Platone

PLATform for Operation of distribution NEtworks

D10.1 v1.0

H – Requirement No. 1

The research leading to these results has received funding from the European Union's Horizon 2020 Research and Innovation Programme, under Grant Agreement no. 864300.

Project Name	Platone
Contractual Delivery Date:	31.12.2019
Actual Delivery Date:	18.12.2019
Author(s):	Pádraic McKeever
Workpackage:	WP10– Ethics requirements
Security:	CO
Nature:	Ethics
Version:	v1.0
Total number of pages:	29

Abstract
This deliverable reports on the procedures and criteria that will be used to identify/recruit research participants in the Platone project.

Keyword list
Ethics, research participants, renewable energy, power grid

Executive Summary

The objective of this deliverable is to provide details on the procedures and criteria that will be used to identify/recruit participants in the Platone field trials. The content of the deliverable is aligned with the EC H – Requirement No. 1 and includes:

- Information on the field trials
- Details of the procedures and criteria that will be used to identify/recruit research participants
- Detailed information on the informed consent procedures including information about the management of informed consent forms.
- Templates of informed consent and information sheets.

This Platone field trials are in WP3 (Italian Demo), WP4 Greek Demo (Mesogeia) and WP5 (German Demo).

Authors

Partner	Name	e-mail
RWTH		
	Pádraic McKeever	pmckeever@eonerc.rwth-aachen.de
BAUM		
	Manuel Haas	m.haas@baumgroup.de
E.DSO		
	Kirsten Glennung Katarzyna Zawadzka	kirsten.glennung@edsoforsmartgrids.eu Katarzyna.Zawadzka@edsoforsmartgrids.eu
ACEA		
	Francesco Sorrentino	francesco.sorrentino@aceaenergia.it
areti		
	Ercole De Luca Gabriele Fedele	Ercole.DeLuca@areti.it Gabriele.Fedele@areti.it
APIO		
	Alessandro Chelli	alessandrochelli@apio.cc
AVACON		
	Benjamin Petters	benjamin-georg.petters@avacon.de
HEDNO		
	Yannis Mantzaris	I.Mantzaris@deddie.gr

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1. Introduction

Platone introduces a market platform for trading flexibility in energy production and consumption. The market platform mediates between the end-customers (who are customers of the electricity distribution operator (DSO), but may also produce and store energy), the grid operators on transmission (TSO) and distribution (DSO) levels and aggregators who match energy supply and demand. The field trials of Platone will take place in three countries (Italy, Greece and Germany), where end-customers will be recruited to participate in the market platform. The scope of the participation of the end-customers who are recruited into Platone (who will be referred to as "participants") is:

- firstly to participate in the market platform; this is done automatically by equipment installed in their houses, it does not require any action on their part. The nature of the interaction is that the participants interact indirectly, i.e. automatically via the equipment installed in their houses, with a computer system (the Platone Market Platform), which enables them to offer their flexibility in production and consumption of electricity as a service on a market
- secondly, to participate in the workshops of WP1, which are described in Ch. 2.1 below.

Hence, when the Ethics Summary Report on Platone [2] comments that "*Human adult volunteers will be involved in several different activities, such as pilots, case studies, live demonstration and trial sites*", it would be more correct to say that the participants will take part in the market platform and in workshops only. For example, in the Italian Demo the participants will be involved in the local flexibility market, through the Aggregator, and will take part in a workshop to promote their awareness of flexibility issues.

Platone is a "customer" project where the participation of humans is essential for a successful outcome. A sound and correct ethical treatment of participants is therefore of great importance for Platone. The participants which need to be recruited for Platone's three field trials are the end-customers, on LV- and MV-levels. The role of TSO, DSO and aggregator will be filled in Platone by project partners, so no recruitment is needed of TSOs, DSOs or aggregators.

In Platone, issues related to Ethics will be dealt with by the Project Management Team. There is no separate Ethics Board in Platone.

Platone will observe the following principles toward participants:

- respecting the integrity and dignity of persons
- participation is voluntary and participants have the right to withdraw from Platone;
- provision of a project information sheet;
- anonymity of participants;
- respecting the principle of proportionality – not to impose more than necessary on the participants, as well as not going beyond stated objectives
- considering the concerns research raises and building an understanding that all benefits of this research are for the good of society
- protection from harm and discomfort.

Platone will be non-discriminatory in its recruitment of participants, regarding age, gender, social background or any other characteristics. The participants must, however, fulfil the technical requirements of the field trials, which relate to their ability to act as prosumers (producers and consumers of energy) / prostormers (prosumers who also can store energy).

1.1 Objectives of the Work Reported in this Deliverable

The objective of this deliverable is to provide details on the procedures and criteria that will be used to identify/recruit participants in the Platone field trials in order to guarantee a sound and correct ethical treatment of human participants

1.2 Outline of the Deliverable

The content of the deliverable includes:

- Information about the field trials and the harmonisation activities of WP1 (Ch. 2);
- Information about Platone's approach to Data Privacy and Ethical Issues (Ch. 3);

- Additional details as requested in the comments made in the Ethics Summary Report [2] (Ch. 3);
- Details of the procedures and criteria that will be used to identify/recruit research participants (Ch. 4);
- Detailed information on the informed consent procedures (Ch. 5);
- Templates of informed consent and information sheets (Annex).

2. Platone Demo Plans

Platone will carry out three demos in Italy (WP3), Greece (WP4) and Germany (WP5). This chapter describes the demos' procedures and criteria that will be used to identify the research participants, i.e. the end customers who will be recruited to participate in the demos.

2.1 WP1's Harmonisation Activities

The main objective of WP1 is to define DSO operation strategies and ensure the harmonisation between the demonstration sites and the methodology applied for analysing their results. To ensure that, regular and coordinated exchanges between demo leaders and other partners will be established and basic KPIs common to different demos will be defined.

