HOW DATA SHARING IS ESSENTIAL TO DELIVER INDUSTRY-WIDE TRANSFORMATION

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Industries from energy to healthcare are facing up to transformational change. This is driven by several factors: a need for greater sustainability, reinforced by regulation; changes in consumer needs and behaviors requiring greater flexibility and customer-centricity; and technological development, especially digital and automation. Current geopolitical and economic trends affecting energy prices, supply chains and inflation are acting as a further driver.

For example, the energy sector, as it moves to Net Zero, is undergoing a revolution in terms of new, sustainable generation sources, along with changing customer needs caused by the electrification of society. For energy network operators, this requires a dramatic shift from a unidirectional command-and-control model to a more complex, bidirectional ecosystem of more and more active players. Operators need to become more customer-centric while increasing energy efficiency to ensure that the lights stay on with minimum expenditure on additional physical grid infrastructure.

Meeting these twin needs around sustainability and customer-centricity requires new levels of collaboration both inside and outside sectors, working with non-traditional partners, regulators, and competitors alike. Central to this collaboration is data. Data sharing is essential to managing climate impact along the entire value chain and achieving the level of flexibility and responsiveness demanded by customers. This is the case for many sectors, not just energy.

However, up to now, data sharing has been easier said than done. A range of challenges must be overcome to achieve it, such as quality, governance, confidentiality, and availability. Adopting a philosophy of system thinking and an open mind-set is essential to help industries break down data barriers and create globally optimized ecosystems. This article explores how the energy sector is starting to tackle the problem, and looks briefly at how other sectors are approaching the issue using similar principles, even if the methods and mechanisms differ.

THE CHALLENGES TO DATA SHARING AND COLLABORATION

Organizations recognize the importance of data and data sharing to effective collaboration across their ecosystem, but they face key challenges:

AVAILABILITY

Information is distributed across the ecosystem and locked in silos within businesses that are unwilling or unable to share it. The data landscape is fragmented, with different levels of organizational data maturity. Non-traditional players are frozen out of the market because of lack of data access, while incumbents struggle to create agile ways to use the data they manage.

QUALITY AND SPEED

Data often cannot be provided fast enough or with sufficient granularity to enable more advanced use cases. Lack of data governance undermines quality and, therefore, trust by users. This results in users and market players launching their own data collection methods, which adds to complexity and leads to lack of interoperability.

STANDARDS

Data created by different players is not in standard or easily exchangeable formats, and has no common vocabulary to describe data. For example, a "customer" can mean different things to different organizations (or even between departments in the same company). This lack of interoperability holds back sharing on a technical level.

CONSENT

Safeguarding personal customer data is central to operating ethically and legally. At the same time, customer interest in sharing data to improve their experience is growing. However, gaining customer consent to use data beyond basic billing and operations is not embedded in current processes. Fears over breaching regulations results in trapped data value.

MIND-SET

The culture within many industries (such as transport, financial services and energy) is heavily focused on compliance and avoiding unnecessary risks. Clearly, this is important. However, it can lead to a conservative, inward-looking culture that fails to see and embrace the benefits that data sharing brings.

SAFEGUARDING PERSONAL CUSTOMER DATA IS CENTRAL TO OPERATING ETHICALLY AND LEGALLY.

In addition to these internal factors, industries are grappling with an accelerated pace of regulatory change, particularly around sustainability. This can create bottlenecks within supply chains that result in missed potential. For example, grid congestion can hold back renewable energy uptake that has been encouraged by regulators.

Taken together, these factors lead to lack of system thinking and failure to see the big picture. Data is used to drive local, isolated initiatives instead of enabling collaborative, industry-wide optimization.

BREAKING DOWN THE SILOS – A PHASED APPROACH

The complexity and challenges outlined above can be overcome through a combination of collaboration and customer-centricity, often enabled by regulatory push.

