Setting a digital strategy for a cost-effective decarbonisation of the energy system

smartEn Position Paper

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INTRODUCTION

For years, the primary obstacle to moving toward the clean energy transition and ultimately climate neutrality has been the cost-competitiveness of renewable energy sources. Today, the challenge of the clean energy transition is no longer about the investment costs in new renewable generation assets but about how to complete system integration of these assets and manage in a cost-effective way the increasingly variable energy system. The fast deployment of renewables in the power system inevitably increases the system flexibility needs. This is where European energy users will have to play a crucial role by unleashing their demand-side flexibility, meaning their ability to flexibly adapt their energy consumption, storage and on-site generation to external signals.

The 'Fit for 55' package provides the opportunity to foster system efficiency through the empowerment and active participation of all European energy end-users by activating their demand-side flexibility, in line with the Energy System Integration Strategy. This requires rethinking how to interconnect the energy value chain horizontally across sectors and regions as well as vertically across TSO-DSO, Balancing Responsible Parties and new Flexibility Service Providers down to communities and prosumers. This also means shifting to a more decentralised energy system with energy production and storage facilities closer to the site of energy consumption.

The development of new prosumer-centric approaches and business models promoting demand-side flexibility support the decentralisation of the energy system by providing ways to manage a more variable energy system and enabling further active participation of consumers to the clean energy transition.

Digitalisation in energy is therefore essential to maximise all benefits of the technology deployed at the edge of the grid delivering new revenue opportunities to energy consumers and market parties while supporting a flexible, cost-efficient and decarbonised energy system. However, this is currently insufficiently addressed by the current EU legislative framework.

The EU should seek to unlock the value of data in Europe through an enabling and consistent regulatory framework promoting prosumer business models while taking into account the latest developments in the energy data space.

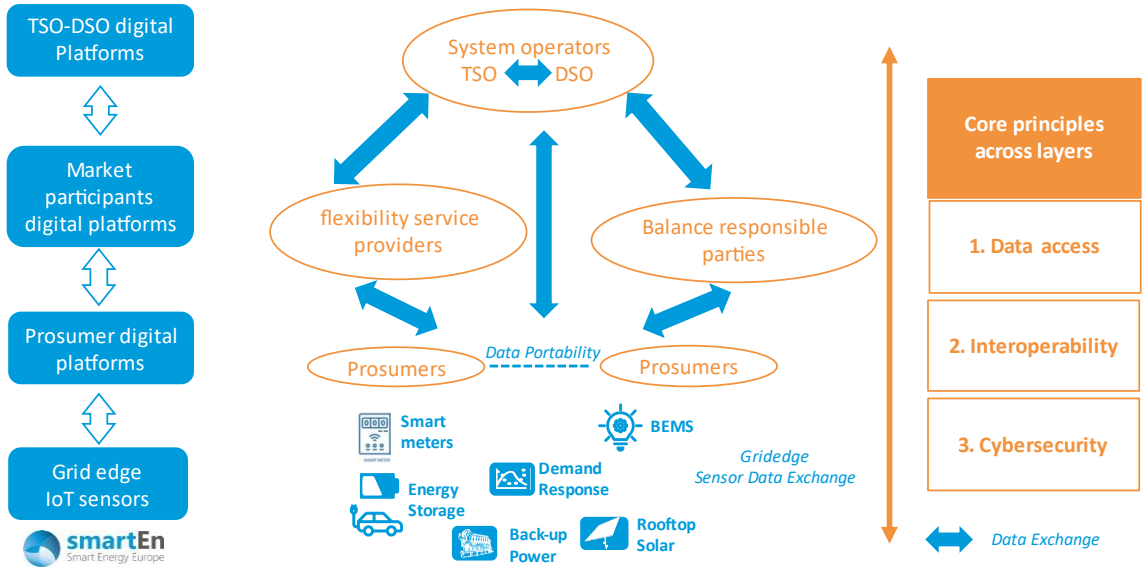
smartEn urges EU policy makers to take into account our recommendations in the definition and establishment of a digital technical framework and data spaces supporting demand-side flexibility and prosumer business models in order to increase system efficiency and reach climate neutrality in the most-cost effective way.

