E.DSO

SHAPING SMARTER GRIDS FOR YOUR FUTURE

Position Paper

Facilitating customers energy data management and interoperability

-DSOs' perspective-

November 2020

Contents

1. Introduction

The Clean Energy Package's Electricity Directive establishes a new framework towards a customer-centric and sustainable energy system. Since DSOs connect both the vast majority of renewable generation and customers distributed energy resources, they play a vital role in the energy transition. Apart from integrating renewable energies into their systems, they support decarbonization by fostering smart sector integration and new business models such as demand response or energy efficiency services.

To enable these new functionalities of the energy system, an efficient data management is key, especially in terms of metering data, where DSOs have a profound experience in collecting, validating, managing, and providing such data. At the same time, DSOs ensure data privacy for the customer, which is an essential safeguard for consumers in compliance with the General Data Protection Regulation (GDPR). The role of DSOs as metering data managers has traditionally been accepted, yet new requirements emerge with the energy transition.

Presently, DSOs support the electricity market with data collection and processing by administrating metering points, providing information for billing, supporting supplier switching, facilitating the settlement process, providing information to local authorities, cooperating with Transmission System Operators (TSOs), and monitoring, planning and operating their networks. Being the market facilitators, DSOs obtain the grid data, the customer data and the (flexibility) market data which they are intended to share in an efficient, transparent, and non-discriminatory way to all eligible parties. Such data exchange can be designed in different ways – bilaterally or centralized. Yet, a 'one size-fits all' option is not conceivable.

The management of data remains crucial to operate the distribution system flexibly while responding to customer needs and managing critical situations appropriately. To that end, this position paper shed lights into the role and responsibilities of DSOs as provided by the Electricity Directive, the data exchange process between the DSOs and third parties, as well as DSOs' willingness to improve cooperation with TSOs at European level for the benefit of customers, namely by pursuing an integrated system approach from which customers can benefit. Further, data exchange between system operators and customers remains important to adopt a more customer-centric approach, expecting DSOs to seek high engagement in European work streams regarding data access and interoperability.

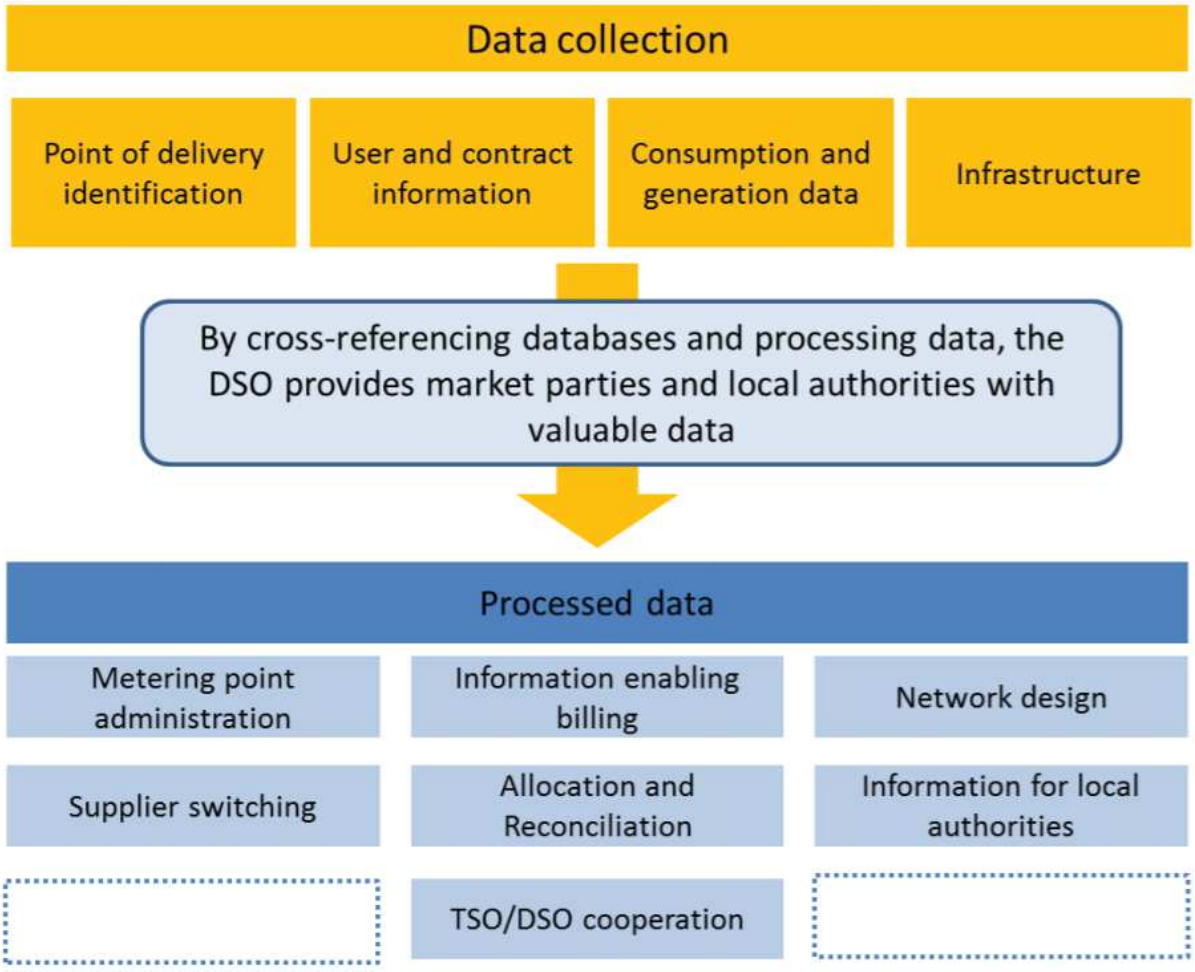
2. Status quo of data exchange between DSOs and third parties

