EDDIE

EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

D3.1

EDDIE Consent Façade

DOCUMENT INFORMATION

WP number and title	WP3 – EDDIE data access components
Deliverable number	D3.1
Version Number	1.0
Document Reference	10.5281/zenodo.11638268
Lead Beneficiary	FHO
Deliverable type	DEM – Demonstrator, pilot, prototype
Planned deliverable date	30/06/2024
Date of Issue	20/02/2024
Dissemination level	PU
Author(s)	FHO, PON
Contributor(s)	FHO, PON, ENT
Keywords	Consent façade, permission façade, AIIDA, data needs

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16	ETA+ GmbH	**ETP**	**DE**

DOCUMENT HISTORY

Version	Date	Status	Author(s), Reviewer	Description
V0.1	20/02/2024	Draft	Marc Kurz	Document Template
V0.2	01/04/2024	Draft	Stefan Grünberger	Content collection
V0.5	05/05/2024	Draft	Stefan Grünberger	First draft of document
V0.7	15/05/2024	Draft	Stefan Grünberger	Ready for internal review
V0.8	23/05/2024	Draft	Shievam Kashyap	Partly Internal review
V0.9	27/05/2024	Draft	Stefan Grünberger	Sent to reviewers
V1.0	20/06/2024	Release	Stefan Grünberger	Incorporated comments of project coordinator; Final document created

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DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Acronyms/ Abbreviations	Description
PA	Permission Administrator
MDA	Metered Data Administrator
EP	Eligible Party
RC	Region Connector
API	Application Programming Interface
VHMD	Validated Historical Metering Data

EXECUTIVE SUMMARY

The EDDIE Consent Interface is an innovative solution designed to streamline and standardize the process of granting and managing permissions for accessing energy data across the European Union. This document provides an overview of the Consent Interface, which is a core component of the EDDIE framework funded by the European Union.

The primary purpose of this document is to detail the implementation and functionality of the EDDIE Consent Interface, which is part of the work package focused on EDDIE data access components. The Consent Interface is a crucial element designed to facilitate the process through which customers can grant access to their energy data. This is especially important given the diverse energy data infrastructures among EU member states, each with its own regulations and implementations.

A key motivation for developing the permission interface is the European Union Directive (EU) 2019/944, which mandates that all customers have the right to access their energy data. However, the directive does not prescribe a uniform implementation method, resulting in varied data access mechanisms across member states. The permission interface addresses these discrepancies by providing a unified and streamlined user flow for customers across different countries.

The document showcases a step-by-step demonstration of the user flow for both, for granting permissions for historical metering data, as well as for near real-time data via AIIDA (Administrative Inhouse Infrastructure for Data Access).

The EDDIE Consent Interface represents a significant advancement in the way energy data access permissions are managed across the EU. By providing a standardized and user-friendly interface, the interface simplifies the process for both customers and eligible parties, ensuring compliance with EU regulations while enhancing data transparency and security. For consumers, it offers a clear, consistent method to manage who can access their energy data, simplifying the process of granting and revoking permissions, and thereby enhancing control over personal data. For eligible parties, it ensures compliance with EU directives through a standardized permission management system, and facilitates seamless integration into existing web applications, reducing the technical burden.

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1 INTRODUCTION

1.1   Purpose of the Document

The purpose of this document reflects the deliverable 3.1 (D3.1) - EDDIE Consent Facade, which is part of work package 3 (EDDIE data access components). It showcases the functionality the Consent Facade, a core part of the EDDIE framework.

As this deliverable is of the type *demonstrator (DEM)*, we provide a step by step presentation of the usage flow, when final customers want to grant access to their energy data. This is done on the example of some of the countries, that we currently support.

This document is based on the version of the EDDIE framework at the time of writing (April 2024).

1.2   Scope and Intended Audience

While the permission façade is integral part of the EDDIE framework, it is the only visual part of the framework which interacts with final customers. This document is for an eligible party (EP) and their technical staff, which is understood as any third party that is entrusted by a final customer to provide his or her data, that intends to use the EDDIE framework for their businesses.

