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ONS-Data Visibility: Research Insights - Round 1

5th May 2020

Users and Methodology

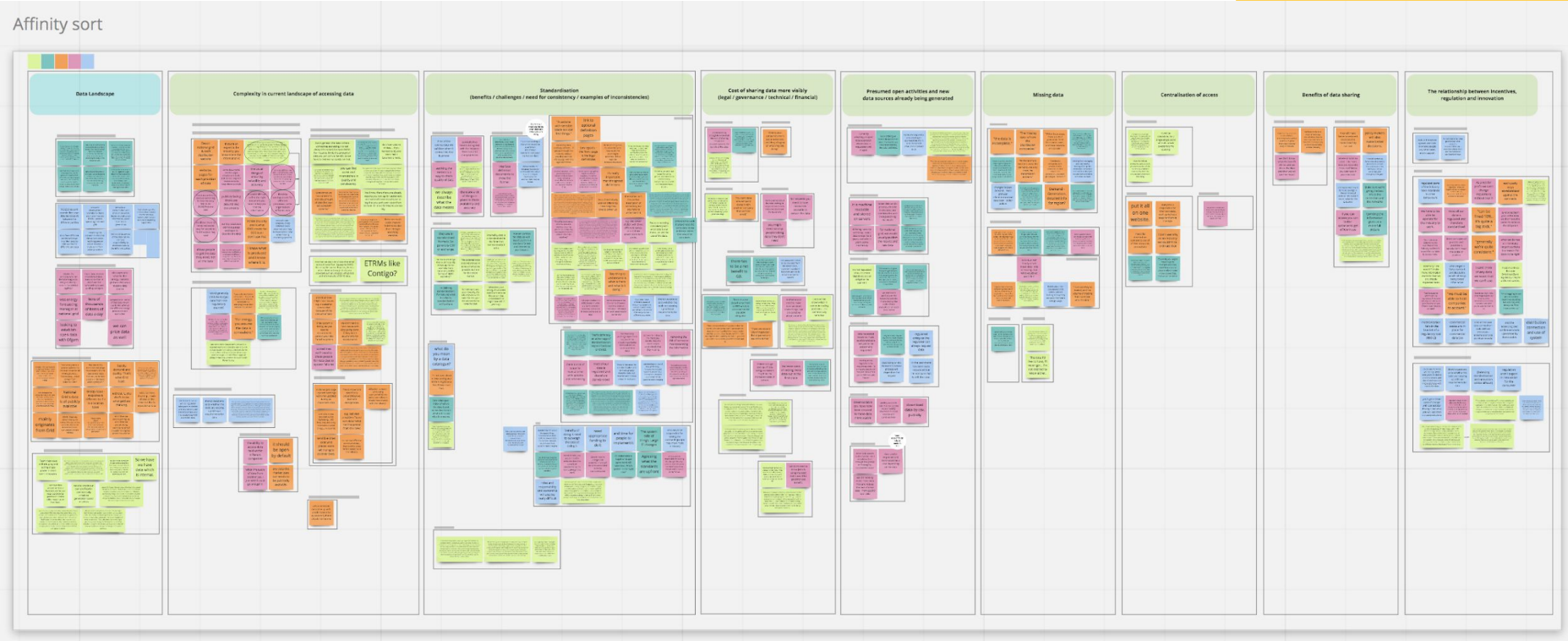
User research

Users

- 5 people
- Organisations: Elexon, Electricity Systems Operator (ESO), Waters Wye Associates, E-on
- Roles: Head of Short Term Optimisation & Dispatch, Modelling Development Manager, Consultant, Data Management, Business Lead
- Remote moderated interviews

Objectives

- Understand how data is currently being used and shared within the business
- Understand if metadata standards are being used already and whether there is appetite in the industry to use a shared standard
- Explore benefits/costs to data visibility
- Explore the idea of motivations, incentives and regulation and how these will impact the industry



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Summary

User research

Summary of Insights

Our insights are broken down into 8 themes

- Access to data
- Standardisation
- On-going presumed open activities
- Missing data
- Centralisation of access
- Benefits of data visibility
- Costs of data visibility
- Incentives, regulation and innovation

We've also been capturing how the users provide and consume data, this has informed our thinking around how we might represent the relationships amongst users to inform both this Discovery and future phases of work.

Access to data

Access to data

Due to the difficulties of sharing and consuming data, expert users are reliant on their industry knowledge of what data is produced and where they've learnt they can find this data

"If you're an expert in the industry, you know where the information is… I know what is produced and I know where it is." - U03

"Separate data catalogues because they're different processes and different companies. e.g. data and docs might be owned by different companies." - U04

"Allows people to get the data they need, not all the data." - U04

"The data is all there. It's just getting into a wrestling into a form that's usable and tractable, which is the the issue." - U01

Recommendation:
Carry out research with "distant" users - innovators and academics - to understand their experience of finding/using data so as to form a fuller picture of how data is accessed.