DSOs have a long experience in data management, collecting, validating, managing, and providing data to guarantee security of supply and quality of service, as well as providing support to market activities. Additionally, high and medium voltage networks managed by DSOs (as well as producers and customers connected to them) are fully digitalized in most countries, allowing remote operation from control centers that manage multiple data flows. The processes that involve data exchange with other parties in today's DSO operations are mainly the following:

- Connection/Disconnection/Change of contractual conditions of a user
- Operation of the Distribution network
- Network Planning
- Transmission System Operator (TSO)/DSO Coordination in operation and planning
- Billing of a customer
- Supplier switching of a consumer
- Load and RES Forecasting
- Asset management
- Coordination of Public Constructions

- Outages information
- Facilitation of new services' development (Flexibility, Energy Communities, etc.)
- Implementation of Emergency and Restoration Plans
- Planning of an efficient operation scheme

Figure 1. Sample of data traditionally collected and processed by DSOs.



Source: EDSO Data management: The Role of Distribution System Operators in managing data.
N.B Depending on the country considered, the DSO may already be involved in more data processes.

As shown above, DSOs are already in charge of managing several data processes. Smart meters, particularly in countries which have or are finishing their rolling out, collect much more data than today's analogue meters, hence are leading to an evolution of the DSO's role. The increased data flow means more opportunities to make use of data, and the need to develop new and flexible technical solutions to manage these larger quantities of data, while guaranteeing data security and consumers' privacy.

2.1 Classification of data

To perform the above operations, the DSO must collect data covering a wide range of fields.

- **Contractual and User Data**

Contractual Data includes all relevant information necessary to conclude, amend or terminate a contract with a grid user. Part of these data may be exchanged with the supplier or local authorities (e.g. for taxation reasons).

- **Grid Data**

DSOs collect data related to their infrastructure to monitor, operate, plan, and develop their grids more efficiently in terms of security of operation, minimum losses, increasing the quality of service. These data include the electrical and other technical characteristics of the grid components, metered grid data coming from sensors within the grid as well as topological and geographical information of the grid. In places where smart metering has been applied, these new meters provide an excellent service as sensing devices reporting on voltage levels and outages (zero voltage) enabling the DSO to pinpoint Low Voltage grid events even before the first phone call arrives.

- **Market data**

The use of flexibility requires increased sharing of data, both existing data and new types of data. Timely access to correct data is crucial for the business model of relevant market parties. For fair market competition also a level playing field in data access and data sharing needs to be ensured, while at the same time customer privacy must be respected in compliance with General Data Protection Regulation[1].