In general, a phased approach, which involves gradually widening sharing outside the core participants in an industry, seems more effective than a big bang. This requires three layers of ambition, as shown in Figure 1.
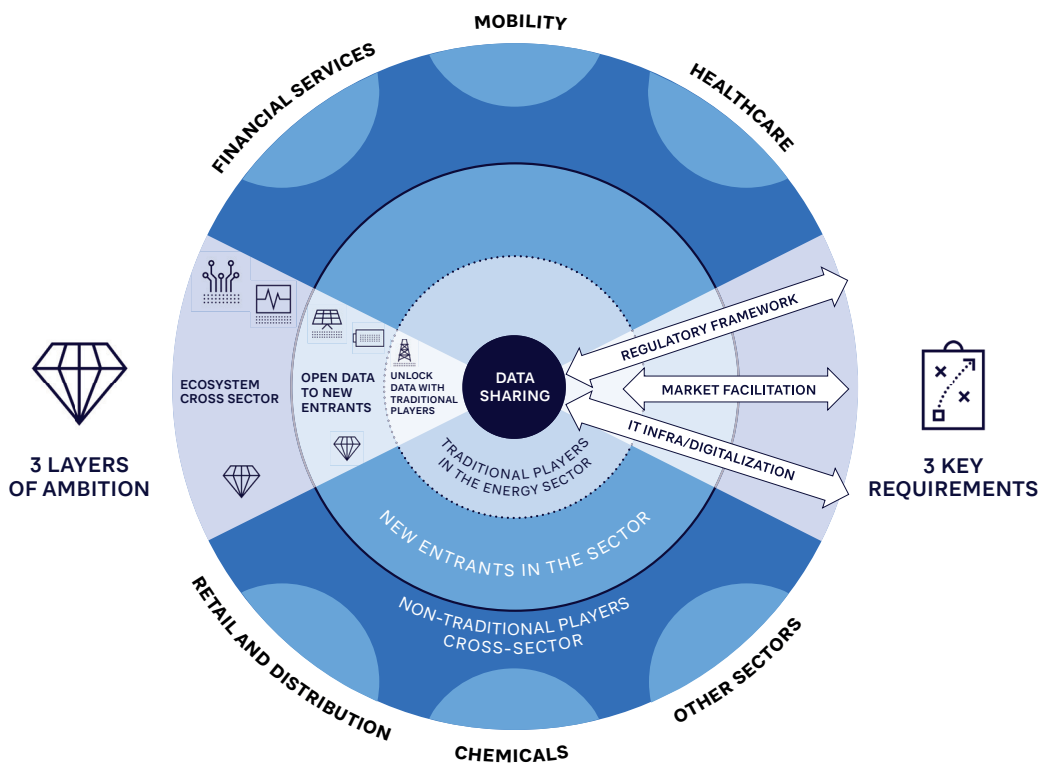
FIGURE 1: A THREE-LAYER APPROACH TO ECOSYSTEM DATA COLLABORATION IN THE ENERGY SECTOR

The first step starts with the customer and involves **unlocking existing data** so it can be reused across traditional players (for example, in the case of energy, grid operators and energy retailers). The second step involves **opening this data to all players in the sector,** including new entrants. The final step is to **create a dynamic digital ecosystem**, with data shared more widely beyond the traditional sector boundaries. Throughout this approach, the needs of the customer should be at the center.

Key requirements need to be in place at a high level to enable this:

– A **regulatory framework** that sets legislative ground rules for collaboration and data sharing, backed by robust customer data consent mechanisms.

– Inclusive and effective **market facilitation** that gives all potential players a voice. This should include a collaboration forum for collective decision-making, as well as operational capabilities to enable cooperation.

– A **cross-industry IT infrastructure** that supports data exchange. Customers should be able to manage access to their data easily, and standardization helps market players access it seamlessly.

DATA SHARING IN THE ENERGY INDUSTRY – AN EXAMPLE FOR ASSET-INTENSIVE SECTORS

To illustrate this approach in practice, the Netherlands energy market provides a good example.