Due to a change in the Commission Implementing Regulation (EU) 2023/1162 by the European Commission [1], the term *consent* has been renamed to *permission* to correctly refer to the current legal wording and to avoid confusion with terminology used with respect to GDPR. While the name of this deliverable is not changed because of administrative reasons, the following terms will be used in the rest of this document:

- consent facade = permission facade
- a consent = a permission

1.3   Structure of the Document

The first part of chapter 2 describes the motivation and the need for the permission facade. As this deliverable is of type *demonstrator*, the process of how final customers can give their permission for sharing energy data using the EDDIE permission façade is illustrated and described using a series of screenshots in chapter 2.2**Structure of the permission facade**. Based on the knowledge gained since the project started, the initially proposed idea of the permission facade in EDDIE framework had to be adapted. These changes in the structure of the permission façade, as well as configurational concepts of the permission façade are

described in the final chapter 2.3. This also briefly describes the configuration of the permission façade and how it's meant to be included on an EP's website.

While this document showcases the working solution after 16 months from project start, it must also be clearly stated, that there might still be changes until the final version at the end of the project is released.

2 Permission Facade

2.1   Introduction – Why do we need a permission facade?

On the one hand, the European Union describes in the Directive (EU) 2019/944 of the Clean Energy for all Europeans Package [2], that all customers have the right to access their energy data. On the other hand, it does not provide any strict regulations about how members states have to realize this. The member states rely on the reference model with a flexibility to implement the energy data landscape in the fashion defined by them. This results into a very diverse energy data infrastructure among member states with major differences in its implementation.
The permission façade streamlines the user flow for all supported countries in an easy and comprehensible way.

2.2   Demonstration of the user flow

In this chapter the process how final customers can access their energy data via EDDIE is illustrated. This is based on a series of screenshots made from the latest version of the EDDIE framework at the time of writing this document.

2.2.1   EDDIE Connect Button

The EP is responsible for defining their DataNeeds (see chapter 2.3.3) and configuring the EDDIE button, which is a key feature of the permission façade to make the permission process for final customers as easy as possible. This button is illustrated in Figure 1 and can be easily integrated in an EP's web application. When the final customers interact with the EDDIE button, they will be prompted by a pop-up dialog without leaving the EP's website. This dialog includes information about the requested data and instructions for the customer on how to proceed.

Figure 1: Example of the EDDIE button that can be placed on a website.

First, final customers are required to select their country from a drop-down menu (see), showing all supported countries that are set in the configuration of the EDDIE framework.

Figure 2: Country selection.

Afterwards, based on their previous selection, they can select their Permission Administrator (PA) from a list which contains supported PAs only. As the further information required from the final customer varies depending on the selected PA, the dialog will load specific additional fields required for the permission request. In the following examples, these are the accounting point ID for Austria (see Figure 3a) on the one hand, or the refresh token (which can be generated by the user in the DataHub) and metering point for Denmark (see Figure 3b) on the other hand.
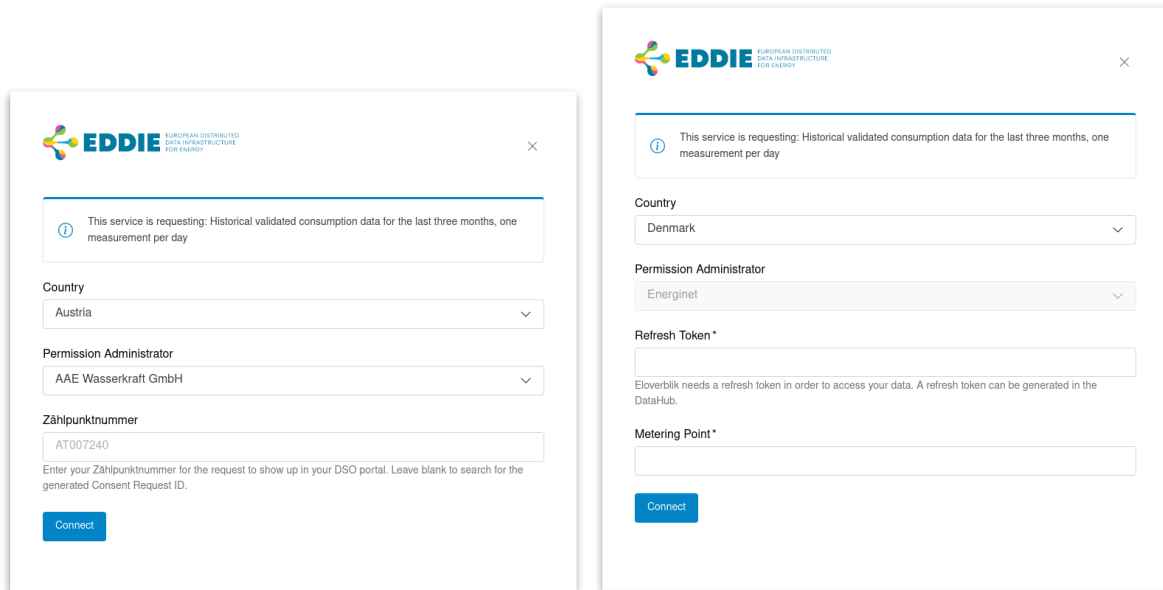
Figure 3: a) PA selection on the example of Austria (left). b) PA selection on the example of Denmark (right).

