Smart system of renewable energy storage based on INtegrated EVs and batteries to empower mobile, Distributed and centralised Energy storage in the distribution grid

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<td>Data collection and management</td>
</tr>
<tr>
<td>Version:</td>
<td>1.0</td>
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<tr>
<td>Release date:</td>
<td>27/06/2018</td>
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<tr>
<td>Dissemination level:</td>
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<td>Status:</td>
<td>Submitted</td>
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<tr>
<td>Author:</td>
<td>Schneider Electric – Per Gjerlow</td>
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Document history:

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<td>Per Gjerløw</td>
</tr>
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<td>0.2</td>
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<td>Third draft version</td>
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Executive summary

This report describes:

- The customer/participants recruiting processes, data collecting processes, data exchange processes and data deleting processes.

- The data protection processes (Ethics/GDPR), and the “deleting”-process if participants want to leave the project.

- The data exchange processes between the pilots and the INVADE platform.

- The internal data processing inside the INVADE platform

- The data exchange processes between the INVADE platform and sources for “external input” (Price, weather, Flexibility…)

This report also includes the contract templates for each “level” E, P, C. (attachments) These levels are shown in the Figure 1, and handles the contracts between customers and pilots: “C”, between pilots and the INVADE platform: “P”, and between the INVADE platform and external sources: “E”.

1 Introduction

This deliverable exposes the data collection agreements between Customers/participants and Pilots (C), between Pilots and the INVADE-Platform (P) and between INVADE-platform and External overlying actors (E).

This deliverable will prepare several agreements/contracts and a collaboration form (C1, C2, C3…, P1, P2, P3…, E1, E2, E3…).

This agreement will support the engagement of the individual consumers/prosumers – households and EV users.

This agreement will include ethics, privacy and security appliances, consent agreement and rules for participating in the project, based on GDPR.

- Acquiring data:
Acquiring of data involves collecting and adding data to a certain platform/data-base.

There are several methods of acquiring data:

- collecting new data from meters or sensors
- using platform owned previously collected data
- purchasing data

**Data processing:** A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use. Methods of processing must be rigorously documented to ensure the utility and integrity of the data.

**GDPR & Ethics.** It will be essential to describe how all data handling processes takes into account the new GDPR (general data protection regulation), and the Ethics described in WP11.

**Data Analysis:** It involves actions and methods performed on data that help describe facts, detect patterns, develop explanations and test hypotheses. This includes data quality assurance, statistical data analysis, modelling, and interpretation of results.
2 Data Management (C + P)

2.1 Norwegian Pilot

2.1.1 Customer / Participant recruitment process (C)

Households and Housing Associations

Recruitment of the pilots has been done through existing sales channels in daughter companies owned by the Lyse Group. Smartly AS and Lyse Energisalg AS. There has been an INVADE discount for participating in the project to benefit the pilots.

There has been developed different INVADE contracts for the pilots to sign. One contract for each product/service. The contract will make sure that data collection and control will be possible in the project period. The contract for the pilots are based on the regular contract for each product, but with an INVADE customization to ensure the project ambitions and goal.

The Home Automation Provider Smartly AS has a platform that is built and designed according to GDPR and will handle the data and personal information according to this. Data shared with the INVADE platform/eSmart will be anonymized. eSmart will only get information about a household with random identifier. eSmart will not get any personal or location information. Data processing agreement must be in place between Smartly AS and eSmart. (See figure 1)

The architecture is designed in such a way that the minimal amount of access rights to the HA system that is necessary for delivering the services are given to the INVADE platform. In such a way, the HA service provider will be responsible for the customer experience and utilize the intelligence and flexibility provided by the INVADE platform to add value for its customers

Recruitment of the pilots are divided in two:

1. Privat households
2. Housing associations

Example from one of the Lyse contracts:

- Section 8.2: Special conditions in connection with the Invade project
The Customer undertakes to maintain the Internet connection for the Product (elbillad) until the Invade project ends. **Customer agrees that data on energy consumption, including usage pattern, for the Product (Electric Vehicle) will be collected automatically using the Customer’s Internet connection, through the Seller’s charging systems.**

In addition, the Customer agrees that the Seller will be able to enter into necessary agreements to collect consumption data from the power meter installed on the property where the Delivery is delivered. In addition, the Customer accepts that the Seller will obtain information about the number of residents associated with the property where the Delivery is delivered, including the number of children and adults and the age of the residents. The customer agrees to participate, in reasonable proportion, in studies conducted by the Seller and / or NTNU (Norway’s Technical and Natural Sciences University) during the project period based on the data mentioned above. These surveys will consist mainly of interviews (physical or telephone) of limited duration.