In addition, WP1 aims to define customer engagement strategies for the project. For this purpose a series of workshops will be conducted in Task 1.5. To harmonise the needs and expectations of customers and partners, B.A.U.M. will lead the following co-creation activities:

- One Innovation Kick-Off Workshop per trial:
  In each field trial one Innovation Kick-Off Workshop will be conducted in February and March 2020 in order to identify user needs and expectations. These can also take place via web conference if an on-site appointment seems not to be necessary. The expected participants are potential users, which can be solution developers, potential participants in the trials and other typical users or representatives of consumer organizations. The Kick-Off Workshops will therefore invite participants, identified in coordination with B.A.U.M. For inviting these, the document "Project Information for Participants" attached in Annex B will serve as a template. The identification and invitation process should mainly take place in January 2020. In the German Demo this Innovation Kick-Off Workshop is planned to take place Platone-internally without users/customers, since it is too early for user involvement (referring to Table 1). The main topics will be the identification and recruitment strategies for potential end users

- Series of Innovation Workshops:
  These workshops aim to develop solutions with the customers and users. B.A.U.M. will coordinate these workshops together with the field trials accompanied by iterative evaluation processes. Moreover stakeholders concerns will be identified, their expectations caught and a partnership for communication and dissemination in WP8 developed. Validation activities will be performed to evaluate the effectiveness of the proposed solutions and will provide retrospective feedback, following an iterative evaluation approach, which will be exploited on the following phases to refine the requirements and improve the provided components. The dates of these workshops will be set individually with the field trials.

2.2 Italian Demo

The Italian Demo will carry out a comprehensive implementation of a "Local Flexibility Market", realizing it within the large metropolitan area of Rome. Therefore, it will involve various types of users located in different parts of the target area to get a reliable representation of the impacts of "flexibility" on the DSO grid, portions of the electricity distribution network, sufficiently representative in terms of voltage levels and typology of transformer substations, will be equipped with "smart technologies" coordinated by a DSO Platform capable, at the same time, to observe / manage and ask to the market for the necessary flexibility to optimize stability, resiliency and security.

The main objective of the trial is to implement a complete end-to-end flexible environment, i.e. a real integrated market where, applying highly innovative distribution network technologies like blockchain and new grid equipment, retail and business customers interact both with aggregators (to access new flexibility market options) and distribution system operators to become active players in in an effective and efficient active distribution network.

Within this context, in fully accordance with and respect of the National Law, customer-engagement activities will be led by the Acea Energia (being the company of the Acea Group in charge for all the commercial processes towards Acea's customers).

The preparation of these activities will start from month 3 of the project. At month 17, a report on customer-engagement strategies, defined and implemented in WP3, will be released by Acea Energia.

The explicit reference to the Ethical Code of Acea must be maintained, as a company rule to be respected. Please, consider inserting again the reference to article 13 of the Acea's Ethical Code.

WP3 involves the collection of information from persons in the target area of Rome. In fact, WP3 will put in place customer-engagement activities, carry out flexibility analysis and implement testing activities preparatory to the Italian Demo implementation, thanks to the involvement of interested customers.

Humans will be involved in PLATONE WP3 directly as participants in Customer-engagement workshops, and in the realization of the testing activities preparatory to the Demo implementation; and indirectly through the Flexibility analysis performed based on the energy data they provide to the Aggregator and customer profiling activities. Customer profiling and measurement activities of users' energy data will be implemented exclusively under the explicit consent of users.

- Participants in customer-engagement workshops will be informed about the purpose of the Platone project and the Italian Demo objectives, and their role as participants in workshop events. The organisation of these workshops has been planned as follows: 1st workshop to be held by the first semester of 2020, addressed to Commercial prosumers; 2nd workshop to be held by the second semester of 2020, addressed to Residential prosumers; 3th workshop to be held in 2021, addressed to Residential Customers.
- Participants in Flexibility analysis activities will be informed about the purpose of the Platone project and the Italian Demo aims and strategies, and their role as participants in customers profiling activities implemented by the Aggregator, based on the energy data gathered and provided by customers. After the realization of the customer-engagement workshops (addressed to commercial and residential prosumers) dedicated flexibility analysis of these customers will be realized over a period of 6 months. When flexibility analysis is completed. Acea Energia will elaborate a tailored proposal to be shared with target customers for their active engagement in testing activities.
- Participants in testing activities preparatory to the Demo implementation will be informed about the purpose of the Platone project and the Italian Demo objectives and strategies, and their role as participants in above-mentioned activities. To this aim, their authorization to the installation of electronic devices (which will be installed by areti) for measuring and increasing users' flexibility will be requested. This step will be taken after flexibility analysis will be completed and a tailored proposal for active engagement will be presented.

Participants will sign an informed consent sheet before the above-mentioned activities described at points (1), (2) and (3) start. The informed consent sheet will contain the following elements:

- a summary of the purpose of the demo,
- an agreement to record the interview and information about the subsequent analytical steps (transcription, consent of interviewee on transcript or protocol),
- statement that all information will be treated confidentially and that no information will be shared that could identify the respondent,
- information that participation is voluntary and that the interviewee may decline to answer any questions.
- an agreement that participants' name may be listed in the list of participants which will be included in the relevant deliverable report to the Commission which is a publicly available document.

In order to ensure compliance with ethical standards for the involvement of human subjects, an informed consent document will be presented to the participants to guarantee their free and fully informed participation. The individual informed consent forms will be available upon request from the Coordinator. For a draft of the informed consent document see Annex A.

Starting from the format of informed consent sheet elaborated by the coordinator, tailored formats of the informed consent document will be elaborated to be shared with the different target users to be involved during the different steps and activities (see points (1), (2) and (3) above-indicated), in order to request their consent with specific reference to the nature of the activities to be carried out, and to different types of information/data to be collected according to level of involvement of the user.

Each informed consent document provided will explicitly refer to Regulation (EU) 2016/679 (named "General Data Protection Regulation" or "GDPR") on the protection of natural persons

with regard to the processing of personal data and on the free movement of such data, in order to ensure the respect of confidentiality right of users involved.

The procedures and criteria that will be used to identify/recruit participants in the Field Trials are given in Ch. 4 below. The participants will be selected for inclusion in the field trial according to their fulfilment of the field trial's technical requirements

2.3 Greek Demo

In the Greek Demo (WP4) different user groups are identified according to project's Use Cases, as follows:

- TSO;
- Aggregators;
- Prosumers: RES producers (wind farms, PVs, PVs with net metering and rooftop PVs), energy communities;
- Consumers: residential/commercial.

In the Greek energy market there is only one TSO, The Independent Power Transmission Operator (IPTO or ADMIE) S.A. Moreover, energy communities and aggregators are not yet formed, so the recruitment process is focused on RES producers and consumers.

In order to raise awareness, engagement and acceptance of pilot site user groups and involve them in the project activities, two different workshops will be organized within the Work Package 4 for the Greek demo. A "Customer Engagement workshop" will be held in February 2020 in the Mesogia area and a "User Engagement workshop" will be scheduled in June 2020.

During the workshops, participants will be informed about the role of flexibility in the energy transition and the goal of the Platone project. Furthermore, the importance of customer engagement in general and particularly in innovative actions will be emphasized and their contribution as participants in the project will be clarified. The following topics will be covered as well.