For Datadis (see Figure 4), which is a data exchange platform by electricity distributors in Spain, for final customers and EPs to get access to energy data. Required information to enter is either a DNI (a personal identification document for Spanish citizen), or a Nif (tax identification number), and a CUPS, which can be seen as the metering point ID.
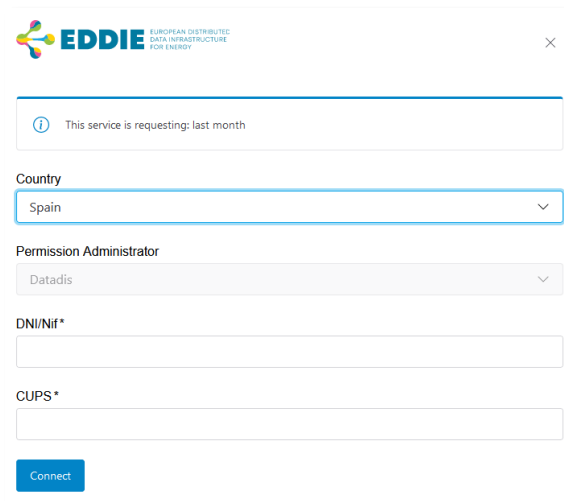

Figure 4: PA selection on the example of Datadis/Spain.

When sending the permission request, which happens when final customers click on the "Connect" button, they will be provided with status updates and instructions on how to

proceed. The following two figures show examples of an error message (see Figure 5, where a data request has been made with a configuration not supported by the selected DSO), and
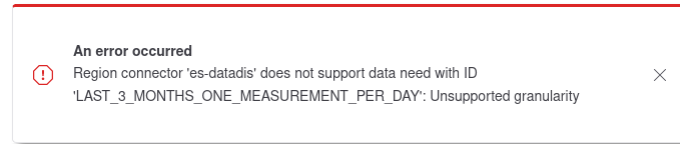

Figure 5: Example for an error message after trying to connect.

the status information after successfully sending a request to the PA (see Figure 6, showing that the request has been sent and it's now being waited for an acknowledgement/response from the permission administrator).
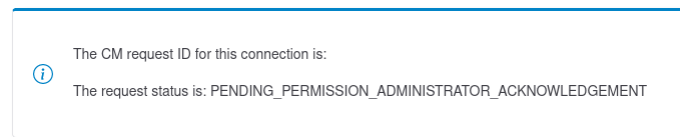
Figure 6: Example with status information.

The next steps vary depending on the selection of country and PA. Exemplarily in the case of Austria, the final customer will be redirected directly to the web portal of his selected PA, where he needs to login (see Figure 7).

Figure 7: Login at the web portal of the Austrian PA *LINZ NETZ GmbH*.

