INFORMATION PRINCIPLES FOR THE ENERGY MARKET





SUMMARY

This paper introduces nine Information Principles, based on industry best practice, and revised and updated for the privacy conscious age we find ourselves in.

There is considerable value in the information held across the energy industry, but to get the most value from it requires a consistent approach to managing it, sharing it, and where possible opening it up to as wide a use as possible.

Where we start to unlock the value held in consumer data, there will be huge concerns around privacy and ethics if this is not done in a safe and transparent manner. We recommend use of our Information Principles as a means of ensuring this is done correctly.

These principles are a tool to address the challenges around the governance, security and ethical use of information, while at the same time promoting innovation through data-driven initiatives.



INTRODUCTION

Like other sectors, the energy industry is realising the value in sharing information between organisations and in publishing its information to promote openness and innovation. With the high degree of regulation across its multiple organisations, the energy market has a lot to gain from a modern information strategy relevant to the digital world in which we now live. Historically, the focus has rightly been on transactional data¹. The rollout of Smart Metering across the UK is a high-profile example of how this type of data can drive value both for consumers looking to better manage their energy usage, and an industry seeking to be more responsive to its customers' needs. What has been less evident, is how the industry intends to treat non-transactional data², and realise the benefits that this could bring.

There are many initiatives to address this, primarily with the Government and Ofgem establishing the Energy Data Taskforce³, at which Gemserv has representation. One of the Energy Data Taskforce's key objectives is to report on "a list of the key data or data sets that are held by industry, Ofgem, Government or other parties, their main attributes and who would benefit from accessing them, and which should be made public, under what conditions."⁴ The Energy Data Taskforce is currently focussing on the datasets around energy assets, descoping (at least at this stage) consumer datasets, which will lead to improved flows of data to optimise the overall operation of the energy system.

Similarly, Fingleton Associates have published a report on the behalf of the Federation of Small Businesses⁵,

- Transactional data describes an event or transaction with a time dimension which becomes historical once completed, such as a purchase order or a meter reading.
- 2 Non-transactional data describes things which typically have longer durations than transactions, such as customer name and address.
- 3 https://es.catapult.org.uk/projects/energy-data-taskforce/

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- 4 From the Terms of Reference at https://www.gov.uk/government/groups/ energy-data-taskforce
- 5 http://www.fingletonassociates.com/publications/open-energy-reportpublished-by-federation-of-smallbusiness/

describing how an open approach to energy data can benefit customers. Its key recommendations on standardising tariff data - enabling it to be easily machine-readable and allowing third-parties access to smart metering data - both point to the value in transactional data. However, it is in the recommendation to allow intermediaries to operate on behalf of customers when switching between contracts that we start to see how other data sources will be required. To make this a reality will require the wider use of the customer's personal information, which will increase the scrutiny on how the industry values the trust of its customers, and the ethics it employs in its use of this data.

Our experience shows us that unless the energy industry gets its fundamental Information Principles right, clearly articulated, and the various interested parties signed up and adhering to them, it runs the risk of repeating the mistakes that have plagued other sectors in their efforts to improve the use of data. In the worst cases, this can lead to suspicion of the objectives you are setting out to achieve and ultimately the rejection of them.

At Gemserv, we have developed a set of Information Principles that underpin the data-driven initiatives in which we are involved. These are drawn from our already published thought leadership pieces on the future of energy governance⁶ and our experience from across many sectors. We are sharing them here as a pointer to what adoption of principles can mean in a wider context, across the energy sector, as a means of promoting consumer trust in our use of data, as well as maximising the value we can all derive from that data. We recommend their adoption more widely across the industry as a means of ensuring consistency in our approach to information handling.

6 https://www.gemserv.com/modernising-energy-governance-a-goldenopportunity/

https://www.gemserv.com/modernising-energy-governance-part-2investing-in-the-future/ https://www.gemserv.com/modernising-energy-governance-part-3-forging-

ahead/



DATA SHARING, OPEN DATA AND THE BENEFITS OF STANDARDS IN A DIGITAL WORLD

In this era of digital initiatives, the tools for both collecting data at scale – especially through Connected Devices and the Internet of Things – and the analytical methods for drawing insights and deriving business advantage from it, are growing in sophistication and main-stream deployment. Decision-making is being revolutionised through a greater uptake of artificial intelligence and machine learning algorithms.

