted throughout the course of the RESPONDENT, and as to ensure that the project will be both ethically and legally compliant, as well as socially desirable.

RESPONDENT's ethical considerations have included the ethical principles that should be observed by RESPONDENT partners. Within the EU Ethics Research Framework, the highest ethical standards, principles, and good practices of research ethics will be applicable. Therefore, RESPONDENT research activities will be conducted in strict compliance with the general principle of integrity and its complementary ethical principles.

The use of AI to achieve the project's aims is expected to adhere to the relevant EU legal and ethical frameworks that were outlined in this document, with special attention give to the principle of prevention of harms at an individual, societal, and environmental level.

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Annexes

A1: Consent Sheet Template

Name of event:

Date of event:

No	Name	Signature	Organisation	Photo/video/audio consent* (Please tick ✓)

*Consent for photography/audio/video

I agree for my name and photo, video footage, or audio to be taken/recorded for use in dissemination activities in connection with the RESPONDENT project.

Some of the places RESPONDENT might use the photos/audio/footage for such activities include the project website, Twitter, LinkedIn, YouTube, and the Newsletter.

Your information will be processed and stored in line with the RESPONDENT data management process and the GDPR.

You can change your mind at any time and withdraw consent for us to process your photograph, audio, or video by contacting bmoore@carrcommunications.ie and linda@carrcommunications.ie.

Your participation is entirely voluntary and there is no obligation on you to give your consent to have your voice, image, or data captured.