**A data processing agreement between the Seller and NTNU shall be entered into, which deals with the exchange and retention of information. Data collected according to the above point, the Seller may use to test, develop and deliver control systems for remote control of the electric carriers or other services. The data will be stored until the Invade project ends. The seller can carry out this work by using subcontractors, including other companies in the Lyse Group, if the data is anonymized.**

### 2.1.2 User Data Collection process (Personal and electric data) (C+P)

All the different type of data will be process as follows:

- Personal data will be collected in line with a customer relationship to be able to have customer support etc.
  - Address, Area, phone number, email
  - Name of legal owner
  - Number of residents, Done by NTNU after signing a Data processing agreement.
• Power Meter data will be collected to get consumption data from each pilot site.

• EV- charging data.
  o Consumption
  o Start/stop Transaction
  o State of charging

• PV- production data
  o Production data

• Battery data.
  o State of charge
  o Charge/discharge rate

• Floor heating and water heater
  o Consumption
  o State of device on/off
  o Set point temperature

Data available in the INVADE Platform:
  o User personal: anonymized, (Random Identifier)
  o User: Production Data, consumption data, EV data, Storage data, Floor heating data and water heating data. (state of power)

2.1.3 User data Exchange (P)

All data between the INVADE platform and the Smartly Platform will be anonymized, and the INVADE platform (eSmart) will not be able to trace the data back to a customer. The INVADE platform will only get a random identifier to establish a site in the platform to enable services based on the algorithms for the project. Anyhow there will be a Data processing agreement between Smartly AS and eSmart before starting sending/sharing data. The agreement will regulate how the data shall be handled and must be according to the GDPR.
The Data processing agreement will be based on guidelines from “Data Tilsynet “ (the Norwegian department for approving data protection procedures / agreements)

2.1.4 Procedures for user software data storage and deleting processes (C, P)

The data storage and deleting process between Smartly cloud and the INVADE platform will be described in the Data processing agreement and will be handled according to this.

The data storage and the deleting process between smartly cloud and the end customer (pilots) will be according to GDPR both personal and technical data.

All data will be stored in the Lyse Data-Lake until the end of the project according to the contract. The data will then be disconnected the end customer and anonymized.

The physical contracts will be locked in a dedicated room at the Lyse Office.

2.2 Dutch Pilot

The Dutch pilot takes place in three domains:

- Households ➔ GreenFlux
- Office spaces ➔ GreenFlux & Elaad
- Public Domain ➔ Elaad

2.2.1 Customer / Participant recruitment process (C)

1) Households

Pilot participants are recruited among existing GreenFlux customers. With these customers GreenFlux already has an existing agreement in place about being allowed to read out the metering data. With regard to this, the GreenFlux general agreements apply. This agreement is high level and basically states that the privacy and data protection laws need to be followed.
With respect to INVADE, the data collection does not change. No significantly different data will be gathered, this data will only be used to:

1. Give input to eSmart
2. Base the smart charging schemes on

With respect to 1: Data shared with eSmart will be anonymized. eSmart will just get information about ‘a’ household with a random identifier. eSmart will not get any personal or location data.

With respect to 2: Smart charging can obviously have a big impact on a person, since if something goes wrong, he or she might not be able to use the car (although many fall backs are implemented to prevent this in case of technical difficulties). This is obviously explained to the participants and they need to sign that they agree. However, this has nothing to do with data management and data protection, as these are control signals to the charging station, not data coming from the charging station.

*The part of the GreenFlux general agreement that covers the protection of personal data.*

23. **Obligations from the Wet bescherming personal data and the Telecommunications Act.**

- 23.1 The parties are obliged to cooperate mutually with each other in order to enable the other party to comply with its obligations under the Personal Data Protection Act (Wbp) and, in so far as GreenFlux is concerned, to comply with the Telecommunications Act.
23.2 The Client shall always and in a timely manner inform GreenFlux whether any processing within the framework of an Agreement is covered by the Wbp and whether this processing has been registered with the Dutch Data Protection Authority or with the Data Protection Officer of the Client. As far as the obligation(s) referred to in this article entails or entails costs or costs for GreenFlux, the Client shall reimburse these, as laid down in the Agreement.