It has long been a rule that the better the quality of data available to an organisation, the better it will inform its decision-making processes, and the better will be the outcome of those decisions. In short, better data equals better decisions. This has led to an explosion in tools and techniques to manage data quality, and to ensure that the data held is as complete, up to date and correct as possible. Similarly, the ways in which we derive insights into data has improved dramatically in recent years. The energy sector may begin to adopt the distinction between data and information that is used elsewhere. The terms are often used synonymously, and this paper purposely continues to refer to data as a result, though it is in information where the real value lies - data in context, with meaning⁷, often derived using digital technologies built on high quality data.

DATA VS. INFORMATION

Data are facts, details, etc. which are either atomic or joined with other data, but do not convey any meaning beyond themselves, for example, a date of 2^{nd} October 1869.

Information is data in context, where the data is processed, organised and structured to give it meaning, for example the date of 2nd October 1869 becomes Gandhi's date of birth when put in context.

Data can exist without information, but information cannot exist without data.

Notwithstanding this distinction, the energy industry can benefit hugely from the sharing of data as it becomes more and more onerous and costly on each individual organisation to manage good guality data on its own. This is clearly facilitated by the widespread adoption of good data standards, built on a commonly understood data dictionary, to ensure that the data collected and validated in one organisation is understood as the same in the organisation which shares that data. Data standards already exist in parts of the industry, such as those developed to support the use of transactional data within the Smart Energy Code⁸, whilst others date back many more years than this. There is no single common data standard to which the very broad range of stakeholders in energy⁹ can readily use, albeit a number of localised standards do exist for specific purposes. Midata¹⁰ is an initiative seeking to address this, by creating standards through which third parties can access consumer's energy data in a controlled and secure manner.

Ownership of data is a challenge to be addressed, and one which other sectors are increasingly solving by turning to digital technology, allowing different user communities the tools to manage their own data. The less reliance an organisation places on the direct value of the information it holds itself, the more likely it is to be willing

- 8 https://smartenergycodecompany.co.uk/document-download-centre/ download-info/gbcs/
- 9 This includes regulators, consultancies, academics, as well as energy suppliers and network operators, and of course consumers themselves
- 10 https://www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/ midata-energy-project

7 https://www.diffen.com/difference/Data_vs_Information

to participate in open data initiatives, such as those promoted through the Open Data Institute¹¹, itself a supporter of Midata. Other sectors have benefited from the adoption of open data, as it is widely accepted as a stimulus for genuine innovation. Transport for London is a great advocate¹², which has seen a broad rise in the value its data brings to commuters in London. Gemserv has recently published its thinking around a governance framework for electric vehicles¹³ (EVs), and Transport for London are also active in this new and exciting area, recently publishing their open data standard for EV charging points¹⁴.

Open data is also recognised as an enabler for trust. Organisations are coming under increasing levels of scrutiny, especially where the data they hold, and the uses they put it to, is unclear. Those who keep their information locked away in the interests of competitive advantage increasingly run the risk of their customers using tools such as Subject Access Requests to make them more transparent. Transparency is at the heart of open data and so can help mitigate this, as has been recognised by the Co-op¹⁵, who have built several open data initiatives into their data handling model. Similarly, the question of how ethical organisations are with their customer data is now being asked. While being open with data doesn't necessarily equate to using that data in the right way, it is a step in the right direction.

There will always be situations where a legitimate commercial or business reason exists for resisting open data, but this needs to become the exception rather than the rule. Trust, transparency, and the ethical use of data will be the key considerations when the data is personal to individuals or, in the current context, energy consumers.

- 11 https://theodi.org/project/open-standards-for-the-uk-energy-sector/
- 12 https://tfl.gov.uk/info-for/open-data-users/
- 13 https://www.gemserv.com/our-thoughts/electric-vehicle-governance-frameworkevgf/
- 14 https://blog.tfl.gov.uk/2018/03/19/electric-vehicle-rapid-charge-points/
- 15 https://digitalblog.coop.co.uk/2017/04/24/being-trusted-with-data/

THE CHALLENGE WITH CONSUMER DATA, AND THE LESSONS WE CAN LEARN

At Gemserv, we believe there is a huge untapped value to be realised in treating consumer data in the same way that the industry has been looking at asset and transactional data. This will lead to insights in the way we consume energy and correlations between energy consumption and other non-energy services, like health and wellbeing alerting. Clearly, this introduces some difficult, though not insurmountable, challenges as we move from sharing non-personal data to data which can be used to identify the habits and behaviours of individuals. The energy sector, like every other, has been through a seismic shift in its attitude to handling personal information as it has readied itself for GDPR¹⁶. For example, granular consumption data is already classed as personal information and explicit consent needs to be given by consumers in order for it to be used.