Customer Engagement workshop (residential consumers/ prostormers):

- Ways that customers can actively participate – how this affects system operation, CO_2 emissions;
- What is an aggregator, which service may provide?
- Step by step to active customer engagement;
- Potential incentives in this action.

User Engagement workshop (commercial consumer/ prostormers, RES producers):

- Improvement of system operation;
- Reduction on costs;
- Aleviate technical limitation of Distribution System – Increase integration of RES;
- Ancillary services provided – Economic incentive for large customers and aggregators;

After the informative sessions, questionnaires about the workshops will be distributed in order to gather feedback and record the willingness to participate in the project. A consent form will be attached to the questionnaire regarding the data collected within the workshop. Network users' data used by HEDNO for the purposes of the Greek Demo, subject to European and national legislation regarding data management by network system operator.

The participants will be selected for inclusion according to their willingness and their fulfilment of the demo's technical requirements, which will be discussed during the workshops. In the final stage of recruitment the selected participants will be invited in a meeting in order to verify and discuss their participation in the project.

2.4 German Demo

Being at the forefront of the German energy transition, Avacon has been challenged by a fast growth of decentral generation. Particularly in the rural regions, Avacon is managing low- and medium voltage networks that are exporting a significant surplus of locally produced energy. This influx of decentral generation has been a challenge for the existing networks, to an extent where investments in additional network capacity could not always keep up with the growth of decentral

generation. The perspective of an increasing number of charging points for electric vehicles have additional potential for future violations of grid limits and in some parts of the current grid may lead to critical situations in which a safe and reliable energy supply cannot be guaranteed at all times. For such future scenarios, Avacon will use Platone to investigate new strategies which ensure a safe and reliable energy supply in grids with high penetrations of distributed renewable energy sources and loads such as night storage heaters and heat pumps, while maximizing the share of green energy in the grid.

Already today there many energy communities located in Avacon's service grid area consisting of private customer households owning roof top photovoltaic systems, flexible loads such as night storage heaters or heat pumps used for domestic heating or in some cases charging stations or wall boxes. These communities are characterized by a high installed capacity of generation and load, leading to a high power export of locally generated energy into the MV grid on sunny summer days or high loads on cold dark winter days. Those communities are not only providing a large number of devices providing potential flexibility for optimization of grid operation, they also provide an environment with ideal conditions for a self-sufficient energy supply by implementing additional storages.

Against this background Avacon will investigate in the frame of WP5 a solution approach for balancing local grids, for providing flexibility out of local low voltage grids and for a new energy supply mechanism. With the implementation of a large scale battery storage system in a local energy community, a balancing infrastructure based on a multi-layer flexibility management platform with smart algorithms following use cases will be implemented and tested:

- Local Balancing in energy communities;
- Coordination of multiple flexibility management platforms;
- Upload of energy packages in bulk;
- Download of energy packages in bulk.

Use Case 1 aims to balance local demand and generation within an energy community to enable a self-sufficient energy supply and to avoid power exchange along the MV/LV feeder by making use of a large scale battery storage and flexibilities provided by private customer households.

Use Case 2 aims to implement a coordination mechanism between a central flexibility management platform and decentral flexibility management platforms which allow flexibility to be provided through balanced energy communities for higher grid demand.

In Use Cases 3 and 4 a new mechanism of energy supply will be developed and tested, which allows supplying the energy demand of a community before the real time demand and exporting energy surpluses out of the energy community in a delayed manner, rather than real time.

Avacon will recruit private customer households with or without potential flexibility. Since the field trial will be located in a low voltage grid section in Avacon's own DSO service grid, no additional parties (DSO, TSO or aggregators) need to be recruited and additionally involved in the field trial to apply and run the use cases. For the identification of an appropriate field trial and recruitment process a multi-step approach will be implemented:

In the first step Avacon will select several potential low voltage grid sections (energy community) which fulfil the following predefined conditions:

- Number of households: 80 – 120;
- Number of Photovoltaics systems: 10 – 20 (80 to 250 kW installed capacity);
- Number of flexible loads: 2 – 20 (minimum 5 kW);
- Available for the installation of a large scale battery storage located near by the local substation;
- Upgrade of the local substation to an intelligent substation with a communication connection via DSL or optical fiber;
- A sufficient LTE, 4G, 3G, GPRS or power-line communication coverage for communication.

In the next step, from all preselected areas, the communities with the most balanced installed capacity of generation will be finally chosen, providing the best balance between local generation and demand. After the most suitable community has been identified, a multistep recruitment approach will be implemented to recruit private customer households. The aim of the recruitment process will be to convince as many customers as possible to participate and to bring a large and diverse portfolio of flexibility in the trial (e.g. night storage heaters, heat pumps or charging

stations for electric vehicles or roof-top photovoltaics systems). Even customer households without any flexible device or not wanting to provide flexibility, but interested in participating can be equipped with sensors to provide measurement values passively, supporting a more precise estimation of local generation and demand.

Avacon will reach out to customers directly via mail. Customers will be addressed individually and informed about the purpose and aims of the project, that they have been selected and are now invited to participate in the German demonstrator of Platone, funded by the European Commission and part of a Europe-wide Smart Grid project for our energy future. The letter will highlight each customer's opportunity to play an active role in creating our energy future and list advantages and state offers made by Avacon to incentivise the customers to participate. Additionally a flyer will be designed and attached giving more detailed information as well as terms and conditions and a response card will be attached. The documents will be designed by making use of the Informed Consent and project information templates provided in Annexes A and B. An example of such an invitation via mail, which already has been used successfully in other recruitment processes can be found in Annex C. Avacon will additionally provide a website where interested customers will have the possibility to learn more about the project and use a web form to sign up right away. Avacon want to gives customers the opportunity to raise questions and get more detailed information about the project in a personal way by offering workshops to the customers, located Avacon offices in the region.

Table 1 gives an overview of the planned timeframe of the recruitment process.