- **Metering Data**

Metering Data is generated by the Metering Data Operator (MDO) on behalf of the customer or generator. In many countries, the MDO role is by default taken over by the DSO, however, also cases exist where other actors take this role. In the following, where content can be applied to all actors carrying out the metering data management, the term "DSO/MDO" is used to cover all options. Where DSOs carry out their role as MDOs, they have a large experience in data collection, data validation, and data storage. DSOs /MDOs are giving access to these data to authorized parties. The services provided by DSOs/MDOs will evolve with the technological advances. For example, smart meters are remotely read, and each DSO/MDO shall decide on the appropriate communication technology for data transfer (Programmable Line Communication (PLC), mobile communication etc.). An increased number of market parties will require access to metering data and the DSO/MDO is responsible to make these data available if the customer provides his/her consent.

DSOs are the optimal entity to perform the role of MDO. There are very significant economies of scale and economies of scope that demonstrate that the DSO, being already an independent operator, is the best choice to efficiently perform the role of metering operator. The experience demonstrates that in jurisdictions where a third party has been chosen to play that role, the final costs of the metering system have been extremely high, losing the obvious synergies between the DSO management systems and the smart metering system.

- **External Data**

DSO also collects various data that support their operations. Weather forecasting data is an example, which are useful for a DSO to perform Load and Renewable Energy Sources (RES) Forecasting so that the DSO can evaluate the capacity of the network in near real time operations

[1] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ L 119, 4.5.2016, p. 1–88.

Network planning requires data related to future RES installations and the development of the consumption side, via assessing different drivers such as economic growth (e.g. GDP estimations) or trends such as electrification of certain sectors.

2.2 Role and responsibilities of the DSO

DSOs are responsible for providing electricity supply with secure and reliable operation of their respective networks, and have an important role in providing information and support to all electricity market participants by acting as neutral market facilitator that enables connection of grid users to the distribution grid. The core tasks of the DSOs are defined in the Electricity Directive (**Article 31**). These include network investments, maintenance and reinforcement, voltage control, load/generation curtailment, losses management and the provision of non-discriminatory access to the grid. DSOs also collect and analyse technical data about their networks, such as voltage behaviour, load factors, power quality, grid resilience and capacity. Additionally, DSOs enable supplier switching, provide metering data from grid users to eligible parties and contribute to the market settlement.

Under the Electricity Directive, the use of flexibility in the distribution network is provided in **Article 32**. This provision stipulates an obligation for DSOs to submit a (at least) biennial network development plan to the NRA, to which the NRA can request amendments, (including among others the flexibility services needed, investments for connecting new generation capacity and new loads such as recharging points for electric vehicles, demand response, energy storage facilities, etc.)

According to **Article 34**, where smart metering systems have been implemented and DSOs are involved in data management, compliance programmes need to include specific measures to exclude discriminatory access to data from eligible parties.

According to the above obligations, the following key principles can be classified into:

- Provide access to data from third parties in a transparent and non-discriminatory way;
- Provide access for consumers to their data in near real time and enable energy billing based on market signals.
- Define clear roles and responsibilities involving data exchange and the associated interaction with third parties;
- Guarantee metering data security and consumer's privacy;
- Perform Cost-Efficient Data Management evaluations; and
- Support innovation by facilitating easy and simple access of data owners to their data.

2.3 Emerging requirements regarding data management

In order to master the challenges of decentralization of generation, increases of distributed energy sources quantity and increasing electrification of different sectors, from a DSO perspective, data management for system operation purposes (e.g. congestion management) should be organized along the natural structure of the grid, e.g. bottom-up. Such decentralized approaches can increase the efficiency and security of data management since data can be used first where it is needed and as a second step can be aggregated at the connection points to higher voltage levels.

The participation of such Distributed Energy Resources (DER) in various mechanisms and processes of the electric power system can be distinguished in

- Demand-side response
- Congestion Management (thermal limits and voltage control) and
- Balancing Mechanisms.

Especially the participation of the response of the demand side is an evolving new possibility to solve congestions and balancing problems.

The above services will require extensive data exchange between all involved participants in order to operate efficiently.

Data Exchange for Flexibility Services from Demand side response

The role of flexibility is increasing in future networks due to the growth of distributed generation. The use of flexibility from demand resources connected to the distribution network will require data management and exchange between the DSO and the market parties (consumer /aggregator / supplier) as well as the DSO with TSO and the DSO with other DSO.