This Position Paper identifies key recommendations around the three pillars of the digital ecosystem needed for the activation of demand-side flexibility and connecting all layers of the energy system from system operators to grid edge:

- Prosumer data
- Grid and markets data
- Cybersecurity

Such digital ecosystem should be achieved by ensuring data exchange across digital platforms where relevant data from various data sets are stored and managed, allowing actors to perform their tasks (see figure below):

Architecture of a digital ecosystem connecting all levels



The below recommendations aim to influence key policy and legislative priorities currently being developed to shape the digital ecosystem needed for the energy sector. These include the action plan on the digitalisation of the energy sector, the 'Fit for 55' package and in particular the revision of the Renewable Energy Directive, the revision of the NIS2 Directive, the Data Act, the Implementation Acts on data access and interoperability and the network code on cybersecurity.

1) PROSUMER DATA

Active consumer engagement with the energy system relies on unlocking value to consumers for providing services to the system. The development of digital solutions that use information on consumers' behaviour (energy consumption, time of use and production from the consumer's premises) are key to incentivise their active participation in the energy system and engage them in the acquisition of innovative and flexible solutions. These data, as identified in the Electricity Market Design[1], are essential for consumer information purposes and for third parties that can, following consumer's consent, act on its behalf and activate the consumer's demand-side flexibility potential to provide new services to the system such as grid balancing, frequency response and local network congestion services. This will offer reward opportunities for consumers (e.g. such as reduced energy bills) as well as new revenue streams.

With wider consumer uptake of decentralised energy resources, a whole range of additional consumer data elements can be relevant for the activation of their demand-side flexibility potential. This refers to billing data, (sub-) metering data and any sensor data associated with flexible energy resources capable to dynamically interact with the energy system, such as smart thermostats for heating and cooling devices, EV chargers or in aggregated way through interoperable Building Energy Management Systems. The consumers should therefore be in a position to access their data and decide to provide access to the energy service providers they chose to help them better manage their energy usage through a variety of energy products and services.

[1] Article 20 of the Electricity Directive 2019/944/EU listing *inter alia* data on actual electricity consumption, actual time of use, validated historical consumption, non-validated near real-time consumption as well as data on the electricity consumers feed into the grid.

With such a large volume of new consumer data, care must be taken to ensure that consumer privacy is respected whilst opening new opportunities for the activation of demand-side flexibility with prosumer consent.

- Data ownership and consumer consent is critical to foster trust and engagement

The successful digital transformation and the achievement of our climate goals depend on data-driven innovation. In particular, prosumer business models rely on consumer data availability and access to activate the demand-side flexibility of individual users. Consumer trust and consent must be at the heart of such business models.

In order to foster consumer acceptance, it is key for market participants and service providers to **clearly inform consumers on the use of their data**, for instance whether the data will be used for analysis purposes or for providing energy management services (energy optimisation, grid flexibility and others) as well as the impact and constraints of these services on their energy usage. This should be accompanied by better information to consumers on their reference baseline of consumption, their flexibility potential and the benefits from activating their flexibility (e.g. reduced electricity bill).

At the same time, **consumer consent should be explicitly required**, in compliance with all relevant EU data protection and privacy rules, to obtain the individual data and authorised control of assets from which end-user's flexibility is triggered. Consumers must be assured that they are **only being asked to share as much data as necessary** to assess their flexibility potential or to activate it for delivering a system service.

smartEn recommends in the Digitalisation in Energy Action Plan to be presented in 2022, to support the upscale and promote best practices of new services and tools that provide information to consumers on the use of their data, allowing them to grant access to their data in an easy and informed way.

- Privacy requirements on prosumer real-time data should enable the activation of demand-side flexibility

smartEn supports the need to properly protect energy consumers' privacy and security through the setting of appropriate "opt-in processes" allowing prosumers to make conscious decisions on the possible usage of their confidential data. Each consumer should have the **full right to decide which market players will be allowed to access specific generated data** relating to his or her own energy usage, in line with GDPR rules and the Electricity Market Design.