GDPR is unequivocal in the obligations it places on organisations to use data (and the information derived from it) for the purpose it was first collected. However, it is often through what are known as "secondary uses" of data, meaning data which has been collected for one purpose, but which can provide valuable information for something else, where some true innovation can occur. An example is the use of smart energy data in the home coupled with artificial intelligence, to alert the medical services in the event of anything unusual in the habits of the person living there. While this example can use consent to align with GDPR, other scenarios may require techniques such as data anonymisation to achieve their goals.

GDPR sets the benchmark for the legal use of data: what can and cannot be done with it. It is clear a new battleground for the use of data will be what should and should not be done with it: data ethics. Social media services in particular are coming under increasing scrutiny in the way they use their customers' data. Simply because an individual has uploaded personal content after accepting terms and conditions does not give the social media provider the right to do what they want with that data. Especially since the terms and conditions were probably never fully read and digested. Social media

PROTECTING AN INDIVIDUAL'S INFORMATION WHILE KEEPING ITS VALUE

Anonymisation – The process of masking, encrypting or otherwise removing personally identifiable information from datasets to protect privacy. It is not reversible.

Pseudonymisation – Similar to anonymisation except that the process can be reversed using separately held information. This allows information in different datasets to be linked, while still protecting privacy.

Aggregation – Gathering data and combining it into datasets in a summary format. Personally identifiable information is usually removed in the process.

companies may be in the clear legally, but that is increasingly not the demand being made on them. The UK Government is already spearheading the establishment of a Data Ethics Framework for digital services, and organisations publishing their ethics policies in much the same way they have published privacy policies in the past.

Despite this, it is so easy to get it wrong when it comes to personal data. History has shown us that when you don't get the basics right, you can engender mistrust and rejection of what you're trying to achieve. A case in point is the NHS, and its troubled history in the sharing of patient health information across health providers. The aim is straightforward and honourable enough: to improve patient care. If I fall ill far from home, I would like to think the hospital treating me would have access to some of my basic health information so they can treat me in the best way possible. This was the original motivation for the Summary Care Record administered by NHS Digital¹⁷. The NHS set the bar high for privacy and security controls from the outset, yet despite this a small number of GPs were sceptical. This scepticism was passed on to their patients, and so began what became a widespread movement to refuse to "opt-in" to patients sharing of their health records.

16 The General Data Protection Regulation – for a guide, see https://www.gov.uk/ government/publications/guide-to-the-general-data-protection-regulation

17 https://digital.nhs.uk/services/summary-care-records-scr

This took considerable time, effort and cost to reposition and communicate better the trust that patients could have in the service, resulting in the Care Record Guarantee¹⁸. The lesson here is that good consistent communication of why consumers should trust us with the safe handling of their energy information is paramount. Failure to do so will result in a damage limitation exercise, and may never be wholly repaired. The problems that have beleaguered the NHS with the Summary Care Record were still prevalent in a related initiative – the care.data programme¹⁹.

A key tool in explaining how we intend to use information are the principles which we have formulated, documented and can demonstrate we abide by.

THE NEED FOR INFORMATION PRINCIPLES



Principles are general rules and guidelines, intended to be enduring and seldom amended. They define the direction an organisation wants to take and are often most useful when deciding between options – the option which best fits the principle ideally being favoured. They should never be completely prescriptive and inflexible. Where a course of action doesn't align with them, their existence allows that course to be followed with an understanding of its implications. Gemserv has developed a set of Information

- 18 https://digital.nhs.uk/services/summary-care-records-scr/informationgovernance-for-scr
- 19 https://www.bbc.co.uk/news/health-26259101

Principles to inform how we want to treat information in several of our projects, such as our work in shaping the strategy of the Market Intelligence Service which we are undertaking with Xoserve, and which will underpin our thinking around the future of the Retail Energy Code (REC). Their purpose is to aid traceability, analysis and decision-making. Information Principles form just one element in a structured set of ideas that will collectively define and guide our values through actions and results. Information Principles are not new, and these build on work from across the public and private sector, especially on work previously published by HMG²⁰. Since these were published, the advent of GDPR and growing public concerns around how information is used by organisations means that they need extending, especially in an energy market as regulated as ours.