DSOs will have to facilitate flexibility service providers by applying procedures such as

- Assessment of flexibility potential,
- Market access – management of flexibility offers,
- Prequalification procedure,
- Measurements and Validation,
- Market settlement.

Congestion Management

Congestion management refers to the actions carried out in case of anticipated congestions in transmission and distribution system to keep power flows in the operational limits of the lines and the transformers. Resources connected to the distribution system can be used by both DSOs and TSOs to eliminate congestions, as long as any activation of a distribution grid user, providing a service for a TSO, has obtained a previous confirmation by the DSO that oversees flexibility operations on his grid.

For an efficient congestion management data exchange shall be coordinated between DSOs and market participants, and in those cases that require it, with TSOs. Since congestions are local phenomena, location specific data (e.g. selection of flexibility needed at specific location) shall be exchanged between System Operators and market participants.

Balancing Mechanisms

According to the Electricity Balancing Guidelines[2], aggregated distributed energy sources can provide balancing as balancing service provider. This would require data exchange between DSO and market parties as well as DSO and the TSO.

2.4 Customers

In the digitalised era, customers' requirements regarding the control over their data related and their use of energy (either consumption or production) is increasing significantly as the opportunities to participate in the new markets and to monitor the own energy efficiency are evolving. The roll – out of new smart meters and the development of enhanced interfaces provides new opportunities in this field.

It remains however important to address the following issues:

- Provision of data access to customers own data in an easy and efficient way;
- Provision of data control to customers own data. The customer must approve the use of its data by third parties;

[2] Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing, C/2017/7774, OJ L 312, 28.11.2017, p. 6–53.

- Appropriate Interface between customer and DSO/MDO;
- Level of data detail and granularity.

2.5 TSOs

TSO – DSO Coordination in Planning

TSOs and DSOs cooperate closely in order to plan both in short term and long term the development of their networks, taking into account all relevant information with regard to the capacity limits at their interconnection points, as well as the potential contribution of each system operator to the other. DSO provides the TSO all necessary information to set up the Network Development Plan. This information includes Load Projections at every TSO/DSO connection point on a regular basis. DSOs provide the TSOs with the necessary information to compute load forecast (day-ahead, week-ahead, month-ahead, year-ahead).

- Generation units and DSOs located within a TSO's control area shall provide the TSO with any relevant information required to calculate the data.
- Network Reinforcements for DSO needs (new connection points, e.g. High Voltage (HV) substations);
- Potential Load transfer to new connection points;
- Network planning will include the flexibility potential as an alternative of network reinforcement.

TSO – DSO Coordination in Operation

DSOs and TSOs operate their networks considering the capacity limits at interconnection points between their respective grids. Specific agreements may be used for certain timeframes, depending on the anticipated load profiles, DER generation and maintenance schedules. Effective coordination between DSOs and TSOs and resilient, efficient, and effective information sharing become increasingly important to ensure cost-efficient, sustainable, and reliable system and grid operation as well as facilitating markets throughout Europe.

System Operation Guideline

The System Operation Guideline (SO GL) and the Key Organizational Roles Requirements and Responsibilities[3] (KORRR) rule the exchange and provision of data and information between TSOs, DSOs and SGUs. This includes, among others, the data exchange applicability, scope and architecture for structural, scheduling, forecast and real-time information.

Data exchange between TSO and DSO for the real-time observability area (substations, lines, transformers, SGUs, reactors and capacitors for each substations) is also included in SO GL as both TSO and DSO need further data for a safe operation of their corresponding grids. This information is also necessary to ensure tool compatibility, security analysis, and remedial actions.

Regarding the real-time information for contingency analysis, forecasts and real-time operation, the SO GL and KORRR define that:

- Unless otherwise provided by the TSO, each power generating module which is a SGU connected to the distribution system shall provide, at least, the following real-time data (Art. 50 in SO GL):
    - status of the switching devices and circuit breakers at the connection point; and

[3] *Requirements, Roles and Responsibilities (KORRR)* relating to Data Exchange in accordance with Article 40(6) of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a Guideline on Electricity Transmission System Operation

    - active and reactive power flows, current, and voltage at the connection point.