Next, the customer can select a request from a list of (pending) data requests (see Figure 8, parts have been blurred for privacy reasons). When a new request is displayed in that list

mainly depends on the PA and its internal processes. We have experienced both, instant availability but also hours of waiting time for a request to become available in the portal. When the final customer sel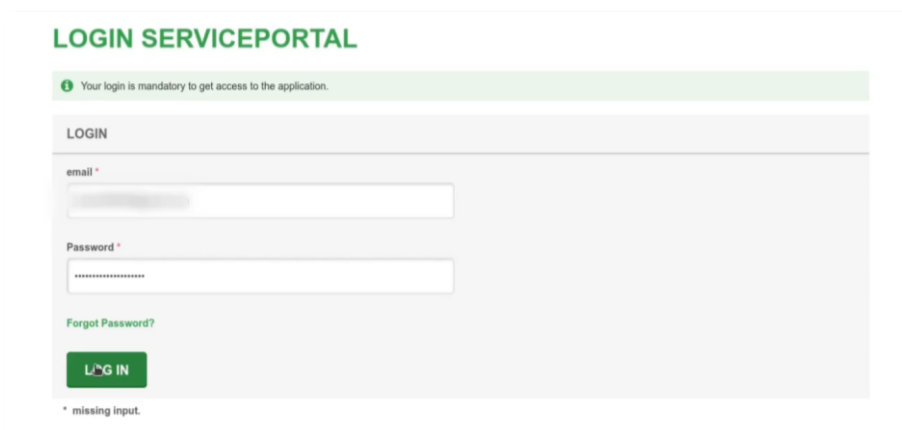ects a pending request, he can verify the request ID displayed in the permission façade's popup window with the one presented in the PA's web portal, as well as the correct metering point, the requesting party, the data type, and the timeframe. Finally, he either accepts or rejects the request. Afterwards the result will be again displayed in the permission façade popup window.
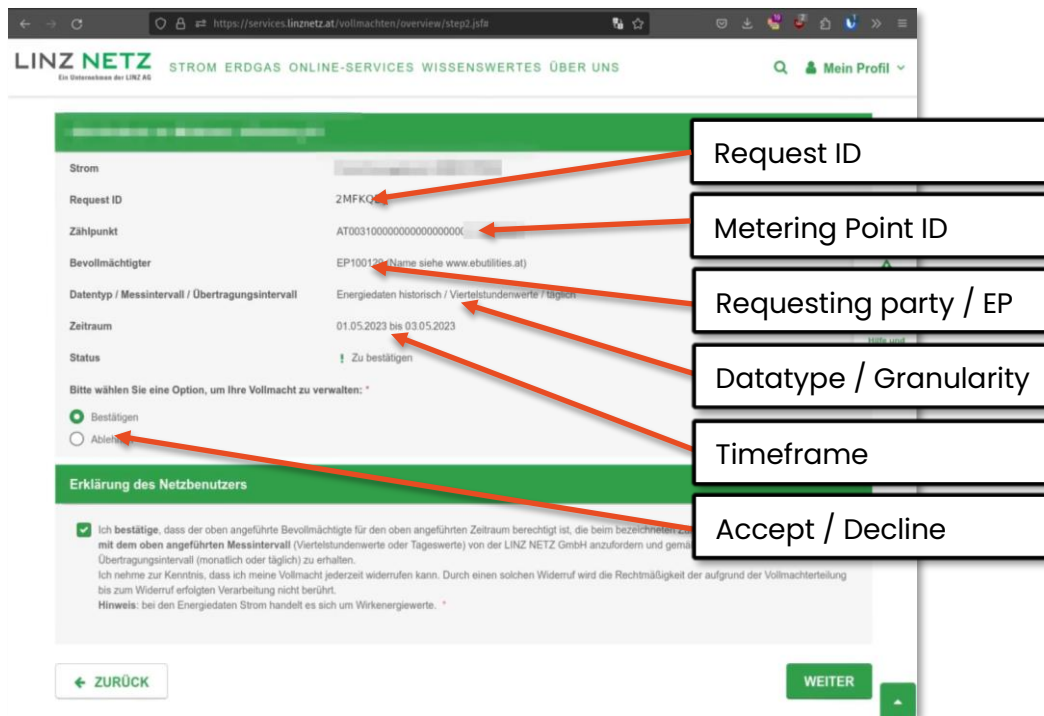
Figure 8: Acceptance of a selected pending request.