In considering the principles, it is useful to think of them as building blocks. Some of them may seem self-evident, but they each build on the other to define outcomes which can be aligned to them.

20 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/ attachment_data/file/266284/Information_Principles_UK_Public_Sector_final. pdf



Foundational

The key foundation is that we consider information as an asset. This might seem like an abstract concept, but it directs a number of key business decisions – particularly in the C-Suite – about how to treat information like other valuable corporate assets, especially in the investment decisions to keep it accurate and timely in the way it is collected and processed. Ofgem has identified data quality as a significant area of focus, establishing a Data Working Group²¹ to consider how best to cleanse industry data ahead of Centralised Switching and the REC. This is an important signal that Ofgem wants information to be an asset for the industry, and builds on initiatives already underway by Smart Energy Code Adminstration and Secretariat (SECAS) within Smart Metering.

Enablers

Building on this foundation are the enablers – those principles which allow us to develop the data-driven services which really begin to add value to our information asset. This means firstly ensuring all industry information is appropriately managed, and that the appropriate controls are in place to ensure its quality, integrity and availability, according to its value. How we protect information, be it personal data or commercially sensitive, also forms part of

21 The Data Working Group is a sub-committee within the governance of the Switching Programme, tasked with delivering data cleansing and migration preparatory to Central Switching Service (CSS) go-live and with defining areas of the data architecture for the REC and CSS. how we manage it. Understanding who owns the data (and whether some categories of data don't actually require ownership) is central to this principle, and this has often been a thorny issue within the energy sector. Secondly, we talk about information being fit for purpose, and we can start to introduce metrics around data quality, and ensure the controls are in place to monitor them and act on them.

Finally, the concepts we have already talked about, in terms of ensuring there is a common data dictionary and standards around how we exchange data, are encapsulated in the principle of making information standardised and linkable. The energy industry already has mechanisms for managing how rules regarding data standards are adhered to, but there is no overarching function, independent of the individual Codes, managed by someone other than Code administrators. The Energy Data Taskforce is looking at solutions for this in relation to asset data.

When making information standardised and linkable, it is important to differentiate between the principle as an enabler, and a solution which may either be centralised or federated in terms of where data is located. In the energy sector like many others, there will be instances where it is appropriate to pull data into a central data repository, and instances where it is better to keep the data in its repository and access it from other services when necessary – a federated model. This principle allows for both.

Services

The next layer is the information services, centred on reusability and accessibility. There is inherent value in information where it can be reused, in terms of cost savings and efficiencies. We know that managing this can be problematic across the energy market through our experience with a unified dual-fuel registration service predating the current Market Intelligence Service. We cover the lessons we have learned about what can and can't work here in the next section.

Similarly, allowing direct access to information by the right stakeholders (which includes consumers, switching services etc.), through digital tools, can lead to greater cost savings. Who better to update and manage a customer's contact details than the customer themselves? And how much more powerful if this change can be accessed and shared across the industry?

Sharing and Openness

All of which brings us to the top-level principle, that of information being published. This is where the real value of information across the energy sector comes into play, and will challenge many of our current understanding of information ownership and our current commercial interests. The Energy Data Taskforce is building a consensus around the value of open data as an impetus to greater innovation, and is working on the principle that all data should be open unless there is a demonstrable reason to withhold it. How this is achieved pragmatically is yet to be determined, but depending on the nature of the data could be a combination of legislation, licence conditions, or energy codes. The benefit to the industry of becoming more accountable and approachable about the data it holds is that it will ultimately engender greater trust.

Engendering Trust

However, simply being more open and transparent about our use of personally identifiable information will not in itself make consumers more trusting of how we manage their information. We are increasingly seeing how the ethical values of an organisation translate into how they manage data on their customer's behalf. Just because an organisation can legally use data in a certain way, does not necessarily mean it should. In the digital world, with the use of Artificial Intelligence and Machine Learning techniques becoming more widespread, ensuring that these algorithmic processes do not themselves behave unethically is becoming a central area of concern²², which we at Gemserv are taking a leading role in addressing. The more the energy industry embarks on serious digital transformation initiatives, the more it will need to think of consumer data as belonging to the customer, and the more it will need to build in controls and safeguards to manage not just the ethical values surrounding the use of this data, but in managing how the other principles are adhered to.