- Data from SGU connected to DSO grid can be directly given to TSO, through its connecting DSO or to both (Art 17.1 in KORRR). In our view, the best option is through its connecting directly to DSO as this has several advantages. Among others:
    - This decentralizes information exchange flows and improves the reliability of all the power system.
    - This facilitates solving incidents related with the real-time information exchanges with SGU as this minimizes the number of interlocutors.
    - The DSO knows their grid topology at any time and can provide useful aggregated real-time data to the TSO. Indeed, Art.50.2 in SO GL already allows aggregating real-time data of the SGUs to be delivered to the TSO.

In the balancing services provided by SGU connected to the DSO grids, the DSO have the right to set limits or to exclude the delivery of reserves located on its grid, based on technical reasons in the prequalification process. Temporary limits can also been set before the activations (Art. 182 in SO GL).

Demand Connection Code

The Demand Connections Code sets the requirements for TSO- DSO data exchange for DSR info (to consumers and from consumers) Data exchange Require the capability to respond to an instruction from the TSO or relevant system operator.

2.6 Other stakeholders

Many other stakeholders are involved in data exchange with DSOs and metering data operators. Service Providers and Retailers is an example of traditional market parties that are engaged with customers. The DSO / MDO should act as a neutral point of contact, from which the supplier can obtain the necessary information to conclude agreements, implement billing or offer tailored energy contracts.

With the regulatory and technological advances of the latest years new roles have been developed such as the following:

- Aggregators
- Energy Service Companies (ESCOs)
- EV Charging Operators
- Storage facilities Operators
- Energy Communities
- National and cross-border datahubs
- Prosumers

The above roles can make use of customer meter data to offer a range of services to them and engage them with the energy markets by acting on their behalf. By this way customers can benefit by reducing their energy bills and/or increasing their revenue streams. Some of the services provided are:

- Analysis of energy usage
- Energy saving solutions
- Demand-response services
- Dynamic pricing

The extent of services generated depends highly on the access to customer's data as well as the level and granularity of data available. It shall be noted that the consent of customers is always a prerequisite

for data sharing with these stakeholders. The customer shall be enabled to perform a list of functions regarding its data sharing with these stakeholders – according to SGTF EG1 Report - such as:

- Download my data: The customer can request data related to his metering point
- Share my data: The customer shall be able to give access to energy data to a third party for the customer to benefit from new services after
- Revoke consent: a customer should be able to revoke his/her consent given to a third party to access his/her personal energy data.
- Terminate service: a customer who does not want to benefit from the service anymore and expects the data collection and the data access to stop.

3. Data exchange

Data exchange between system operators and customers is key to adopt a more customer-centric approach, thus DSOs are seeking high engagement in European work streams about data access and interoperability. The following chapter provides an overview of prerequisites for data exchange, design options for data exchange in general and to achieve cross-border data exchange, current initiatives and the derived positions.

3.1 Interoperability and consent management as a basis for data exchange

A crucial aspect of data management is the exchange of data, especially across information systems of different stakeholders, which requires interoperability, defined in IEC 61850-2010[4] as follows:

"Interoperability is the ability of two or more devices from the same vendor, or different vendors, to exchange information and use that information for correct cooperation".

CEN-CENELEC-ETSI Smart Grid Coordination Group "Smart Grid Reference Architecture"[5] further detailed this definition, stating that interoperability must be ensured across five layers:

- business: regulatory framework, role, and business models
- function: use case description independent from physical implementations and actors (role model approach)
- information: information to be exchanged between functions, services and components based on defined data models
- communication: protocols (rules of communication incl. error recovery methods) to be used for the specific use case
- component: physical distribution of participating components

[4] International standard defining communication protocols for intelligent electronic devices at electrical substations
[5] https://ec.europa.eu/energy/sites/ener/files/documents/xpert_group1_reference_architecture.pdf