2.2.2   AIIDA (Administrative Inhouse Infrastructure for Data Access)

The infrastructure used for access to near real-time data is called AIIDA. AIIDA itself also implements a Permission Façade where the final customers can see a list of their permissions. They can also manage existing permissions and accept new permissions to share near real-time data. The initial prototype of a web frontend can be seen in the following two images. A new permission can be added by pasting the *AIIDA Code* into the corresponding text field, which can be seen below the EDDIE logo in Figure 9.
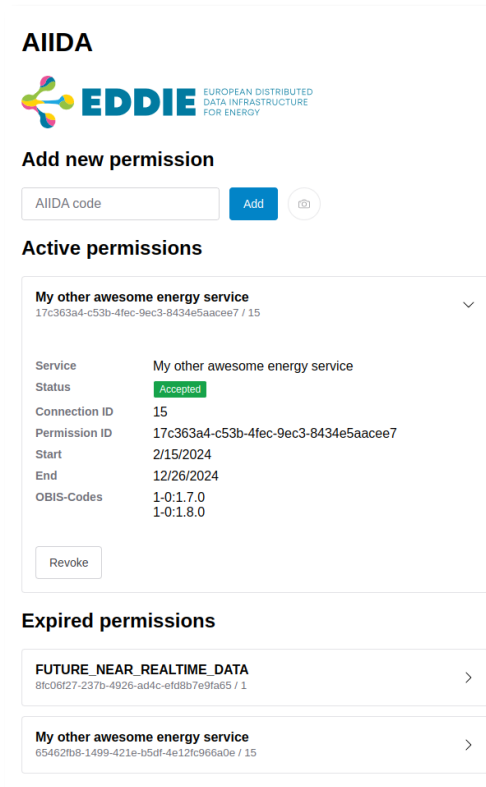
Figure 9: Example of AIIDA web UI showing active and expired permissions.

If a new permission is added, a popup with all the details about the data to be shared is presented to the final customer (see Figure 10). It contains information about the start and end date for the permission, as well as information about the type of data (in Austria in form of OBIS codes). Once the user clicks on *Confirm,* the data sharing is automatically started in the background. All the details about permissions are stored locally on AIIDA.
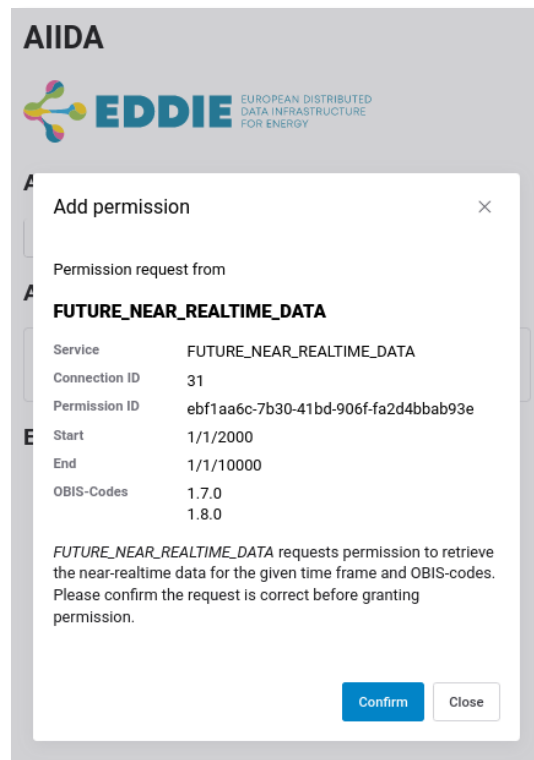
Figure 10: Example of AIIDA popup for permission request confirmation.