As the value of electricity varies typically every hour down to 15 minutes, access to granular, near real-time consumer data is essential for helping consumers in better managing and accounting for their energy usage and activating their demand-side flexibility, either by reacting to price signals (implicit flexibility) or by trading it on the different electricity markets (explicit flexibility). Such data include real-time data about the consumer's energy usage or the localisation of end-users, which can be needed by aggregators, in particular for the development of future local TSO-DSO flexibility markets for congestion management.

However, when participating in the market, for instance when providing balancing services, market parties need to share information about their portfolio in order to guarantee transparency and reliability as service providers. In that case they should ensure the **anonymisation of the individual end-user data of their clients to respect data privacy** in line with GDPR rules.

To ensure further harmonisation of the approach at European level, smartEn recommends to:

- **Establish clearer principles and requirements on data anonymisation and aggregation in the forthcoming Digitalisation in Energy Action Plan that ensure the protection of consumer's privacy while supporting the development of prosumer business models. In particular:**
  - **Clear rules governing the possibility for aggregators to handle personal data should be set, accompanied by security and transparency measures specifying to consumers how their data is used and shared by aggregators.**
  - **Clear rules on governing mixed data sets.**
  - **Requirements on data pseudonymisation should be developed, while safeguarding data privacy as it allows to preserve statistical accuracy and data integrity needed for the development of demand-side flexibility services.**
- **Provide guidelines in the Data Act to implement proportionate and consistent data privacy requirements across Europe that do not go beyond what is necessary and compatible with a future-proof energy system. Otherwise, there is a risk to limit the availability of data for innovative data-driven energy business models and to hamper consumers' participation in flexibility services.**

- Data portability is a key enabler for competition

Data portability is a key element to avoid consumer 'lock-ins' as it allows consumers to reuse their personal data and own IoT sensors across different services and to switch from one energy service provider to another, thus fostering competition among energy service providers, utilities and IoT platforms. Data portability is therefore key for consumer empowerment and for boosting competition in the electricity market and should be fostered around two priorities:

- Formalising prosumer ownership of data[2] as this will reinforce consumer trust and acceptance in data-driven energy services. Data traceability mechanisms can also be implemented to open new business models for consumers to profit from the authorised use of their data.
- Ensuring interoperability of prosumer data (metering and submetering data) based on open format.

As a short term action, smartEn proposes to take advantage of the forthcoming Implementing Act on demand response data access to enable such data portability and interoperability for metering and submetering data which have a direct impact on the settlement of demand response and associated grid services. To facilitate the portability process, existing standards on data migration, the use of machine readable formats and proportionate fees for portability should be encouraged.

This effort should be used for the creation of the new European Energy data space as part of the Digitalisation of Energy Action Plan that fosters inter alia the development of an interoperability framework for those prosumer data that are useful to bring benefits to consumers and provide services to the energy system. The European Energy data space should promote seamless sharing and exchange of data in a customer-centric and secure manner which will support a competitive market for energy services and demand-side flexibility.

smartEn recommends exploring the use of an Open API among market participants, specifying the data type, as this could support the portability of data.

[2] Notably data referred to in article 20 of the Electricity Directive 2019/944/EU.

- Sub-metering data are a significant source of data

Smart meters data are a relevant and reliable source of end-user data but they should not be considered as the only ones. Sub-meters and IoT sensors are becoming increasingly important to provide real flexibility measurements instead of theoretical counterfactual baseline and to activate and settle distributed flexibility, notably the incentives-driven (explicit) flexibility managed by service providers. A narrow focus limited to smart meters would not contemplate all market opportunities that can be provided through other sub-metering data to activate demand-side flexibility and thus does not allow a fair reward of distributed flexibility.