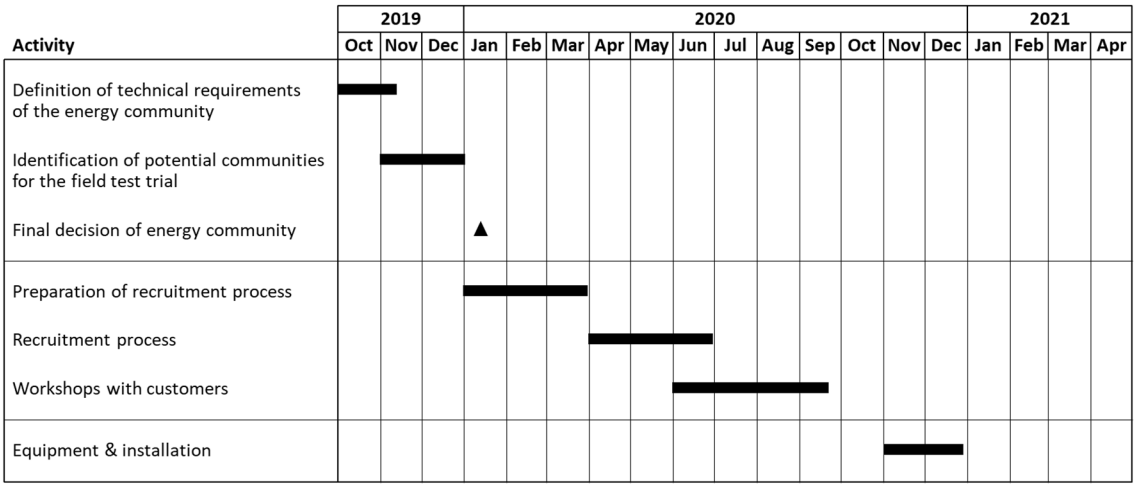

Table 1: Avacon Recruitment Timeframe

Avacon will collected measurements values from households for grid state estimation purposes and the application in the use cases. All data will be handled anonymously and be collected with the customers' agreement. The data will be handled according to the German federal guidelines for data protection according to the national law "Bundesdatenschutzgesetz (BDSG)", in conjunction with the specific data protection laws of federal states regulating the collection and processing of personal data in IT- and communication systems as well as manual processing.

3. Platone approach to Data Privacy and Ethical Issues

Platone's policy on personal data, privacy and ethics is given in the GA [1], In Ch. 2.3.4 it states: "The Platone project fully supports and agrees to take the legal and ethical issues into consideration in order not to violate the privacy and individual rights of participants, pilot users and stakeholders involved in the project. The project policy will be extremely vigilant with the data and strictly use only that which is necessary to carry out the project activities considering all the processes and actions requiring access and use of personal data" and refers to Ch. 5 of the GA for further information.

The stakeholders in Platone are treated in Ch. 3.1.3 below. The active stakeholders, i.e. those who will participate in the flexibility market, are TSOs, DSOs, aggregators and end-users.

The TSOs and DSOs and aggregators in involved in the field trials are already project partners. Hence, there is no need for a method in Platone to find and recruit any TSO, DSO or aggregator participants and they are, therefore, excluded from the detailed information given in this deliverable. The type of active stakeholder who has to be recruited is limited to the end-users, who are private persons or commercial enterprises who agree to participate in one of the three Platone field trials. "End-user" here means entities which are end users of the electricity distribution service offered by the DSOs at LV- or MV-levels, but also includes entities who produce their own electricity or have their own electricity storage equipment, i.e. they are so-called prosumers. In some Platone documents, the term "prostormer" is also being used for prosumers who also store electricity.

The target end-user group of Platone is firstly experienced, active, and healthy private individuals and secondly commercial enterprises who participate in the field trials as prosumers/prostormers. As well as fulfilling the field trials' technical requirements as prosumers/prostormers, the participants need to have the competence to understand the informed consent information. In the unlikely case that they are unable to do so, they will be excluded from any tests or evaluations within Platone. The scenarios will only include participants with competence to understand the informed consent information and a valid driving license.

Only the principal investigator, at each field trial site, will have access to personal information about the participants. Platone project partners who will analyse technical data will receive anonymised and coded information, never any personal data. Any recorded technical data will be available only in anonymised format.

An overview of ethical considerations regarding participants in the field trials is given in Table 2.

Table 2: Ethical considerations regarding participants in Platone

Ethical and Social risks	***Description***	***Ethical Risk Management in Platone***
Ethical and legal framework applied	All relevant legislation, regulation and ethical codes will be taken into account; they are defined how they are met in terms of processes, timing and responsibilities.	Platone Project Management Team will oversee the ethical concerns involved in the project.
Transparency and consent of the end-user	The informed consent aims at ensuring that the user accepts participation and is informed about all relevant aspects of Platone. It should be given in written form after the users have been provided with clear and understandable information on their role (including rights and duties), the objectives of the project, the methodology used, the duration of the project, the possibility to withdraw at any time, confidentiality and safety issues, risks and benefits.	The basic elements of the Platone informed consent will include: • The objective of the field trial, its duration and methodology; • Possible risks, discomforts and side-effects; • Privacy and data protection procedures ; • The possibility to decline the offer and to withdraw at any point of the process (and without consequences); • Contact person.
Privacy and data protection	Only anonymised data will be processed and, therefore, no personal data will be collected in relation to specific user. The name will not be connected to other characteristics (e.g. age, sex, nationality and health condition). Participants will be recorded only if they provide consent. All this information falls under the European legislation for the lawful processing of personal data. Special attention is also given to national legislation. These provisions have to be respected even if the users have given their consent for the processing of their personal data. Sensitive data, like physical or mental health, sexual orientation and ethnic origin, will not be asked for or recorded. To avoid risks related to the processing of personal data such as identity theft, discriminatory profiling or continuous surveillance, the principle of proportionality has to be respected. Data can be used only for the initial purpose for which they were collected, if nothing else is agreed in the ethical approval. No recordings of the participants will be made. No biometrics of the users will be taken. Anonymisation or pseudonymisation is a way to prevent violations of privacy and data protection rules. Processing has	The project identifies which data protection rules apply and establishes a list of risks and potential solutions; taking due account of the following: • What kind of data will be processed? • What is the purpose of the processing? • Will the data exceed the purpose of the field trial? • Are there procedures ensuring that data is processed only for the originally identified purposes? • Who is the owner of the data? • Is data connected to other information? • Will data be commercially exploited? • What is the duration of the storage of the data? • Where will the data be stored and according to which national legislation? • Who will access the data? Are they secured? • Will the user be recorded? • Which biometrics will be implemented? • Who will supervise the data protection?