The energy industry is typical of many distributed, deregulated, asset-intensive sectors, which are now being disrupted by changing customer requirements and the decarbonization imperative. However, it is set apart in that it has been faster to collect and share data at a customer level, through ongoing roll-outs of smart meters. When combined with grid asset data, this potentially gives players access to a comprehensive range of data sets to enable collaboration. In the Netherlands, three obstacles have been preventing the energy sector from moving towards a fully integrated, interconnected, digitalized market, including lack of:

– **A transparent regulatory framework**, with no incentives for players to become more open

– **Facilitation across the energy market**, covering customer data, access for new players, and slow decision-making processes at market level

– **Transparency and openness within current market governance**, which prevents effective decision-making

The above points mean data was solely used for closed and isolated system processes (such as supply, switching, and balancing), and only shared with a small group of market participants. To enable sector-wide data sharing, the energy grid operators, working with ADL, initiated a new Energy Market Facilitation Framework. (See Figure 2.)
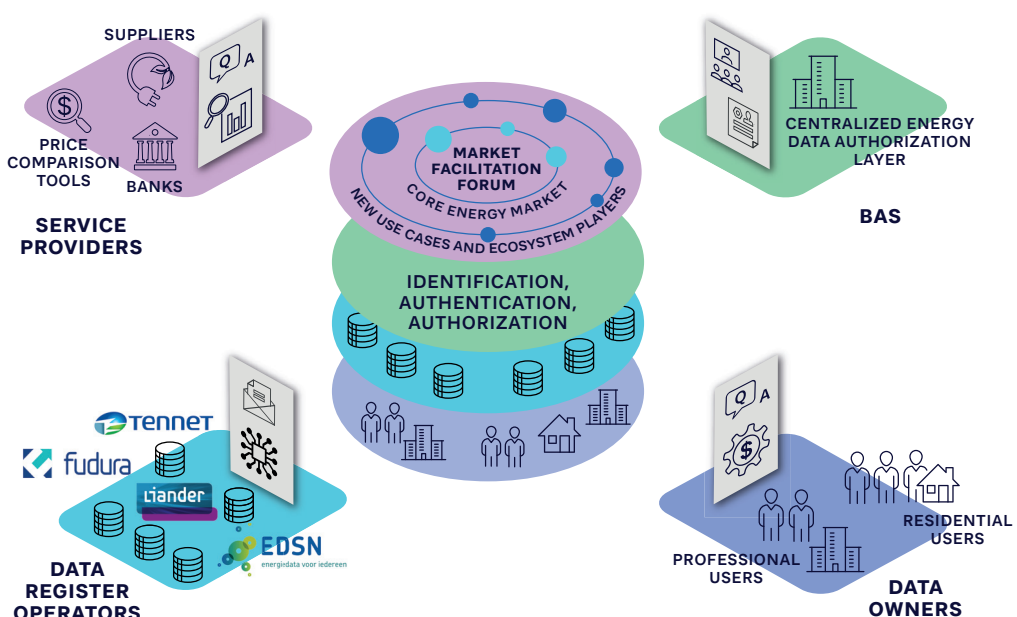

FIGURE 2: ENERGY MARKET FACILITATION FRAMEWORK

The first step was to support the necessary regulatory and legal changes needed to open the market to new technologies, players and use cases. All players were then aligned through setting up a market facilitation forum (MFF[1]), a new consultation and decision-making forum open to all energy sector stakeholders. A second entity, BAS, was created to execute the decisions made by the MFF. BAS[2] is responsible for the technical and operational side of data sharing, and currently creating a centralized energy data authorization layer.

The new framework covers the identification, authentication, and authorization of any requests for data sharing enabling multiple new use cases. These could include, for example:

– Customers who can share accurate household energy usage data when applying for bank loans for green renovations or solar and battery storage

– Insurers that can monitor household energy efficiency to automatically adjust their premiums and deliver greener products

– Construction companies that can use energy usage data to audit how a property can be made more sustainable. Aggregated efficiency data can also be used at district, city or country levels to enable targeted interventions and funding

– New services to manage EV batteries, such as providing predictive maintenance and optimal charging, based on insights into the charging profile and real-time voltage level of the connection. This also enables more granular grid balancing with tariff flexibility for consumers

These use cases vary in their complexity, and different players have different levels of digital maturity. Data therefore must be made available in multiple formats and ways (such as through a self-service portal or APIs). The examples listed here are not exhaustive – essentially, opening up data lowers barriers to entry for new players, and therefore encourages innovation and new, customer-centric use cases.