At the same time, data granularity requirements for distributed energy resources need to be proportionate as to not create a barrier to their participation in providing flexibility to the market. Overly frequent data granularity and data exchange processes from distributed energy resources often lead to disproportionately burdensome prequalification procedures for flexibility services. It needs to be understood that the data requirements of such prequalification services have historically been drafted for large conventional generators and off-takers. To comply with such requirements with small assets creates disproportionate burdens for devices not primarily made for market participation.

In the context of the forthcoming Implementing Act on demand response and Digitalisation in Energy Action Plan, smartEn recommends to:

- **Ensure that data sharing obligations cover data that are relevant and needed for providing energy services. The relevant data parameters should be based on harmonised prequalification requirements, defined for instance by means of flexibility service APIs to facilitate the participation of decentralised energy resources, such as storage assets, to electricity markets both directly or through aggregation. This will ensure that data access requirements to distributed energy resources are reflective of the value available on the markets.**
- **Contemplate relevant energy data from both smart meters and sub-meters, integrating all relevant submetering devices aggregated through Energy Management Systems and which are considered for the baseline and - to the extent possible - settlement of demand response and grid services. For example, this can cover submeters in EV chargers or prosumer storage inverters as well as relevant IoT sensors or other connected devices that communicate with interoperable Buildings Energy Management Systems). This will ensure a comprehensive coverage of both price-driven and incentives-driven demand response schemes, based on consumers' consent, supporting the increase in demand-response participation in all electricity markets, directly and/or indirectly through aggregators, and which is needed for the cost-effective decarbonisation of the energy system.**
- **Clarify that access to these data should be 'read-only'. Third parties should not be able to change the parameters of these data in order to avoid security hazards.**
- **Consider setting an open source standard for communication between such assets and market participants (particularly flexibility service providers) as this will ease data communication and integration of distributed energy services while supporting system integration and ensuring a proper reward of each distributed energy resource's real-time response. However, widely open data APIs on individual assets in large numbers can create significant burdens on device manufacturing, product cost and ultimately might slow down the upscaling of energy transition products. Mandatory Open-source data communication therefore merits a detailed assessment of additional costs of unrestricted data provision and should only be granted in cases of sufficient value of flexibility markets. This is especially true if data is measured and transmitted in high granularity as such data is not made available directly at the asset level but in the back end of the device. Also, Open APIs should**

only be granted for performance data and not inside device diagnostic data as these data are not required for flexibility services.

Such approach should also be reflected in the Renewable Energy Directive supporting the Commission's proposal to require manufacturer of domestic/industrial batteries and of electric vehicles to allow non-discriminatory and real-time access to basic battery management system information and in-vehicle data such as the state of charge, state of health, power set point, battery capacity and the EV location.

2) GRID AND MARKETS DATA

Digitalisation not only enables new product and services, but is an essential prerequisite to allow a proper real-time orchestration of data across all layers of the interconnected energy system from system operators to grid edge. It calls for migrating current IT architectures towards new data exchange platforms allowing seamless data exchanges across the value chain, through TSOs & DSOs merging data, from wholesale central energy resources and with all distributed energy resources at prosumer premises. This new approach requires to further standardise APIs used by regulated infrastructure operators to publish their data – TSOs and DSOs as well as power exchanges – and evolve towards open data standards easing market access to new entrants and innovation-driven business models. It should also adhere to reasonable security standards.

Energy service providers such as aggregators require extensive access to data and data exchange with other actors (including TSOs and DSOs) to help end-users optimise their energy consumption in reaction to external signals and to be able to offer flexibility in various markets. Availability, certainty and access to energy and pricing data is the backbone of a consumer-centric and smart energy system.

The Digitalisation in Energy Action Plan should be the opportunity to create a market for data-driven energy services and develop seamless data exchange across all layers of the energy system, considering the enablement of local energy markets and the procurement of demand-side flexibility as a central service.

- Access to essential data to all market participants should be improved to eliminate market barriers

System operators should disclose information on network constraints and real-time data on the status of the energy mix in an anonymised and aggregated way and greenhouse gas content to strengthen transparency and allow new business models.