Ethical and Social risks	***Description***	***Ethical Risk Management in Platone***
	to be limited to what is truly necessary and less intrusive means for realising the same end have to be considered. Access to personal data will be limited to the designated person at the Platone partner operating the field trial.	
Safety	Data collection and evaluations should not entail any undue risk for participants.	Testing of technologies is supervised; sensors and systems will be verified and validated prior to any use. The integrated systems do not pose any safety risk for participants.
Participants' engagement	Research has to be inclusive and representative of different prosumer types, as required by the individual field trials. The selection and recruitment of participants is a crucial part of the involvement process, as it will impact on the quality of the outcomes. The participant Gender balance and equality is addressed.	Platone will target prosumers/prostormers. Specific technical inclusion criteria will apply; details of the field trials technical requirements are given in Ch. 2 and Ch. 4. As the role of the participants is to be prosumers/prostormers, the individual characteristics of the participants, such as gender or social background, are not relevant for the field trials. The technical requirements on the participants may mean that many of them are householders, and this may mean that they are mature people. Not withstanding this, the recruitment will try to achieve a good representation of (i) different age groups, (ii) balanced female/male ratio (iii) various social backgrounds. The PMT of Platone will oversee the selection of participants.

3.1 Response to Comments in the Ethics Summary Report on Platone [2]

The Ethics Summary Report on Platone [2] comments that "*Human adult volunteers will be involved in several different activities, such as pilots, case studies, live demonstration and trial sites. The Ethics section within B2 describes the informed consent procedures, however, further details are needed*." The following sub-chapters answer the points raised in the Ethics Summary Report.

The page numbers in the ESR refer to the submitted proposal and are different in the Grant Agreement [1], so the relevant chapter in the GA is identified per item below.

3.1.1 Collection of customer response to the market request p8

The Ethics Summary Report on Platone [2] requests further details on "*Collection of customer response to the market request*". This refers to Ch. 1.1.3 of Part B the Grant Agreement [1], in particular to the paragraph on the Blockchain Access Layer, which reads:

"***Blockchain Access Layer:*** *The Blockchain access layer adds a further level of security and trustworthiness to the framework. It is an extension of physical infrastructure and performs multiple tasks, among which the data certification and automated flexibility execution through Smart Contracts. Furthermore, it includes a shared data archive component, where all certified data are registered together with all flexibility requests, thus resolving the entire data dispute. In particular, it registers: i) energy measurement, ii) signalling of flexibility requests from the market to the customer, iii)* ***collection of customer response to the market request****, iv) electrical behaviour of the customer respect to grid conditions. For data archive realization different technologies will be investigated including distributed filesystems (such as InterPlanetary File System) and cloud-based solutions.*"

The above paragraph concerns communication between three parties:

- the DSO Technical Platform, which is a computer system for management of electrical distribution grids;
- the Market Platform, which is the Flexibility Marketplace, which is a computer system where TSO, DSO and Aggregators agree on Flexibility Requests;
- the Physical Infrastructure where Smart Meters and Actuators execute flexibility requests and certify actions and requests through the "Blockchain Node". This entity is connected to the blockchain protocol and interfaces towards its plant, composed by the smart meters and the actuators

These three parties communicate and agree over an interface (API) called Blockchain Protocol. The communication relates to a negotiation and realization of customer's flexibility requests in producing and consuming energy (which is the subject of the Platone project) and is performed automatically by the three communicating parties without any intervention from the customer concerned.

In order to avoid disputes between the parties, the system must be able to prove the integrity of the negotiation, of the values of measures and prices applied to flexibility service. That's why it is important to certify both the messages being exchanged in the Blockchain and their contents (energy measurement, signalling of flexibility requests from the market to the customer, electrical behaviour of the customer respect to the grid conditions) and also that the customer has accepted or denied the flexibility requests from the market. The latter is what is referred to as **"the Customer Response to the Market Request"**. Hence, in the Blockchain Access Layer, the exchange of messages is certified and signed with a timestamp:

- Signalling of Flexibility Requests from the market to the customer;
- The Customer Response to the Market Request (that accept or deny the flexibility request);
- The energy measurement;
- Electrical behaviour of the customer respect to the grid conditions;

With all of this certified data it is possible to avoid disputes between the parties, and all of the three parties can use these data to improve their services.

Furthermore, no personal data related to the customer is involved in this negotiation; the data being communicated is purely related to the energy flexibilities and cannot be used to infer anything about the end-customer or his behaviour. In addition, the purpose of blockchain technologies is to ensure that such communication exchanges are secure from tampering, and they can only be shared with authorised parties.

3.1.2 Shared Customer Database

The Ethics Summary Report on Platone [2] requests further details on "*Shared Customer Database*". This refers to Ch. 1.4.3.1 of Part B the Grant Agreement [1], which described the Italian field trial, in particular to the description of the Use Case, which reads:

"*The flexible power proposal offered by the aggregator is elaborated thanks to information coming from the DSO's BlockChain platform. This platform has to collect and certify meter's data from individual end user every 4 seconds. In addition, the Blockchain infrastructure will certify the DSO validation of the Aggregator offer and will consequently send the certified set points to the final customers to implement flexibility services. According to DSO responsibility in metering data collecting and sharing, it will be developed a "**Shared Customer Database**" that transparently provides to all the authorized players (aggregators, customers, TSOs…) involved in the flexibility market, all the Blockchain certified requests and measures logs to calculate the flexibility action results, realizing a cost-efficient general system since the same metering / certifying infrastructure serves all the market players*."

The use Case being described concerns the implementation of a marketplace for flexibility in energy production and consumption. A negotiation about flexibility takes place between two computer systems: one party is the DSO Technical Platform, which is a computer system for management of electrical distribution grids; the other party is the blockchain node, which is located at the Smart Meter in the customer's premises. These two parties are blockchain peers which communicate over an interface (API) called Blockchain Protocol. The communication relates to a negotiation about the customer's flexibility in producing and consuming energy (which is the subject of the Platone project) and is performed automatically by the two peer communication parties, without any intervention from the customer concerned. The other actors in the Use Case are Aggregators and TSOs, which are companies engaged in businesses related to power grids.

This "Shared Customer Database" will be used to store data related to the flexibility market. These data comprise the flexibility requests and the negotiated offers of flexibility and logs of the communications. This is purely technical data related to energy flexibilities; no personal data related to the customer is involved in the flexibility negotiation or stored in this database.

3.1.3 Include all the stakeholders (TSO, DSO, aggregators and end-users)

The Ethics Summary Report on Platone [2] requests further details on "*Include all the stakeholders (TSO, DSO, aggregators and end-users)*".

This phrase is used in the description of the Objectives of WP3 in the WP3 description in Ch. 1.3.3 of Part A the Grant Agreement [1]. The text reads: "*The aim of Italian's Demo is to realize a fully functional system that enables distributed resources connected in medium and low voltage to provide grid services in different flexibility market models which **include all the stakeholders (TSO, DSO, aggregators and end-users)***."