The screenshots are taken from an early development prototype. As the permission façade is actively being worked on it is subject to change for the final version.

2.3   Implementation and configuration

2.3.1   Structure of the permission facade

In contrast to the initial proposal of the EDDIE framework, the permission facade is implemented in a modular way. The driver for this decision is that for each permission administrator, a specific user interface is needed.
As an example, let's assume that a user (= final customer) wants to grant permission to access their consumption data. This process is illustrated in Figure 11.

Figure 11: Process how users can grant permission.

1. The user interacts with the application of an eligible party which requests consumption data via the EDDIE Framework. The EDDIE popup is embedded into the EP application by including the *EDDIE Connect Button* that triggers the popup in the web application.
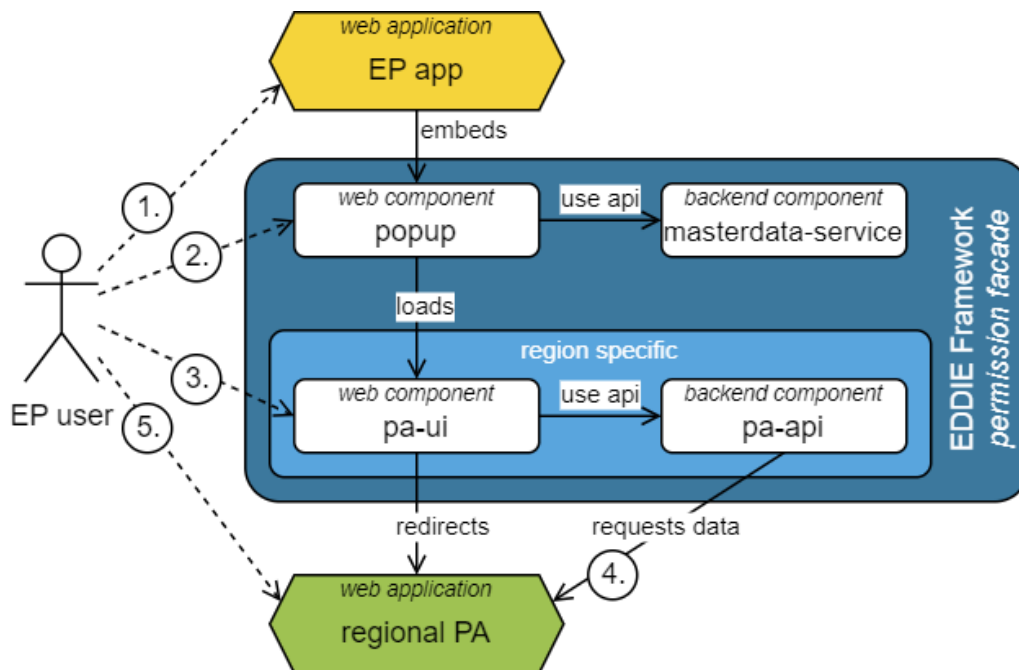2. After activating the popup, the user selects a permission administrator. Using the master data service the popup invokes the correct region-specific part of the user interface from the EDDIE Framework into the browser, which is also shipped as a web component.
3. The region-specific data is entered into the UI.
4. The corresponding backend service is requesting the desired data from the metered-data administrator.
5. The user grants access to her data on the website of the according permission administrator.

So, the permission facade is divided in two parts (see Figure 12). First, there is a separation between the backend components and the web components implemented as HTML5 custom elements. This provides a way to integrate the EDDIE user interface seamlessly into the eligible party application.