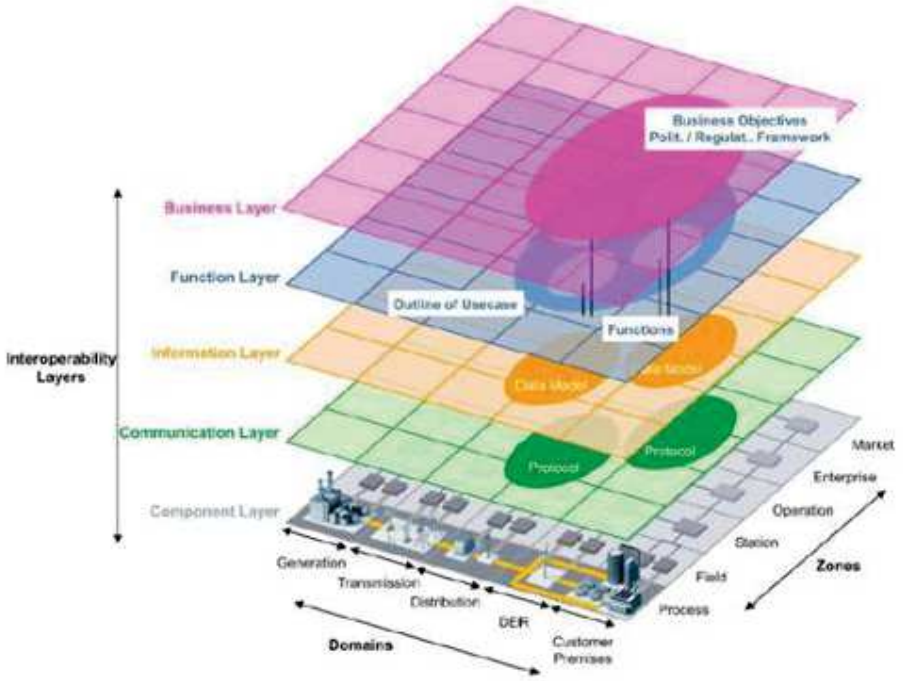


Figure 2: SGAM Model divides interoperability layers in domains and zones

Therefore, it is important to understand, **that barriers hampering data exchange can exist** at any of these five layers, i.e. that apart from technical barriers such as different data formats and protocols, also the functional processes or even the regulatory framework might be a barrier for interoperability[6].

Another aspect of data exchange is the requirement to manage the consent of natural person's private data, who shall be able to control the use of its data by third parties. GDPR defines tasks, rights, and responsibilities of and the interactions between different roles.

3.2 Data exchange design options

Regardless of the different layers of interoperability of systems for data exchange, two main design options exist for exchanging data: Centralized data exchange via a single data exchange platform (DEP) or decentralized data exchange carried out bilaterally between the different actors).

Centralized data exchange implies a single point of contact for all actors. The DEP may work with different data formats and protocols, offering translation services to the actors and therefore enabling interoperability of different systems. However, also here a higher standardization in communication reduces implementation and maintenance costs. Potentially, the DEP can also carry out the consent management. Such data exchange model is independent from the choice between of centralized or decentralized data storage and/or processing.

The **decentralized data exchange** is based on a high level of standardization with regard to data formats and protocols. Consent management can be carried out at the source. Since the model bases on the subsidiarity principle, there is no single control of data and a greater autonomy to develop new solutions within the agreed national framework. Since data exchange is not concentrated at one platform, a failure leads to less impact to the whole system, reducing the attractiveness for cyber-

[6] See also Recommendation 8 of SGTF EG1 Main Report: "Bear in mind that legal aspects in national markets can be a limiting factor to full interoperability."

attacks. Hybrid models also exist, where e.g. all participants can communicate in a decentralized manner, but for some use cases there are task-specific central structures.

All models have their own specific advantages and disadvantages. Depending on national requirements, Member States have implemented one model or the other. **Any change of the data exchange models must be duly considered by all stakeholders, carefully assessing risks, costs, and benefits.**

3.3 Cross-border data exchange

Especially across Member States, interoperability challenges exist across the business, functional, information and communication layer due to the specific solutions in the different Member States. Where certain cross-border data exchange is necessary for security of supply (e.g. exchange of grid data across TSOs and RSCs), the ability to exchange metering data between the customer and a foreign service provider fosters competition. Therefore, the goals for enabling cross-border data exchange might be different, and also the methodologies to enable cross-border data exchange might vary. Such options are:

- Harmonization of all necessary layers to achieve interoperability (especially data formats and protocols)
- Create comparability of national solutions: Mapping of Member States processes and information models towards a core reference model
- Implementation of cross-border DEPs: Connecting the national data systems (centralized or decentralized) and translating the national specifics

As for the assessment of centralized and decentralized data exchange models, all options may cause different benefits, costs and risks, depending on the use case for which the models are implemented and the Member States' existing implementation. Currently, the European Commission is, together with TSOs, DSOs and smart meter representatives, setting up an implementing act to address the cross-border interoperability of smart meter data.