The **lack of visibility on network constraints** and spare network capacity prevents the introduction of new innovative services and the efficient operation of markets open to demand-side resources. Data on current and future grids congestion areas and curtailments needs to be shared by system operators – both at transmission and distribution levels - for market participants to propose flexibility as alternatives to grid reinforcement. Such data should be shared in a secure way to avoid endangering the operational security of the system, especially in case of a cyberattack.

In this context, system operators should not only provide data on network constraints but also on planned network extensions and reinforcements in a standardised digital form. To adequately compare grid investments to non-wire alternatives, such data requires transparency on costs, time-horizons, hours of operation at full power equivalent, peak utilisation hours (at x% capacity), average duration of peak utilisation, as well as the load and utilisation forecasts run by the system operators.

These data are required in high granularity especially on the distribution level and should be published with DSO/TSO grid development plans[3] on a regular basis.

At the same time, **real-time data, including below 15 minutes granularity, on the status of the energy mix** and greenhouse gas content is needed to inform consumers and market parties. This would allow the alignment and activation of demand-side flexibility in times when renewable generation is abundant or at risk of being curtailed[4]. As a result, this would help shifting consumption to help integrate more clean electricity in end-use sectors and reduce the need for fossil fuel energy during peak hours.

The proposal made by the Commission to amend the Renewable Energy Directive requires TSOs and DSOs to make digitally available to third parties information on the share of renewables and the greenhouse gas content of the electricity they supply in each bidding zone[5]. It also requires that this information can be read by electronic communication devices such as smart metering, EV recharging points, heating and cooling systems and Buildings Energy Management Systems and that it should be as accurate and as close to real time as possible, in time interval of no more than one hour, with forecasting where available.

Such 24/7 renewable and carbon accounting from system operators can contribute to increase transparency and give more accurate information to market participants, aggregators, consumers and end-users on the energy system's carbon footprint and implication on their own consumption. This also has the potential to lead to a locational marginal emission indicator that could incentivise real-time consumption and absorption of renewable electricity generation, thus further supporting demand-side flexibility business models including energy communities, while contributing to system efficiency.

smartEn strongly supports this proposal and recommends further improvements in the revised Renewable Energy Directive by:

- **Requiring also data on network constraints and capacity to be made available to market participants in a secured way. This should cover both real-time network constraint data as well as forward looking grid planning and reinforcement.**
- **Clarifying the source of the data shared by System Operators to also include DSO own anonymised and aggregated data on decentralised RES-E production from self-production within their grid (e.g. solar rooftop, storage) as this contributes to provide accurate data on the share of RES-electricity and the greenhouse gas content of the electricity supplied in each bidding zone.**
- **Specifying that the information should be shared in an interoperable manner. TSOs and DSOs should seek to harmonise data format and coordinate their datasets.**

- Interoperability in front of the meter and across borders should be ensured

To avoid the fragmentation of data exchange platforms and marketplaces across Europe smartEn recommends as part of the Digitalisation in Energy Action Plan to develop a European data-sharing infrastructure that would ensure maximisation of these developments by putting in place a common European energy data space, based on interoperability and transparent access to third parties.

[3] In line with the articles 32 and 21 of the Electricity Directive 2019/944

[4] Such approach is already supported by the UN 24/7 Carbon-free Energy Compact launched in September 2021 that sets principles to ensure that every kilowatt-hour of electricity consumption is met with carbon free electricity sources, every hour of the day..

[5] See Article 1(10) of the proposed Directive amending Directive (EU) 2018/2001 (RED II) adding an Article 20a on facilitating system integration of renewable electricity in Directive (EU) 2018/2001.

Interoperability must be ensured across Europe between:

- **the different marketplaces**
- **the different data exchange platforms and**
- **the marketplaces and data exchange platforms.**

Firstly, flexibility services can be traded in different marketplaces (day-ahead, intraday, balancing, local flexibility markets). For such marketplaces to scale across Europe and to avoid fragmentation, they should be interoperable so that the different markets and market parties can send each other incentives and respond in real-time.