Which brings us to the role of information governance in this: setting the parameters for information management and usage, and resolving the issues that may arise. At present, governance, like information assets themselves, is fragmented across the industry. We at Gemserv have a history of administering a number of energy codes, and in ensuring that discrepancies in their adherence are reported and addressed. If the energy industry is serious about ensuring it becomes a truly open and transparent, data-driven economy, then an equivalent governance framework (including a 'council' or governance body) will need to be established across the industry. This will ensure all participants are behaving correctly with the information they manage, whatever part of the market they operate within. At present, Gemserv are focussing on the areas we can make a difference in, as the next section explains.

²² https://www.gemserv.com/director-co-uk-ai-and-ethics-cutting-through-thehype/

HOW WE ARE APPLYING THESE PRINCIPLES

The Market Intelligence Service (MIS)

Ofgem's Switching Programme aims to harmonise the gas and electricity retail energy market. To do this it will deliver the REC, which aligns key areas of the governance underpinning the retail energy market. It will also deliver a cross-fuel Central Switching Service (CSS) to replace the currently separate gas and electricity customer switching processes. When scoping the Switching Programme, Ofgem decided that the future of non-transactional²³ uses of retail energy data was best defined by the energy industry itself.

The MIS is a joint initiative between Gemserv and Xoserve which arose from the need for the industry to define its own non-transactional retail energy data needs. It can be divided into two discrete areas of activity:

- Delivery of specific improvements to the existing provision of non-transactional retail energy data, as identified by retail energy market participants; and
- Definition of a strategy for non-transactional data in the energy industry to complement the Switching Programme.

The key specific improvement has been to develop Application Programming Interfaces (APIs) for the Electricity Central Online Enquiry Service (ECOES) and the Data Enquiry Service (DES), which enables data integration in these key switching data repositories through a shared set of technical standards.

The implementation of these APIs embodies our Information Principles. As long-standing custodians of consumer personal data, we have used our experience to ensure that data is used to the ultimate benefit of its subject, and sought consent before we use it. Data providers have control over who can access their data with a comprehensive set of checks and balances to quickly identify and address misuse. The improved access methods we are offering strike the appropriate balance between security and ease of use.

We believe the opportunity exists to further foster consistency in data products, to improve their choice, and to ensure their ethical use. Users of energy data need consistent data products and data subjects need to know how their data is being used and why. Users of energy data also need choice. Their needs are diverse, the domain is large and complex, and competition between data providers will benefit users and ultimately the consumer. Using our Information Principles allows us to build on the lessons we have learned to date and could result in a model as shown in the following diagram.

23 In CSS, we use "non-transactional" to mean all of the secondary uses of retail energy data which are not the operational act of switching a customer or of managing metering assets. In other words, the CSS will deliver a new transactional hub for customer switching, but legitimate other uses for switching data will still exist



This recognises the growing need for an industry wide, cross-fuel approach to ensuring that the public asset of information is governed ethically and readily available under the appropriate circumstances. We aim to achieve this by reflecting our principles in the design of the MIS, the key features of which are:

- Independence it is governed and delivered separately from any one industry code or interest group
- Demand-led gathers requirements from a broad user community, connecting users to appropriate existing data products and facilitating delivery of new products where needed
- Standards-driven Creates and manages standards for data sharing and assures that individual data products are compliant with them
- Assured "MIS-certifies" data products and maintains a whitelist of offerings that conform to the MIS standards
- Non-Prescriptive it is not itself a data product. Rather, it is a way to give the user community a single vehicle for delivering its data needs, provide confidence in the data they're using and to ensure ethical use of data.
- Inclusiveness it is open to any data product that meets the MIS standards.

CONCLUSION AND NEXT STEPS

In this paper we have shared our nine Information Principles, which we are using in our current digital projects and which will underpin future ones. Data-driven initiatives sit at the heart of digitalisation of services, but where that data can be used to identify people, the challenges around its governance, security and its ethical use will need to be addressed. Adhering to the principles are a demonstrable step to ensuring these concerns are taken seriously, while at the same time promoting innovation to get the maximum value from data.

There is huge value in the consumer information held across the energy industry, but to get the most value requires a consistent approach to managing it, sharing it, and where possible opening it up to as wide a use as possible. To be most effective, and to achieve the consistency which will provide consumers with the greatest confidence, we believe these Information Principles should be adopted across the industry.

A significant programme of work will soon be undertaken to consolidate the governance of a number of energy codes into the REC. Our next paper in this series will focus on how Information Principles should sit at the heart of the strategy for managing the REC, and how they will be pragmatically applied to ensure that REC data is fit-for-purpose and used to the benefit of all.





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