3.4 Current initiatives on data exchange with focus on DEPs

Currently, different initiatives are ongoing in Europe with the aim to facilitate data exchange via DEPs. Some of them show a high presence in media and/or sector-specific conferences. This is without prejudice to other data exchange initiatives and the numerous optimization initiatives for decentralized data exchange which is mostly either not labelled as project or not supported by strong marketing initiatives, but equally useful to fulfil the requirements of modern data management.

To realise the EU Digital Strategy vision for a genuine single market for data, principles of openness, interoperability and transparency must be included. Therefore, DEPs should develop competitively, strengthening Europeans innovative capacity and avoiding mandatory solutions or lock-ins.

As such, future policies on cross border data exchange, should consider that the provision of high-quality data for re-use can induce additional costs for companies for which they would need to be compensated for. Moreover, the re-use of data based on commercial and non-commercial conditional data-sharing agreements does not need to be unlimited.

Data from critical infrastructures and customers' personal data are actually securely collected by DSOs as part of their legal tasks; an inappropriate sharing of these data could jeopardise the safety and privacy of people and the security of the energy system. Therefore, critical infrastructures and customers' personal data are vital concerns that have to be ensured in any case and, cannot be forgotten by the individual or business concerned, be it through a donation" or through a "sale" of data.

The following initiatives exist with a focus on cross-border data exchange:

The **International Data Spaces** (IDS) was founded in 2014 by Fraunhofer in Germany and consists of more than 100 members from 20 countries. The goal is to guarantee data sovereignty by an open, vendor-independent peer-to-peer architecture for the data exchange across companies from all sectors. In order to allow the secure data exchange, an "IDS connector" (gateway) is needed.

GAIA-X bases on the data exchange technology of IDS and aims at maintaining data sovereignty of European companies by connecting decentralized services at cloud and edge in order to allow such services to scale up and exchange data. The project is clustered in 8 domains, among them mobility, smart living and energy, and shall be at European scale.

Other initiatives with focus on energy data exchange are:

Datadis is a Spanish DSO's initiative to facilitate free, safe, and neutral access for each consumer to their electricity consumption data. The users will be able to access information on their electricity consumption through a common channel, even if they have more than one supply point and these are connected to different distributors. Datadis does not store any data. It works as a fully operational and easy-to-use gateway to benefit customers. Datadis even allows to perform administrative tasks on the connection contracts. It has been setup by a consortium of all DSOs in Spain, big and small, with the objective of ensuring that all customers with a smart meter have the same functionality and data service

Powerfox is a German start-up, making use of the optical interface of smart meters to send the metering data to a data platform, where customers get access to their data and where they can also share the data with other service providers. Third party's services may also be implemented directly on the platform.

Afsprakenstelsel is a Dutch initiative from all DSOs in cooperation with the TSO on implementing a data exchange framework, for access to and sharing of data, relevant for all current and future market actors (e.g. automotive, finance, building eo) in the Dutch Energy space. The governance framework is defined by 9 building blocks (data standards, exchange protocols, identification & authentication authorisation, metadata, operational agreements, legal agreements, governance, finance). The framework of the "afsprakenstelsel" has been adopted by all market parties and the ministry and will be formalized in the new Dutch Energy Act. The Dutch system operators will be assigned with the task of managing and governing this framework in its development and operations.

Enedis Data Connect and SGE services are portability platforms in France, opened to all Energy Services Companies. Since 2018, they allow citizens and companies to securely transfer their consumption and production data and benefit from new digital services. Around 300 ESCOs are connected to our services. Data Connect uses a CIM-based data format and standardised authorisation protocols, allowing easy-to-use APIs. This data format facilitates the re-use of these data at European scale for interested third parties. Enedis Data Connect also follows the use cases provided in the EG1 report.

In the US, the **Green Button Initiative** aims at standardizing the format and communication of energy data so that customers and third-party service providers can easily access, and exchange energy usage information made available by electricity suppliers. A similar initiative was also proposed in Europe by SGTF EG1 "My energy data initiative" [7] and supported by IEC 62325-451-10 (FDIS in 2020) (EUMED Market). Other complementary format can be foreseen (EUMED Metering).