Klaas Hommes, Director of BAS NV

Rethinking how data is unlocked and distributed within and across sectors is a top priority. In the energy sector, for instance, having data in a uniform and transparent way with a centralized consent layer for customers facilitates market growth and sector-wide collaboration.

1. Marktfaciliteringsforum
2. Beheerder Afsprakenstelsel

HOW OTHER INDUSTRIES ARE APPROACHING DATA SHARING

The approach successfully applied in the Netherlands energy market is not the only model for data sharing. For example, sharing can also be underpinned through blockchain or federated learning. Different approaches have different strengths and weaknesses. Below we provide an overview of how other sectors are approaching data sharing.

FINANCIAL SERVICES

In financial services, data sharing across banks has become standard practice, at least in the EU, thanks to the Payment Services Directive 2 (PSD2) regulation. Data can be shared with other banks, fintech players, and even those outside the industry, such as retail companies for their loyalty programs. This aims to drive greater customer centricity through additional services and more choice, while lowering barriers for new entrants.

THE FINANCIAL SERVICES APPROACH HAS BEEN MORE DECENTRALIZED THAN THAT OF ENERGY PLAYERS, WITH EACH BANK MANAGING ITS OWN DATA-SHARING CAPABILITIES.

The financial services approach has been more decentralized than that of energy players, with each bank managing its own data-sharing capabilities. The lack of a market facilitation element means there is no centralized data authorization layer for payment and account data, and customers have no central place to manage consent or determine with whom their financial data can be shared. This may explain why PSD2 has not yet had the consumer traction that was expected at the time of its inception.

MOBILITY

Lacking a proper level of data exchange, modern cities currently struggle to build more sustainable and customer-oriented urban mobility systems. In line with the phased approach suggested above, mobility data might be unlocked in stages:

– First, authorities could open their infrastructure data related to mass transit networks, stations, mobility hubs, road networks, traffic and parking data.

– Second, mobility service providers could give access to data regarding routes, schedules, real-time and historical status of vehicles, fleet capacity, and deployment.

– Third, going beyond mobility, urban planning and events data can be exchanged, including information on public spaces and points of interest.

This data collaboration should be led by local authorities through data and service exchange hubs that cover all ecosystem players. The approaches mentioned above for the energy sector are also broadly applicable for urban mobility.

HEALTHCARE

Digital transformation of healthcare is key to achieving objectives around quality, access, efficiency, and enablement of personalized healthcare. Already the rise of wearable medical devices and remote patient monitoring is increasing the volume and availability of data. This is allied to the growth of electronic health records (EHRs), which make information more widely available and underpin a more decentralized patient journey. Data volumes in healthcare are also compounding, with increasing large-scale biologic information being gathered from genes

HOW DATA IS GATHERED AND STAKEHOLDERS' INTERESTS ARE MANAGED CAN ENABLE OR HINDER THIS TRANSFORMATION, PARTICULARLY WITH PATIENTS SHARING THEIR DATA.

and other pools of molecules. The aim is to develop much more personalized treatments and identify personal risks at a very early stage. Sharing this data securely will require a clear ecosystem approach with a digital hub that allows for safe and compliant collection, processing, analysis, and data sharing across key ecosystem stakeholders (such as doctors, patients, payers, hospitals, research institutes, and drug developers), as well as adoption of new technologies.

How data is gathered and stakeholders' interests are managed can enable or hinder this transformation, particularly with patients sharing their data – especially if they feel it is not being used to directly benefit them or it is being shared with third parties who will exploit it for commercial gain. To overcome this, multiple stakeholders need to work together. Government must promote implementation of integrated systems and knowledge sharing, potentially backing it with legislation to deepen the protection of personal data. Private institutions can supply specific analytics skills that many healthcare providers lack.