There are two sorts of stakeholders in Platone: firstly the ones mentioned in the bold text above, who are active in the project and secondly ancillary stakeholders such as the Advisory Board, the scientific community, energy sector actors such as TSOs, DSOs or aggregators (or their organisational bodies) who are not in the Platone consortium or local and regional authorities and organisations in the field trials' areas. The objectives for WP8 (Dissemination and Exploitation) mention policy, regulation, technology, businesses and academia as stakeholders in this second sense. However, the ESR comment refers to the first kind of Platone stakeholder, who are the participants in the energy flexibility market which is at the project's core. This is central to the Platone project summary, which says that:

"*To manage energy transition, DSOs require innovative tools. Volatile renewable energy sources in combination with less predictable consumption patterns call for higher levels of observability and exploitation of flexibility…. Fully respecting the existing regulatory framework, a layered set of platforms will allow to meet the needs of **system operators, aggregators and end users**. A*

*blockchain based platform is the access layer to **generators' and customers'** flexibilities able to break traditional access barriers by providing certified measures to all the players. In conjunction, certified data and signals will be used for an innovative DSO platform to locally maintain system integrity fostering confidence in flexibility operations. An upper layer will implement a new concept of blockchain-based open market platform to link the local system to the **TSO** domains and enhance the overall system cost efficiency. Because flexibility means customer involvement.*"

Hence, the meaning of "stakeholders" as used in the WP3 objectives is the TSOs, DSOs, aggregators and end-users (who are the people who will be recruited to participate in the three field trials). These are the entities who will actively participate in the energy flexibility market that will be developed in Platone.

3.1.4 Participants will be informed beforehand about the project aims and methods by written information and consent will be asked

The Ethics Summary Report on Platone [2] requests further details on "*Participants will be informed beforehand about the project aims and methods by written information and consent will be asked*".

This phrase is used in Ch. 5.1.2 of Part B the Grant Agreement [1]. The text reads: "*All methods protecting the privacy of the users and participants (private persons, firms stakeholder groups) participating in field and case studies and surveys will be planned according this policy: **Participants will be informed beforehand about the project aims and methods by written information and consent will be asked**. At all times, participants retain the right to withdraw consent and cease their involvement in the project without negative effects.*

Data coming from surveys will be treated anonymously in all cases where possible, and aggregated when needed to keep users' privacy.

Researchers will be informed that participating users have the right to remain anonymous.

Where a questionnaire is sent through the post to subjects, their return of the questionnaire may be taken to imply consent."

Further details of how the project will inform the prospective participants beforehand about the project aims and methods with written information, and how consent will be asked for, forms the main content of this D10.1 deliverable. In particular, Annex A contains a draft of the Informed Consent forms and Annex B contains a draft of the written information that will be provided. Further information is also contained in Chs. 2 and 3.

3.2 Ethical Approvals

The nature of the field trials in Platone means that there is no testing of the participants themselves (in a physical, physiological, psychological, medical sociological or biological sense) and so no need for approval from the national ethical control bodies of Italy, Greece or Germany.

4. Procedures and criteria that will be used to identify/recruit participants in the Field Trials

The procedures and criteria that will be used to identify/recruit research participants are detailed in Table 3 for the three field trials in Platone.

Partner	Who have you identified as the participants in the project?	How will the participants for the engagement activities be recruited?	Inclusion or exclusion criteria
Acea Energia, with the cooperation of areti for the realization of networking activities	• Commercial Prosumers • Residential Prosumers • Residential consumers	• Through a dedicated selection among Customers present in the Acea Energia Customers Portfolio • By realizing dedicated information campaigns on the project (e.g. networking face-to-face meetings, mobile marketing campaigns, preparation of dedicated information materials etc.) Invitation to participate as audience in the customer-engagement/awareness-raising workshops organized by Acea Energia	No specific exclusion/inclusion criteria are provided. During the selection of the target users through the consultation of its Customers Portfolio, Acea Energia will define “nice to have” criteria for the identification of users to be involved (concerning specific technical aspects)
HEDNO	• Commercial Prosumers/Consumers • Residential Prosumers/Consumers • Agricultural Prosumers/Consumers • DER producers • IPTO (Greek TSO) • Aggregators • Energy Communities	• Through a workshop focused on increasing small customer awareness of innovative solutions and active participation in energy market • A second workshop will be organized so as to engage largest customers, RES producers and possibly aggregators.	• Compatibility with preselected use cases • Location within a preselected grid region of interest. • Compliance to national regulatory framework • Technical requirements (flexible loads, metering devices)
Avacon	Private Customers households as part of local energy community located in a preselected grid section of the low voltage grid, owning small scale roof top photovoltaic systems, flexible loads such	Customers will be recruited via a multi- step approach. 1.) Written invitation consisting of a formal letter, flyer, reply card, terms of services.	**Inclusion:** any household located within a preselected grid region wanting to participate in the project with or without any flexibility to share.

	as night storage heaters, heat pumps as well as charging stations for electric vehicles or battery storages.	2) Workshops with the customers to present the project in detail and to give the customer the opportunity to raise questions and get more detailed information about the purpose and technical solution of the project. Internet webpage with detailed information towards the project	**Exclusion criteria:** The customer cannot participate if one of the following conditions is not met: • neither a mobile (LTE (4G), 3G or GPRS) nor a power line communication infrastructure is present; • the customer agrees to share their own WLAN internet connection to the metering sensors; • the customer confirms that we make use of their metering data.

Table 3:: Procedures and Criteria to identify/recruit research participants

5. Templates of the informed consent forms and information sheets

Purpose of an informed consent document

An informed consent document is typically used to provide subjects with the information they need to make a decision to participate in a research study. This information is most often presented to subjects in the form of a written document but it may be offered verbally by a member of the study team or the member of the study team may provide additional verbal clarification further to providing a written document. The member of the study team provides any necessary clarification and answers any questions potential participants may have. Regulations and policy require that certain information be provided as part of the consent process.

The informed consent document is designed to be clear and straightforward, aimed at ensuring the participants understand and agree to participate. The form requires no sensitive data to be collected (such as age, health, sexual orientation, ethnicity, political opinions, religious or philosophical conviction).

Informed consent procedures to be implemented

Information about the project will be prepared in an appropriate form and language for potential participants, catering for the audience's needs (e.g. information for children or vulnerable adults will be presented differently than that developed for adults, etc.). This will include rules for participation and withdrawal from participation. Partners will ensure the translation of materials into local languages.

Platone partners will discuss the project's public engagement activities and evaluation carefully with all those selected to take part in the project. Through the co-creation approach Partners will have the chance to decide which participatory methodology and evaluation methods will be the most appropriate to use.