23.3 The Client shall ensure that the controller within the meaning of the Wbp will comply with all obligations of the Wbp. The Client indemnifies GreenFlux against claims from third parties that may be instituted against GreenFlux on the grounds of the Wbp in connection with the activities in accordance with the Agreement.

2) Office spaces

In case of smart charging at an office or car park, the constraints on data protection are more relaxed. In this case, all GreenFlux knows is the location, which for the INVADE pilot will be:

- 70 chargers at the head-office of Enexis, a Dutch grid operator
- 82 chargers at the High-Tech Campus in Eindhoven
- 80 chargers at the Schneider office
So GreenFlux can make a fair assumption that the people charging at the charging station will be working at or working with Enexis, a Schneider or any of the 120 companies on the High-Tech Campus but has no clue about who is actually using the charging station. All the information GreenFlux has and needs is data from the charging station and an identifier of the customer. With this identifier, GreenFlux can check whether this person is allowed to charge and to which party the invoice needs to be sent, GreenFlux cannot use this identifier to retrieve personal data, only the party the customer has a contract with knows the relation between the personal data and the identifier.

The pilot locations have agreed to participate in the INVADE project as part of a technical service from GreenFlux to this location to prevent grid congestion, optimize local renewable energy and make use of dynamic pricing.

The smart charging is executed on a socket level, not on a personal level. Should one of the users need a higher capacity this can be done via an App. There are two possibilities for this:

- The user puts in the socket ID directly into the app and requests a higher priority for this socket
• The user puts in his customer identifier and requests for a higher priority. In the latter case the GreenFlux platform will look for the socket at which this identifier has an active transaction running.

In both cases, no personal data is used in the GreenFlux/eSmart algorithms. All personal inputs are transferred to technical requests belonging to a specific socket, which by design cannot be traced back to personal data.

3) Public domain

For the 500 to 700 public chargers used in this pilot the situation is very similar to the offices domain with the important difference that the charging stations are spread out across a much wider area, and since they are on public grounds it is even more difficult to make assumptions about why someone parked their EV at that particular spot. Where in the office scenario the chargers are usually on office grounds, here the public location has no particular link to any particular building in the neighbourhood.

Elaad is just a CPO (charge point operator) and has no customers of its own. It only makes infrastructure available to customers from EMSPs (Emobility Service Provider). The user uses their card at the charging station, we then get an ID that is not linked to any particular person, and we forward that ID to EMSPs to check if this session is allowed. We don't get personal data back from the EMSP, only a yes or no.

The following picture explains how the registration of EV-drivers and charging sessions works:
Registration: The EV driver signs up with an E-mobility Service Provider (EMSP). In return the EV driver receives a charging card, to be used at charging stations. The EMSP registers the unique ID of this card in either a centralized EMSP register (as shown in picture) or directly (not shown) with the CPOs it has contracts with. This registration consists of nothing more than the unique card ID and the EMSP ID. No EV driver personal data is shared, this is only used to check if the card ID is still valid and which EMSP to send the transaction details and invoice to. Only the EMSP knows who the user is.

Charging: The EV driver starts a charging session at a station by using his ID card. Here also, only the unique card ID is read by the charging station and nothing more. The charging station then sends this ID to the CPO to check if charging sessions are allowed with this ID. The CPO either checks in the EMSP register or with the EMSP directly. The register or EMSP doesn’t share any data in the reply, only a yes or no. If yes, the EMSP will accept the costs for the charging session. If no, the charging station will not start charging.

Invoicing: When the charging session is done, the CPO sends the transaction details with meter values to the EMSP that accepted charging on the card ID. Here also, no
details about the user is shared by the EMSP. The EMSP pays the CPO for the session and the transaction will show up on the regular invoices from EMSP to the EV driver. Nowhere in the process, or outside of this process, does the CPO have access to information that might be combined with the charging card ID to deduce the identity of the EV driver. The ID card can therefore not be marked as personal information.

2.2.2 User Data Collection process (Personal and electric data) (C+P)

In this pilot, no personal data is collected, only technical data about the different chargers.