RETAIL AND DISTRIBUTION

Sourcing good-quality, exhaustive product information from suppliers is paramount for distributors and retailers. Most often, "not enough detail or information" is the primary reason given for online cart abandonment. Additionally, retailers are legally responsible for displaying key technical specifications, such as energy efficiency and flammability of certain product categories.

Brands also rely heavily on product content to engage with customers and convey their values. Product syndication is an important part of this, differentiated depending on the retailers and their audiences.

Product data has historically been exchanged bilaterally between brands and retailers, using diverse solutions and proprietary data formats. In order to improve efficiency, multiple retail sectors have organized themselves to facilitate data exchange:

- The construction supplies industry has collaboratively developed common data models for exchange of product data, through standards such as Fab-Dis, ETIM, and BMEcat.

- In consumer goods, players have built shared data platforms for product data synchronization, for example, leveraging the GDSN standards established by GS1, the leading not-for-profit standardization organization.

These approaches have driven efficiency and productivity gains through greater collaboration, systemic thinking, and strong governance.

CHEMICALS

Arguably the single most important strategic challenge to the chemical industry is meeting its sustainability objectives and targets, particularly around decarbonization and circularity.

The chemical industry increasingly understands that data sharing is a critical enabler to meet rising environmental concerns and regulatory changes around this green transition. Two specific key examples are:

- Tracking, tracing and reporting sustainability performance. Governments, as well as customers using chemical products, are expected to demand ever more extensive, robust and traceable data on areas such as (indirect) carbon emissions and use of recycled and biobased materials. This requires data to be shared between, for instance, every player along the value chain of a polymer, in order to assess the sustainability performance of its end product, such as a component in a car dashboard.

- Optimization of logistics and distribution. Efficient sharing of accurate data helps reduce operational costs, increase resource efficiency, and facilitate a seamless modal shift (i.e., between transport modes over land and sea). It also helps optimize business processes through greater real-time planning and steering, increased sustainability, and more end-to-end transparency. Finally, real-time data sharing may bring early/proactive detection of risks and enable rapid intervention.

INSIGHTS FOR THE EXECUTIVE

Across all industries, data is the fuel for increased collaboration and innovation to meet the twin needs of sustainability and customer-centricity. Even historically less-regulated sectors will be impacted by increased legislation. Data needs to be shared beyond traditional players, widening ecosystems to bring in new entrants for the greater good, while enabling existing companies to embrace new opportunities and reap the benefits of innovation. However, to be shared effectively, data needs to be freed from silos and made interoperable and available to all, while strong governance and consent mechanisms are ensured. The key transferable lessons from how the energy sector has approached this are:

– **Put the customer at the center of the program**. Customer-centricity is essential to deliver the right framework to meet their changing needs.

– **Ensure you create a clear storyline** related to the need for change, explaining the specific benefits and resolved pain points for each of the different market parties. Focus on showing "what's in it for me" for each persona.

– **Take a phased, iterative approach**. Ecosystems contain a wide range of players and market participants with different agendas, and players need to get their buy-in and build a governance model. The Dutch energy example started with grid operators to fund and facilitate the framework, and then moved on to retailers, before widening to new market players. This will allow the value proposition for each stakeholder involved to be gradually built.

– **Create a forum for stakeholders** once the seed is planted. A steering committee or taskforce of key stakeholders helps to jointly shape and implement suitable governance, with facilitators needed to drive wider adoption. The forum should be representative and participative. The value increases exponentially with the number of active players involved.

– **Involve regulators/government**. This may lengthen time frames, but it provides a legal mandate and ensures compliance with supranational laws, such as EU regulations, as well as protecting customer data. If applicable, embed the governance as part of the regulation.

– **Understand that data sharing is not a tech-led solution**. While a flexible, scalable data platform is important, ensuring adoption requires cultural change and buy-in, particularly from traditional players. Technology alone is not enough.

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