In the case of local flexibility markets, consolidation of the flexibility marketplaces would be likely to occur over time to increase the size of the market and therefore its liquidity. This needs to be supported by interoperability of the market data so that the market merger can be efficient.

smartEn emphasises that marketplaces should be interoperable, e.g. by having a published API, and work towards open standards to further promote open competition. Considering the large usage of CIM IEC62325 based APIs recently deployed for market-related exchange of data across market platforms such as Xbid as well as the new electricity balancing platforms, smartEn proposes to consider a progressive transition towards a set of APIs across Europe based on CIM IEC62325 enabling interoperability of marketplace platforms across Europe and easy market entry for new players. A list of comparable standards should be made possible to avoid changes in technology already in place.

This CIM profile is becoming widely accepted for interoperability and already contributes to strengthening the coordination between different TSOs. In the future, it is expected to be increasingly used between TSOs/DSOs and other market participants, supporting the coordination and cooperation between TSOs and DSOs[6]. System operators, both DSOs and TSOs could be encouraged to reuse this standard as this will ensure easier access by other market parties such as aggregators.

Secondly, the interoperability between data exchange platforms contributes to facilitate data access from third parties and to ensure seamless data exchange.

Data exchange platforms where actors can distribute, source, exchange, share and commercialize data and/or orchestrate data ecosystems are key to maximise the value of flexibility services.

Several Member States have already established or are considering developing **data exchange platforms,** also called data hubs, to improve data access and sharing between the different actors connected to the electricity system and participating in the market. These platforms aim to collect and manage data on production or consumption used for billing purposes in a safe and valid way that should not compromise consumers' privacy. This data should be made more accessible to market participants by being fully interoperable and whenever possible open-sourced as this will also support access to different energy services contributing to the efficient operation of the energy system.

Increased information exchange and data management have multiple benefits such as efficiency gains in grid operation and planning, better integration between wholesale and retail markets, lower market access barriers and more transparency on consumers' usage, thus supporting new and innovative business models.

[6] Bridge report (2021); European energy data exchange reference architecture

These data exchange platforms can be developed and managed by system operators or other market participants. For instance, the ENTSO-E Transparency Platform aims at increasing data transparency at TSOs level. This could be replicated at DSO level as soon as they start enlarging their market facilitation role as provided for in the Clean energy package.

The use of data exchange platforms is subject to different regimes and practices throughout Europe. Data exchange platforms should, in line with e-privacy and GDPR, include standardised access to household, industrial and network essential data (such as household/site level consumption data used for settlement purposes and for providing flexibility services) with adequate real time, reliability performance, to be accessible and securely shared with third parties, including aggregators and other (possibly new) market players. Key is to ensure that requirements on the type of data to be exchanged is proportionate, covering only data that are necessary for providing energy services to end-users and the system.

Harmonised APIs from system operators to grid edge have the potential to boost prosumer business models and can efficiently track the use of the different data. Consistent data models could be re-used across the different layers of data exchange platforms that are interoperable (TSO-DSO-Market Participants-IoT platforms) to ease API harmonisation and enable scaling up IoT across the energy value chain.

As the CIM standard is largely used in both TSO and DSO grid domains (as demonstrated through various recent H2020 projects such as TDX Assist, EU Sysflex, Interrface and Onenet) smartEn recommends investigating this standard as a base option to foster further interoperability between data exchange platforms.

Interoperability of data exchange platforms should not be achieved just at the national level, but across Europe to support the development of cross-border data exchange models with easy access to data (single entry point). This will contribute to the integration of an EU-wide energy system and data ecosystem. smartEn also recommends the European Commission to work with international partners to develop international standards related to these new digital approaches in view of strengthening Europe's industrial leadership (and thus ease the re-export of European approach and technologies as part of the EU industrial strategy and Standardisation strategy).

Thirdly, marketplaces may be supported by different data exchange platforms displaying data such as metering, grid status and grid needs as well as load and generation forecasts. The interoperability between marketplaces and data exchange platforms would allow optimisation of flexibility procurement for system and grid needs while maximising the value of the flexibility provided by market parties[7].