The other separation is between general permission-process-related functionality and the region-specific parts. This enables easy extension of the EDDIE framework to support many regions in a robust way.
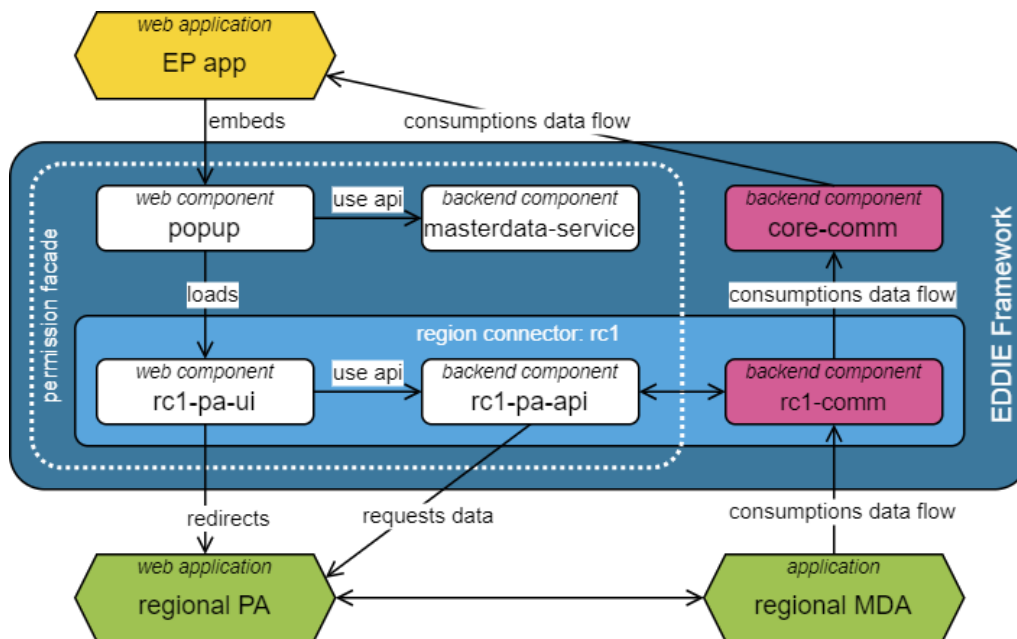
Figure 12: Web and backend component separation & consumption data flow.

2.3.2   Integration of the EDDIE framework

For the final customer the visual part of the EDDIE framework is provided in form of the EDDIE button as a web component. To use the EDDIE button in an eligible party application, the EP application has to include the button in its HTML page. It can be integrated into a frontend-based application (e.g. a single-page application) or into a server rendered web application as it's implemented using standard HTML custom elements. This and further information can also be found in the file OPERATION.md of the EDDIE project on GitHub, once the project is made open source as intended.

The following source code snippet (see Figure 13) illustrates, that the integration of this EDDIE button can be done with only a couple of lines of code:

```
<script type="module" src="${eddieUrl}/lib/eddie-components.js"></script>
<!-- ... -->
<eddie-connect-button
        connection-id="1"
        data-need-id="LAST_3_MONTHS_ONE_MEASUREMENT_PER_DAY">
</eddie-connect-button>
```

Figure 13: Source code for EDDIE button integration.

The `eddie-connect-button` element can be configured using the following attributes listed in Table 1. The `connection-id` has to be generated by the EP application. It is included in the messages sent by EDDIE so that the button instance can match with the data stream that is created using it. The EP application is also responsible for storing previous connection IDs and linking them to the users of the EP application. Each connection ID must be used only once to create a uniquely identifiable connection with EDDIE.

Attribute	Type	Description	Required
`connection-id`	String	The connection ID is generated by the EP application integrating EDDIE and is used to identify generated requests.	Yes
`data-need-id`	String	ID of a pre-configured data need. Required if allow-data-need-selection is not true.	Yes
`allow-data-need-selection`	Boolean	If true, the user can select a pre-configured data need. This feature is intended for development purposes only.	No
`permission-administrator`	String	Sets a fixed permission administrator to use by its ID.	No
`accounting-point-id`	String	Sets a fixed accounting point id for permission administrators supporting this feature.	No
`remember-permission-administrator`	Boolean	If true, the most recent permission administrator is stored and loaded from local storage.	No

Table 1: Configuration parameters of the EDDIE button.

When the configuration is correct and the EDDIE button can be loaded from the EDDIE instance, it will look like illustrated in Figure 1.