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7 https://ec.europa.eu/energy/sites/ener/files/documents/report_final_eg1_my_energy_data_15_november_2016.pdf

4. Conclusion

DSOs in their natural role as **neutral market facilitators** welcome every development which helps customers to make better choices. Indeed, DSOs' customers will be the core of the future energy system, getting more active by monitoring their energy use, carefully choosing their supplier and service provider, producing their own electricity, and selling flexibility to third parties.

Where DSOs also operate smart meters, they give customers access to their data and enable the **sharing of data based on the customers' consent with eligible parties, no matter where in the EU** this eligible party is based. Such data is provided **in the data format and protocol as determined by national regulation**. Since DSOs treat eligible parties in a non-discriminatory way, data exchange platforms are treated as market parties as any other service provider the customer has given consent. Therefore, **DSOs facilitate the emergence of new services** and activities of customers such as the provision of flexibility of active customers or the use of energy efficiency programs. **For these reasons, DSOs must be closely involved and contribute to all initiatives aiming at defining interoperability requirements or even standards and data formats to foster new services and uses.**

Customer-centricity is a value DSOs pursue when it comes to the cost-efficiency and **their fair cost allocation** based on the real use of the system. Therefore, DSOs see the cross-border data exchange (in the context of the translation across different Member States information models) **not as a regulated DSO business**. Instead, the **costs of such solutions should be covered by the users of these services**, i.e. the service providers (cf. Art. 23 Directive (EU) 2019/944) and not by all other grid users (via tariffs). Socialization of costs should be avoided.

The **analysis** of the different initiatives also **reveals a competition of platforms and ecosystems for cross-border and cross-sectoral data exchange**. Additionally, it might be possible that the Metering Data Operator could offer as an additional non-regulated service the provision of data in other formats, enabling cross-border data exchange. On the other hand, **single solutions** such as centralized cross-border data exchange platforms **cause regulation and governance challenges** (single control of data, revenue monopoly), where the abuse of market power must be avoided.

DSOs are the optimal entity to perform the role of MDO. There are very significant economies of scale and economies of scope that demonstrate that the DSO, being already an independent operator, is the best choice to efficiently perform the role of metering operator.

As described in Chapter "Cross-border data exchange", apart from the creation of single data exchange platforms also other solutions exist to facilitate the emergence of new services and increase competition within the EU. Giving **transparency to the market via comparing national processes** with a core reference model, as it is foreseen for the Implementing Act on Data Access and Data Interoperability **is a practical and cost-efficient way forward to reduce market entry barriers** for individual service providers. Such solution also **avoids unnecessary sunk costs**, since IT systems (from DSOs, MDOs but also retailers, etc.) can converge to an accepted standard when being updated on a national basis.

Due to the decentralization of the energy system, DSOs advocate for **a bottom-up based data management**, starting at the customer followed by the DSOs in order to allow the secure and efficient functioning of the distribution grids.

Since DSOs are convinced that energy data exchange is the key to a more customer-centric energy system, **DSOs seek high engagement in respective European work streams** to support interoperability and therefore strengthen the European Single Market. DSOs also seek further **cooperation and discussion with TSOs at European level for the benefit of customers**, pursuing the "one system approach" to avoid isolated solutions and facilitate new third parties' scalable business

models. Such cooperation takes place in European work streams, projects and will in future be a core task of the EU DSO Entity. Stating this, the **discussion** of how to achieve interoperability must be hold **within established frameworks, such as SGTF EG1**.

Any way forward to more interoperability across borders must **base on the Data Management models** (centralized/decentralized/hybrid and data models) **established in the Member States** (cf. Art. 24 Directive (EU) 2019/944). In order to ensure trust and transparency, data exchange should also be based on **Open Standards** (such as IEC Common Information models (CIM)). These standards should be defined or adopted explicitly by legitimized European organizations.

Key takeaways of the position paper

- DSOs are the neutral market facilitators, also in the future with their data management
- Customers' data shared based on their consent/permittance this data exchange is based on the structure and processes for data exchange in the respective member state
- DSOs emerge new services in the new energy system, including the data and their management
- DSOs are committed to a fair cost allocation of their data management
- Although there still is a completion on platforms and systems, DSOs manage the data without discrimination and within a possible regulation
- The decentralization of the energy systems forces a bottom up decentralized data management by the DSOs
- DSOs follow European work streams for data interoperability and data management as well as respect the processes established in the member states

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