All the data that are going to be available in the INVADE Platform are:

- Measurement data from the charging stations
  - StartTransaction
  - StopTransaction
  - kWh
  - A
- Measurement data from the pilot sites
  - Consumption from inflexible loads
  - Production from local renewable energy
- Maximum grid capacity

Regarding the User production or consumption data:

- Will be part of the INVADE platform, but only related to a location not to a person. This location will also not consist of an address, but of an identifier. eSmart does not need to know where the specific pilot sites are. E.g. for the office pilot they will get three location identifiers, but they will not know which identifier belongs to which pilot location.

Some details about what information is required in INVADE regarding the measurement data from the charging stations:

- StartTransaction
- StopTransaction
Measurement data from the pilot sites:

- Consumption from inflexible loads
- Production from local renewable energy

Maximum grid capacity:

State of Charge is not known (is not charged by most cars) and is therefore also not used in the algorithms. Estimations of the state of charge are possible by means of statistical data-analysis but will only work in the office-pilots since with single cars at households the standard deviations will be too large.

### 2.2.3 User data Exchange (P)

For data exchange, the OCMP protocols is used. This protocol for smart charging electrical vehicles is based on available capacity that is divided by the DSO. Although the Open Smart Charging Protocol (OSCP) protocol offers these kind of functionalities Open Capacity Management Protocol (OCMP) is complementary to OSCP 1.0. OCMP is a development name to the INVADE pilot project specific version of OSCP.

The following overview shows the different data components between Charge Station Operator (CSO) and Capacity Management Operator (CMO).
2.2.4 Procedures for user software data storage and deleting processes (C, P)

There is no personal data exchanged. Both GreenFlux and Elaad follow the rules of GDPR which means that all data that is relevant for the business is stored as long as there is a relation with the customer and direct relation between activities and data. When the relation between parties is finished data is deleted as far as this is allowed by the laws for keeping records and data for tax regulations. Historical data is backup-ed to be able to retrieve data for proof of transactions.
2.3 Spanish Pilot: EPESA

The pilot in Spain refers to PUC – 2, where a centralized battery is installed at a secondary substation and provides flexibility services to the DSO and BRP. The flexibility is managed by the FO through the Integrated Invade Platform (IIP).

2.3.1 Customer / Participant recruitment process. (C)

In the Spanish pilot there will be no direct contact with end customers. As described above, the users of the platform will be the DSO and the BRP, therefore the recruitment process for participants is not applicable in the Spanish pilot.

For this reason, there will be no contracts type C; on the contrary there will figure two contracts type E; one between the DSO (EPESA) and the FO (MERCATOR) and other between the BRP and the FO, where all the terms in which the users use the flexibility services are described.

Declining fees must also be part of the contracts, since the FO might need to pay a penalty to the DSO or BRP in the occasions where it cannot satisfy the flexibility request sent by the SESP / FO.

In a contract between DSO/BRP – FO the following conditions are specified:

- Maximum power [kW] that the DSO or BRP can request to the FO
- Time in which the DSO and BRP can request flexibility
- Maximum duration of an activation
- Minimum time between activations
- Maximum number of activations for a specific period
- Cost for reserving capacity – a fixed fee can be agreed between parties
- Cost for activation in work-days [€/kWh]
- Cost for activation in non-work days [€/kWh]

In addition to this, some general information figures in the contracts, which is listed below:

- Counter party
- Contract type
- Signing date
- Validity date
• Type of renewal

Within the Spanish pilot, a separate contract between the DSO and the BRP will be set up in order to establish the confidentiality terms in which the data is used between these two entities.

2.3.2 User Data Collection process (Personal and electric data) (C+P)

What kind of data is expected to be collected from the participant?

- Personal, Technical Data
  - In the Spanish pilot there will be no collection of personal data, only technical data.

- Data to be available in the INVADE Platform
  - All necessary data for the platform to perform its operations.

- User: Contract names or data:
  - Company name and other information which is needed in the billing process.

- User: Production, Consumption, storage data:
  - All the storage data from the battery which is needed for the platform to perform its operations.

2.3.3 User data Exchange (P)

During the INVADE project, the data flow from the pilot users to the INVADE platform will be done through a communication API. This will be data needed for the platform to run predictions, perform optimizations and send control signals.

The platform will receive data from the battery storage corresponding to its state of charge (SOC) at a certain time. This data is sent in periodic time intervals, in order to allow the platform algorithm to be able to evaluate whether it can (or can’t) respond positively to the flexibility requests it receives.