Consent forms are for adults legally able to respond.

Partners will fully inform participants about the project, its evaluation and what is being asked of them, including the potential risks/benefits and exclusion criteria, in order to facilitate them being able to make a fully informed decision about whether or not to participate. This will be an active step on behalf of the participant and not subject to any inducement, coercion or perceived pressure.

Information to be provided to participants will include:

- Aim of the study
- What data will be collected
- How data will be stored, analysed and destroyed
- Confirmation of the right for participants to request that their data is deleted
- Possible risks to project partners, participants in engagement activities or any third parties
- Confirmation of the right to step back from participation without any consequences at any time of the study
- Access to the analysis of the data collected and any resulting recommendations

Templates of the informed consent forms and information sheet are given in Annex A.

As the process of shaping the demos is still ongoing at this point in the project development (December 2019), some details of the information about the project's actions are still incomplete and have to be added prior to the launch of the events and activities. Thus all Partners are asked to adapt the forms where needed and requested. The forms will then be translated into national languages.

The way in which Consent Forms will be managed and stored in order to comply with the rules for protection of personal data will be detailed in D10.2.

In order to ensure compliance will legal requirements, Platone project partners responsible for trial sites will ensure that all data subjects will state in writing that:

- They have read and understood the information about the project;

- They have been given the opportunity to ask questions about the project;
- They have voluntarily agreed to participate in the project;
- They understand they can withdraw at any time without giving reasons and that they will not be penalised for withdrawing nor will they be questioned on why they have withdrawn;
- The procedures regarding confidentiality have been clearly explained;
- The use of the data in research, publications, sharing and archiving has been explained;
- They understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms specified in this form;
- They agree to sign and date this informed consent form.

A draft version of the Informed Consent form is included in Annex A and a draft of the information for participants is in Annex B.

6. List of Tables

7. List of Figures

No table of figures entries found.

8. List of References

[1] Grant Agreement No. 864300 – PLATONE
[2] Ethics Summary Report

Annex A: Preliminary Draft of the Informed Consent Form to Participate in Platone Project

Platone PLATFORM FOR OPERATION OF DISTRIBUTION NETWORKS	*Smart Integration For Market Innovation* *–* *Innovation For The Customers,* *Innovation For The Grid*

Consent to Participate in Platone Project

This part will be filled in by both the participant and the project representative.

Title of the Project: Platone: PLATform for Operation of distribution NEtworks

Principal Project partner: [name, institutional affiliation]

The Platone project with all Consortium members fully support and agree to take legal and ethical issues into consideration in order not to violate the privacy and individual rights of trial participants, pilot users and stakeholders involved in the project. The project policy will be extremely vigilant with respect to the processing of data and will, having considered all the processes and actions requiring access and use of personal data, use strictly only that data which is necessary to carry out the project activities.

By signing this document, you are agreeing to participate in the field trial. We will give you a copy of this document for your records. We will keep one copy with the study records. Be sure that we have answered any questions you have about the study and that you understand what you are being asked to do. You may always contact the researcher if you think of a question later.

Personal Release

By signing, participants agree that all personal data as well as pictures and photographs taken up for conducting the trial may be electronically processed. In compliance with the General Data Protection Regulation (GDPR), your data will be processed exclusively, confidentially and for legitimate purposes, i.e. for documentation, reporting and communication activities related to the Platone trial. This includes PR and internal use for documentation like pictures and photographs. After conclusion of the Platone project including its review period, all trial participating members of the Consortium will delete your personal data in compliance with GDPR Art.17(1). You may withdraw your consent and cease your involvement (according to Article 7 GDPR) via e-mail any time by writing to pmckeever@eonerc.rwth-aachen.de.

By signing this document, you are agreeing to participate in the field trial. We will give you a copy of this document for your records. We will keep one copy with the study records. Be sure that we have answered any questions you have about the study and that you understand what you are being asked to do. You may always contact the researcher if you think of a question later.

I agree to participate in the study.

_____

Printed Name

_____

Signature Date

Informed Consent Form

I / we, the undersigned, confirm that (please tick box as appropriate):

1.	I / we / We have read and understood the information about the project, as provided in the Platone Information Sheet dated _____.	☐
2.	I / we have been given the opportunity to ask questions about the project and my / our participation.	☐
3.	I / we voluntarily agree to participate in the project.	☐
4.	I / we understand I / we can withdraw at any time without giving reasons and that I / we will not be penalised for withdrawing nor will I / we be questioned on why I / we have withdrawn.	☐
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to me / us.	☐
6.	I agree to that ***"Enter Trial Site lead beneficiary here"*** collects, processes and uses the data specified in above mentioned Platone Information Sheet.	☐
7.	If the project requires a dedicated transfer of technical (i.e. not personal) data to the consortium involved in the project, I hereby also consent to this transfer.	☐
8.	I / we understand that other Platone consortium members will have access to this data only if they agree to preserve the confidentiality of the data.	☐
9.	The use of the data in research, publications, sharing and archiving has been explained to me / us.	☐

Participant:

_____ _____ _____

Name of Participant / Representative, Signature, Date

Platone Representative:

_____ _____ _____

Name of Platone Representative, Signature Date

Annex B: Project Information for Participants

Platone PLATFORM FOR OPERATION OF DISTRIBUTION NETWORKS	*Smart Integration For Market Innovation* – *Innovation For The Customers, Innovation For The Grid*

Information for Participants in the Platone Project

To manage energy transition, local system operators require innovative tools. Volatile renewable energy sources in combination with less predictable consumption patterns call for higher levels of observability and exploitation of flexibility. While these two challenges are traditionally treated with separate means, Platone proposes an innovative approach to a joint solution for both. We want to increase use of decentralized renewable energy in Europe through a higher level of observability and exploitation of flexibility. Fully respecting the existing regulatory framework, a layered set of platforms will allow to meet the needs of system operators and end users. A blockchain-based platform is the access layer to the flexibilities of generators and customers, which will break traditional access barriers by providing certified measures to all the players. Because flexibility means customer involvement, Platone puts the grid users at the centre, investigates their needs and expectations and uses the underlying blockchain to unlock the potentials of higher dynamics of response. The platforms will be tested in three large pilots in Italy, Greece and Germany. Platone will increase use of decentralized renewable energy in Europe through a higher level of observability and exploitation of flexibility. Platone is a four-year European Commission-funded research project that started in September 2019 and will run until August 2023.

We would like to invite you to participate in this project.

All Partners responsible for the collection of personal data have provided written confirmation from their Institutional Data Protection Officer that they will adhere to European and national ethical standards and guidelines.