2.3.3 Permission information / DataNeeds

To simplify the process for third parties to standardize their data requirements across various Region Connectors, we have introduced a concept known as *DataNeed*. A DataNeed represents a detailed specification of a service's data requirements. This specification includes elements such as the type of data required, the data's time frame, its resolution, and other service-specific requirements. It also assists third parties in presenting the data

requirements to the user. As a result, users can see and verify which data (and for which time) is requested for a dedicated service and for which purpose this data is to be used. An EP has to define this DataNeed in advance and configure the EDDIE button accordingly with the correct DataNeed ID. Depending on an EP's use case(s), this can be for instance that for one service validated historical metering data (VHMD) for the last 18 months are required, while another service only needs future data [4].

DataNeeds vary in their structure depending on the type of data that shall be requested. Essentially there are three main categories at the time of writing this document: (1) for accounting point information, (2) for validated historical metering data, and (3) for near real-time data. According to the DataNeed type, additional specifiers further define its properties, such as timeframe (start and end time for which data is required), granularity (interval of data transmissions, e.g. every 15 minutes), human-readable name, description, purpose, policy and others.

The configuration of DataNeeds is in conjugation with the work summarized in chapter 6 of EDDIE deliverable D5.1 [5]. At the moment a DataNeed can be configured to be used in the following supported countries:

- **Austria**: The *Energiewirtschaftlicher Datenaustausch* (EDA) operates an information communication technology infrastructure for decentralized data exchange with 114 DSOs in Austria [6] [3]. The supported types for data requests are VHMD, accounting point master data, as well as near real-time data. The granularity for VHMD is per default set to daily, which means that the meter data administrator delivers the requested metering data on a daily basis. Additionally, there is the option for final customers to opt-in for 15 minutes intervals.

- **France** operates a decentralized data exchange with around 160 DSOs, each of them being responsible for making data exchange with third parties for their customers possible. Within the EDDIE project we focus on Enedis only, France's biggest DSO, which covers about 95% of continental metropolitan France [7]. Enedis supports requesting for accounting point master data and VHMD with a granularity of either 30 minutes or a daily interval. Requesting near real-time data is possible from a technical analysis point of view and currently under practical investigation with the Linky smart meters.

- **Denmark**: The Danish TSO *Energinet* operates a data exchange platform for all market participants in Denmark, called *ElOverblik* [8]. ElOverblik is a web portal allowing final customers to access their VHMD and manage permissions for eligible parties. It supports data request for both, accounting point masterdata and VHMD. The choice

of the granularity ranges from 15- and 30 minutes, to hourly, daily, monthly and yearly intervals.

- **Spain** operates the data exchange platform called *Datadis*, covering all of the Spanish metering points. Supported data requests include accounting point master data as well as VHMD with a granularity of an hourly interval, and 15 minutes for some cases.

3 Summary & Conclusion

This document showcases the permission facade of the EDDIE framework as of now. It showcases based on a step-by-step demonstration of the user flow for granting permissions using the EDDIE Connect Button, a key feature of the interface. Users begin by selecting their country and corresponding Permission Administrator (PA). The interface then dynamically adapts to gather the necessary information specific to the selected PA, ensuring a smooth and efficient process. The permission interface is implemented in a modular manner to accommodate the specific needs of different PAs. This modular approach ensures that each PA's unique requirements are met without compromising the user experience. Detailed instructions are provided on how to configure and integrate the EDDIE button into an eligible party's (EP) website, facilitating easy adoption and use by various stakeholders.

Additionally, the document introduces the user flow in case of AIIDA (Administrative Inhouse Infrastructure for Data Access), which is foundation component for near real-time data access. AIIDA provides a web interface for users to manage their permissions, including adding new permissions and viewing existing ones.

In conclusion, the EDDIE Consent Interface is a cornerstone of the EDDIE framework, demonstrating the project's commitment to improving digital interactions within the energy sector. By addressing the regulatory and practical challenges of energy data access, the Consent Interface paves the way for more efficient, transparent, and secure data management practices across the European Union. This document serves as both a demonstrator and a guide, offering detailed insights into the motivation, implementation, and configuration of the permission interface, thereby supporting stakeholders in adopting and leveraging this innovative solution.

4 References

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