Such interoperability is thus needed to ensure the integration of physical and digital layers by allowing automated exchange of data to and from the trading platforms.

In particular, as both TSO and DSO are responsible for the security and stability of the grid, coordination and mutual data exchange between TSOs and DSOs is necessary to ensure that there is no harmful impact on their respective grids. For example, this would be the case in platforms for congestion management at both local and national levels, either run by DSO, TSO or jointly, where system operators could in theory procure the same flexibility services thus creating discrepancy with a double activation of the same bid for flexibility resources[8]. Interoperability will avoid such situation by

[7] The H2020 project INTERRFACE will propose a demonstration project linking a data exchange platform with the balancing marketplace in order to match demand-side flexibility with supply. http://www.interrface.eu/

[8] As identified in the EG3 Final report 'Demand Side Flexibility – Perceived barriers and proposed recommendations'.

supporting TSO-DSO coordination and ensuring an efficient operation of individual systems and the coordination of data between systems, as well as maximisation of the value of demand-side flexibility procured.

- The right governance framework is needed to support an EU market for data exchange

In order to support seamless data exchange, scalability of markets and demand-side flexibility, an EU governance framework should be organised, ensuring data structures and exchange rules are easy to adopt and adapt. It should define the data exchange models based on interoperability.

smartEn recommends the definition of a governance framework for a common European energy data space to be developed as part of the Digitalisation in Energy Action Plan, built on minimum requirements to reinforce:

- **Transparency**
- **The use of open communication protocols**
- **Consumer data ownership allowing data portability of end-users if they want to switch platform**
- **Oversight of data exchange platforms by a fully neutral facilitator guaranteeing that all market parties – both traditional and new market entrants – have equal access to information.**

Existing federated cloud infrastructures such as Gaia X[9] could be further scaled up by broadening their participation and use-cases to lead to a truly European data infrastructure ecosystem. The governance within the Gaia X ecosystem requires cross-border common data access, collection and sharing capabilities, enhancing interoperability and portability across Europe. Gaia X should foster collaboration with key energy associations to ensure the models used to create the Energy Data Space truly leverage on-going developments (particularly related to usage of the Harmonized role model of the electricity market as well as the usage of CIM IEC62325 based APIs and interoperability). Standards should improve trust and efficiency. However, the list of standards that can be used should not remain closed nor the options should be made mandatory. Interoperability is a cost-effective approach to facilitate competition without requiring changes to technology already in place.

Besides, the EU should enhance its critical digital infrastructure promoting the development of multi-country projects and investments such as Industrial Clouds Important Projects of Common European Interest (IPCEIs)[10].

3) CYBERSECURITY

The energy sector must be particularly protected from cyber-attacks, given its strategic importance. With the growth of electric devices becoming Decentralised Energy Resources providing flexibility to the system, cybersecurity is a prerequisite for all data-driven business models to guarantee both security of supply and consumer engagement based on trust when it comes to the security of their data.

[9] Gaia X is an open digital ecosystem connecting centralised and decentralised infrastructures bringing the opportunity to share and to aggregate data from the different stakeholders across the energy system.

[10] Cloud IPCEI entering next phase as call for expressions of interest is launched in Germany and preparations for European matchmaking process get underway (source: https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2021/07/20210709-cloud-ipcei-entering-next-phase.html)

Together with its members, smartEn is committed to address and mitigate the cyber-risks related to their business models, in particular of aggregators and virtual power plants. This is key to support the secure participation of end-users and the reliable operation of the electricity system.

smartEn recommends applying the following four principles in all legislative initiatives related to cybersecurity in the energy sector in particular the revision of the NIS2 Directive and the elaboration of the network code on cybersecurity:

- **A high common level of Cybersecurity** across the whole energy system, including at the grid edge to ensure trust in prosumer business models by making sure that the electricity system as well as prosumers themselves are protected against cybersecurity risks. In particular, there is a great need to consider the ecosystem **with a risk-based approach** and a common harmonised legislative framework considering every actor of the value chain regardless of the size. Besides, data privacy and cybersecurity of energy-smart appliances must be ensured and guaranteed. In particular, cybersecurity protection needs to be embedded in the active control devices, data transfer should be encrypted to ensure data privacy and secure protocols must be used by service providers. This is key to support consumer empowerment, trust and active participation in the clean energy transition, notably through demand-side flexibility.