The data that the platform receives from the BRP corresponds to the data present in a flexibility request, e.g. a certain amount of energy [kWh] at a specific time.
Regarding the DSO, the platform will also receive information present in a flexibility request (energy and time) and it is yet being defined whether the platform receives information regarding grid topology or energy readings as well.

2.3.4 Procedures for user software data storage and deleting processes (C, P)

No personal data will be stored from the users, as no end users will be involved in the pilot.

2.4 Bulgarian Pilot

2.4.1 Customer / Participant recruitment process (C)

There are 2 domains of customers in pilot Albena:

1. Tourists and all activities that are carried out for the service of tourists
2. EVs that are charged in Albena area. This can be EVs that belong to Albena as well as EVs that are property of tourists

In the first case, the tourists themselves consume power on room level. The aggregation of the consumed energy of all rooms is being measured on main distribution board level and therefore no personal data will be gathered or used. There are a lot of activities that are carried out for a good service of the customers. They represent an indirect customer consume, in example the production and storage of domestic hot water. In Albena pilot this represents the only possible controllable load without interference with the customer satisfaction. The controllable load of the boilers is measured by a smart meter and switched on and of by a dedicated industrial controller M251 by Schneider Electric. In this case again, no personal data can be gathered and used due to the fact that the hot water production is centralized in a dedicated boiler room. Therefore, there is no need of contract to be made with the final customer regarding data of personal used energy.

In the second case, however, Albena pilot will use the battery of EVs that belong to third parties – in this case existing final customers that are already on site. Therefore, their permission will be necessary to use their EV-battery and the data we are about to save, process and store for a certain period of time. The contracts will be signed additionally and cannot be part of other contracts with the customer, especially not part of the booking contract due to diverse legal complications. Also, important reason for this
decision is the fact, that a lot of local guests are coming to the beach for a couple of hours a day, without staying at our hotels.

As part of the ongoing transport transition, Albena owns a number of electric shuttle buses and golf cabbies that are managed and charged by us. Contract in this case is not needed.

The process of charging:

1. Customer enters the area of Albena. A parking ticket with unique ID number has been printed out and taken by the customer.

2. The customer parks their EV on a spot near a charging station and connects the car to the charging point.

3. Customer shows the parking ticket to the scanner of the charging point. This way the car is identified as a property customer of Albena.

4. Charging point asks the customer if he is willing to participate and if he agrees to the terms and conditions which are shown visible on the charging point and on a dedicated web site.

5. A click on the “I agree” button is considered as a condition to start the charging process. Limitations of the charging or discharging process can be additionally defined by the customer.

6. The process stops automatically when the EV is disconnected from the charging point. Information summery is sent to the parking system which then reduces the parking fee that needs to be paid.

2.4.2 User Data Collection process (Personal and electric data) (C+P)

In order to keep the process simple and as general as possible, and due to the fact that no cash money will be paid off but rather price reductions of the parking fees, no registration process will be needed. To each car will be a unique system number appointed.

- Type of data is expected to be collected from the participant.
  - No Personal data can be collected. Technical Data regarding the details of a normal charging process are required – car model, battery model, MaxAvailableChargingRate, each EV will have its own unique identifier.
Data to be available in the INVADE Platform

- Charging stations measurements: ChargingStartTime, ChargingStopTime, ChargingDuration, EnergyCharged, EnergyDischarged, CurrentSOC, AverageChargingCurrent, AverageDischargingCurrent, MaxAvailableDOD, MinimumSOC

- User: contract data
  - None, it’s not important for the INVADE platform. It’s not going to be a base for a decision making

- User: Storage Data:
  - Capacity for charge, capacity of discharge, consumption data.

Invade needs to know how much capacity it has on disposal – if it’s positive or negative. In this term aggregated information of State of Charge and possible charge and discharge rates of all units that are connected to the grid and participate in INVADE should be constantly online and reporting. Therefore, the following parameters need to be reported, stored and statistically processed:

- ID
- SOC
- Possible + and – DOD (depth of discharge)
- MaxChargeCurrent and MaxDischargeCurrent

### 2.4.3 User data Exchange. (P)

The data exchange between Albena Pilot and the INVADE platform is an important part of the project. The information and signals that flow from the Albena SCADA to the IIP are the base for making a decision by the IIP. Then, this decision with the corresponding information is being sent back to the Albena SCADA for fulfilment.