Your participation is about [***add what the participant's job is about for the Demo]***.

It is your decision whether to take part or not. If you decide to take part, you are still free to withdraw at any time during the process, without any obligation to give a reason.

You should only participate if you would like to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important to read the project information carefully and discuss it with others if you wish. Please ask us if there is anything that is not clear or if you would like more information about the project. If you decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form.

Description of Your Involvement

If you agree to be part of the research study, we will ask you to

[details to be filled in by Platone Demos: *Provide a concise description of the research including the expected duration of the subject's participation, description of research and/or experimental procedures that you will ask the subject to do, and the time commitment for the research and/or experimental procedures.****].***

Benefits of Participation

Although you may not directly benefit from being in this study, others may benefit because ***[details].***

Risks and Discomforts of Participation

We do not foresee that there will be any risk or discomfort from participating in Platone.

Confidentiality

We will not include any information that could be used to identify you. Your privacy will be protected and your personal records will be confidential to ***[enter name of Platone partner responsible for Demo]*** and will not be shared with anyone else. Only ***[name],*** the principal representative of ***[enter name of Platone partner responsible for Demo]*** will have access to your personal data

Storage and Future Use Technical Data

It is possible that other Platone consortium members may need to see technical data generated by your participation in the field trial ***[(such as amount of energy produced or used by you)-edit this example as needed]***. This technical data that may be shared with other Platone consortium members will never contain any information that could identify you. ***[Add details: why and how, duration, who has access, and time reference for destruction of data, if applicable. The Data Management Plan (D9.1 and D9.2) will contain details which can be added here].***

This technical data will be anonymised by ***[enter name of Platone partner responsible for Demo]*** before being shared with any other Platone partners and will not be shared with anyone outside the Platone consortium.

Voluntary Nature of Participation

Participating in Platone is completely voluntary. The expected duration of participation is 18 months with an option to continue for a further two years ***[individual demo to adjust preceding project duration data as applicable]***. Even if you decide to participate now, you may change your mind and stop at any time and withdraw before the project is completed.

Benefits of Participation

For your participation in this project, you will receive ***[details*** *if applicable****].***

As a participant, you can contribute to a regional energy system based on renewables and gain access to detailed data on your own energy use. Participants will be able to learn about the field trial at ***[fill in place, country of Platone field trial]***.

As a participant, you have the option to be involved in workshops to develop Platone's solutions. The aim of the workshops is to harmonize with the needs and expectations of customers, users and partners. By taking part, you can bring in your ideas and point of view.

Contact Information for the Project Team

If you have questions about Platone, you are welcome to contact ***[Project team member's name, contact info].***

Contact Information for Questions about Your Rights as a Project Participant

If you have questions about your rights as a project participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact **[add appropriate contact]**.

Annex C: Example Mail Invitation from German Demo

avacon

Co-funded by the European Union

Avacon Netz GmbH · Schillerstraße 3 · 38350 Helmstedt

<Vorname> <Nachname> <Name 1> <Name 2>
<GP-Strasse> <GP-Hausnummer>
<GP-PLZ> <GP-Ort>

Avacon Netz GmbH
Schillerstraße 3
38350 Helmstedt
www.avacon-netz.de

T 0 53 51 · 38 88 · 01 20
F 0 53 51 · 3 99 69 · 08
kundenservice@avacon.de

<Versanddatum>

EU Forschungsprojekt – werden Sie unser Partner!

<Anrede> <Nachname> <Name1>

gestalten Sie mit uns die Energiewende! Im Rahmen eines europaweiten Forschungsprojektes zur digitalen Energiezukunft braucht die Avacon Sie als einen von 200 möglichen Teilnehmern. Wie geht das?

Sie sind mit Ihrer Photovoltaikanlage, Wärmepumpe, elektrischen Heizung, Ihrem Speicher oder Blockheizkraftwerk bereits den ersten Schritt in Richtung Energiezukunft gegangen. Gemeinsam mit Ihnen und Ihrem neuen kostenlosen, intelligenten Mess- und Steuersystem möchten wir einen Schritt weiter gehen. Im Zuge der Erforschung von Technologien für grünere Netze mit weniger Netzausbau binden wir Ihre Anlage so in unsere Netzsteuerung ein und machen sie - nach gemeinsamer Absprache - steuerbar.

Der Vorteil für Sie: Mit der neuen schlauen Technik können Sie Ihren Verbrauch oder Ihre Einspeisung online einsehen und damit zum Beispiel auch die möglichen „Stromfresser" in Ihrem Haus identifizieren. Mehrkosten entstehen keine.

Wollen Sie Teilnehmer werden? Einfach bis zum 31. Oktober 2017 die Antwortkarte ausfüllen und an uns zurückschicken. Oder teilen Sie uns Ihre Entscheidung online mit unter www.avacon-netz.de/interflex. Gemeinsam klären wir dann, ob Ihre örtlichen Gegebenheiten den Einbau eines intelligenten Mess- und Steuersystems zulassen.

Sie wollen mehr erfahren? Nutzen Sie die Gelegenheit, Ihre Fragen persönlich mit uns zu klären. Dazu finden am **14.09.2017** und am **05.10.2017** jeweils um **17 Uhr Infoveranstaltungen** am **Avacon-Standort in Lüneburg, Lindenstraße 45** statt. Einfach eine E-Mail mit dem Betreff **„Anmeldung Infoveranstaltung InterFlex"** und Angabe Ihrer Telefonnummer an **kundenservice@avacon.de** senden.

Freundliche Grüße

Rainer Schmittdiel
Mitglied der Geschäftsführung

i. A. Thorsten Gross
Projektleitung InterFlex

Übrigens: Jeder Projektteilnehmer erhält für seine Mühe einen Einkaufsgutschein im Wert von 300 Euro und ein Überraschungspaket. Als Bewerber für die Teilnahme am Projekt gewinnen Sie mit etwas Glück zusätzlich ein E-Bike oder eines von fünf iPads.

Ihr QR-Code für die Anmeldung zur Teilnahme

<Serialnummer>
Zählernummer

<Teilnahmecode>
Teilnahmecode

<Vertragskonto>
Vertragskonto

<Geschäftspartner>
Geschäftspartner

Adresse Ihrer Verbrauchsstelle
<Anlage-Strasse> <Anlage-Hausnummer>
<Anlage-PLZ> <Anlage-Ort>

Geschäftsführer:
Susanne Fabry
Jörg Maaß
Rainer Schmindiel

Sitz: Helmstedt
Amtsgericht Braunschweig
HRB HRB 203312
Ust-ID: DE281304797

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