- **Proportionality** based on the actual level of risks an undertaking is exposed to and poses to the whole electricity system. EU legislation should also seek the right balance between an appropriate level of cybersecurity and the costs of these measures for certain companies and industries. This will ensure that prosumers business models needed for the clean energy transition can be deployed without facing unnecessary barriers.

- **Consistency** with sector-specific legislation and common sets of rules and guidelines such as network codes contributing to ensuring high levels of cybersecurity. In particular, the forthcoming network code on cybersecurity will be setting high cybersecurity requirements for data driven business models taking into account their specificities and those of the electricity system.

- **Inclusion of all risks** covering all entities with large aggregation points connected to the power system (e.g. electro-intensive industries, EV charging point operators and essential service suppliers not established in the EU but delivering services in the EU). Such entities create the same level of risk if they participate in the electricity market or carry supply function or not and should not go without any supervision.

Besides, the Network Code on Cybersecurity should rely on existing, tested and complementary families of standards in order to cater in an appropriate way for all the different actors of the electricity system. The interoperability of cybersecurity requirements and standards should also be addressed in the network code to avoid any vendor lock-in risk through the cybersecurity standards.

The following standard families should be used for different purposes without mandating their adoption as the unique certifiable standard. This standard list could be used for constituting the Electricity Requirements and Standards Mapping Matrix (ERSMM), following active participation from all entities in this mapping exercise, as foreseen in the ACER framework guidelines on the cybersecurity network code to preserve investment and security plans already in place in Member States:

- ISO27000 family for ICT management,
- the common criteria approach (ISO/IEC 15048) for the ICT services,
- IEC 62443 family for ICT products.

Finally, the relevant parties leading the drafting of the network code should involve stakeholders, including flexibility service providers and new business models, in a structured and proactive way from the beginning of the drafting process. This is the only way that the network code can provide an efficient answer to the challenges the grid system operators and service providers are facing while supporting the resilience of the entire electricity system expected by consumers.

To support such an inclusive and transparent approach, smartEn calls for a stronger role for all relevant stakeholders in line with the Electricity Regulation and welcomes the opportunity to be joining the drafting committee monitoring the process and progress and providing input to the drafting team (composed of TSOs & DSOs) on the cybersecurity network code. In parallel, smartEn also sees the need for ACER to set up an Expert Group involving all relevant stakeholders, as done for the network code on demand-side flexibility.

The network code should ensure the right governance is in place replicating good practices from other existing electricity network codes (in particular, CACM, SOGL or EBGL) which have established tested governance for the adoption of terms and conditions and methodologies. This relies the participation of stakeholders and the necessary oversight.

CONCLUSION

Consumer empowerment is central for the achievement of climate neutrality in a cost-effective way. All energy consumers and end-use sectors have the potential to provide important flexibility potential needed to stabilise the increasingly variable energy system, thus supporting carbon and system efficiency.

The Electricity Market Design forests important rules to empower consumers. However, it is currently implemented in a timid way and with strong delays. Ambitious data-related policies are needed to accelerate this effort and to provide the necessary push for the development of prosumer business models, turning consumers into active participants in the electricity system.

smartEn identified several recommendations to be taken in due account by policy-makers in order to build a European data sharing infrastructure able to support and value the contribution of demand-side flexibility towards a cost-effective, secure and future-proofed transformation of the energy system.

About smartEn - Smart Energy Europe

smartEn is the European business association integrating the consumer-driven solutions of the clean energy transition. We create opportunities for every company, building and car to support an increasingly renewable energy system. Our membership consists of the following companies:

The positions expressed in this document represent the views of smartEn as an association, but not necessarily the opinion of each specific smartEn member.
For further information about smartEn, please visit www.smarten.eu