The following data will be transferred from Albena SCADA to the IIP:

- Battery current status

The status of the battery includes SOC, possible DOD, MaxChargeCurrent, MaxDischargeCurrent, RealEnergyInput, RealEnergyOutput, Voltage levels, status of the inverters.
• PV generation rate

PV generation rate includes the PVGenerationCurrent, PVGenerationPower, RealEnergyOut, Voltage levels

• Status of controllable loads

As already mentioned, in pilot Albena the controllable loads are presented by the production of Domestic Hot Water (DHW) and its storage in tanks. The controller of this system constantly reports the Albena SCADA system CurrentThermalSOC, MaxChargePower and MaxNegativePower.

• Status of uncontrollable loads. Metering data of all uncontrollable loads – CurrentRealPower, CurrentApparentPower, CurrentReactivePower, cosPhi, Voltage levels.

3 INVADE Platform Data Storage processing / analytics and Security

3.1.1 Tenants

The INVADE platform architecture support multi-tenancy. Each pilot will be set up as a separate tenant in Microsoft Azure to ensure no data is visible across pilot companies. GreenFlux and Elaad will be setup with separate tenants since these are separate companies within the Dutch pilot.
4 References / Contracts (this section will show examples of contracts)

4.1 Lyse contract

Data process agreement:

<table>
<thead>
<tr>
<th>Contract no</th>
<th>&lt;CONTRACTNUMBER&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Processing Agreement</td>
<td></td>
</tr>
<tr>
<td>Revision number:</td>
<td>Date:</td>
</tr>
<tr>
<td>Prepared by:</td>
<td>Date:</td>
</tr>
<tr>
<td>Verified by:</td>
<td>Date:</td>
</tr>
<tr>
<td>Approved by:</td>
<td>Date:</td>
</tr>
</tbody>
</table>
Data processing agreement

between

[BOOKMARK2]

and

[<COMPANYNAME]
This Data Processing Agreement shall regulate the Data Processor's processing of Personal Data on behalf of the Data Controller pursuant to agreements entered into between the Parties ('the Main Agreement(s)').

The purpose of the Data Processing Agreement is to establish a binding agreement on processing of Personal Data between the Parties as required pursuant to Norwegian law. The Parties agree that if laws or the supervisory authorities' guidelines change significantly, the provisions of this Data Processing Agreement shall be revised so that they as far as possible reflect the Parties' original principles when implementing this Data Processing Agreement.

The Data Processing Agreement shall ensure that Personal Data relating to the Data Subjects are not used unlawfully or fall into the hands of unauthorised parties, and that the Processing otherwise meets the requirements in the data protection legislation in force at all times, and that the Data Subjects' rights are safeguarded.

This Data Processing Agreement replaces all prior agreements entered into concerning processing of Personal Data. In the event of a conflict between provisions included in this Data Processing Agreement and other agreements between the Parties, this Data Processing Agreement shall take precedence.

[In the event of call-offs under framework agreements, the Data Processing Agreement shall apply in full between the party making the call-off and the supplier (Data Controller)].

2. DEFINITIONS

In connection with this Data Processing Agreement, the terms ‘Personal Data’, ‘Data Controller’, ‘Data Processor’, ‘Data Subject’, ‘Processing’ and ‘Personal Data Breach’ shall have the same meaning as what follows from the Norwegian data protection legislation in force at all times.

3. PURPOSE OF PROCESSING, CATEGORIES OF DATA SUBJECTS AND TYPE OF PERSONAL DATA

Personal Data shall only be processed on behalf of the Data Controller.

1) Services and Purpose

The Processing applies to all existing services agreed between the Parties in accordance with the Main Agreement(s) where the Data Processor processes Personal Data on behalf of the Data Controller.

The subject, nature and purpose of the Processing are defined as part of the services set out in the Main Agreement(s).

2) Categories of Data Subjects

The categories of Data Subjects whose Personal Data are processed comprise the following (tick):

- The Data Controller's customers
- Employees, including voluntary and temporary employees
- Suppliers
- Others

3) Type of Personal Data

The Personal Data processed comprise the following types of Personal Data (tick):
4.2 Greenflux / Elaad contracts

Elaad and GreenFlux use existing customers with existing contracts for the Dutch pilots in the INVADE project. This is part of the regular offering to make use of smart charging functionalities or offer them via the charge stations. This includes the functionalities from INVADE, which is not separately mentioned.