Access to data

However, existing catalogues / definition documents are context-specific and numerous, and the current experience of using these does not necessarily facilitate a simple or ideal user experience

“I think there's good reason why that happens externally, for things like electronics File flows, because these are things that you know, have to be machine readable and form a very strong process. There are data catalogues for all these flows mean, and they're horrendous, not because they're designed badly, but because the number of flows is so complex, because the number of rules [across] the industry is so complex.” - U01

“We'd love there to be an enhanced way for people to find the data they need” - U04

“Publicly facing there are around 350 documents.” - U04

“Some documents are 400 pages already so it could just be too long so it makes sense to keep them seperate.” - U04

Recommendation:
Understand the paths that “distant” users take to understand data, and if they find they have a means to do so. Cross referencing this with “close” users’ experiences of catalogues will be of value, since we might see a lot of this complexity spilling over, and informing some of the issues in access identified in the next slide.

Access to data

Where data is available, the process of consuming it is cumbersome, with users noting issues around limits on the volume of data you can consume, the quality of the data, and the ability to find data (which is potentially linked to the need for common definitions)

"How exclusive the data is versus overlapping. for example... you might have two summaries of something. But actually the right hand of summary one, overlaps the left hand of summary two. And trying to unpick, that could be quite difficult." - U01

"We see this with asset registers. We might have the full name for a site and in a register the other party's put together, it might only have part of the name, things like that which the human eye you can actually translate quite easily but when it comes to using a computer system it has more issues than you think they would." - U02

"But in general, the data is there sometimes extracting it is not always the easiest because BMRS for instance, limits the amount of data you can call via the API. So we have to find workarounds for that." - U01

"National Grid is good at putting stuff on the website but it's difficult to find, but then National Grid say ask google. When people in the organisation don't know, how am I supposed to find it? There are much easier ways to find information than through electricity websites." - U03

Recommendation:
Supplement this - and other pain points - with the experience of "distant" users (academics + innovators) in finding and using data, identifying similarities/differences in pain points which will help define what users need from the end service.

Access to data

A lack of centralisation results in numerous different paths to obtain similar data from across the sector

“For REMIT, there are several routes... which is a bit frustrating because there should be a 'you can only do this route' because it ensures consistency... there are specific routes, but there are options around it.” - U01

“The only time might be for data analysis - e.g. looking at the effects of lockdown on demand... we might want to look at the impact of weather... then you might compare it with the met office data which wouldn't be accessible in the same way or in the same place.” - U02

“And some of the data in some providers is exposed via the kind of a data back end with with particular formatting others isn't. So we have to find out how to access the data we need. We've got a lot of different types of calling of that data, whether it's via API's with Power Query.” - U01

"Especially distribution companies... they've all agreed to do it (publish registers) to the same basis but annoyingly it's on their website, not central." - U03

Recommendation:
Continue to explore this need in research with “close” v. “distant” users (this pain point feeds into the broader emerging need for centralised access amongst the users).

Access to data

The complexity of the landscape has led to the use of services that simplify data that is already made available across numerous platforms

"And then we also a lot of data that either comes directly from, I guess the BMRS, Balancing Mechanism Reporting Service, either direct or through third party providers such as Enappsys, who precis and reformat a lot of BMRS data." - U01

"We also use Contigo as our ETRM [to help us manage trades and settlement]." - U01

Recommendation:
Understanding how these data services are used, and understanding what these services do well in meeting user needs, will be invaluable to defining the value the end service will need to add.

Access to data

Consumers of the data wanted the ability to access data that they are aware of without barriers

“It should be open by default” - U03	“Any data the market puts out needs to be publically available … I just want to get the data, or see the data!” - U03	“[I would like] the ability to access data held within different companies” - U04	“When I'm aware of data from another job, I just wish i could go and get it.” - U04	“Unless someone can come up with a valid reason for a password, there should not be one” - U03

Recommendation:
Further understand both “close” and “distant” users’ expectations for accessing data, and other barriers they may face to this end (e.g. monetary costs), which will continue to inform what the end service looks like.

Access to data

Consumers of data have also noted physical and digital operational issues as pain points to data access

“The other thing is reliability. So what we'll often find, for example, if we're consuming data through Reuters is all of a sudden one of the feeds will drop or it'll change. Or one of the things at the moment for instance, on ENTSO, which is the peer and wide network transmission system, Reporting Service. The data around the within day scheduling of the interconnectors to and from Ireland is now delayed by four or five hours ... things like that is quite frustrating because we tend to end up with gaps in data that we've got to spend time filling in.” - U01

“Sometimes we'll need to chase people for data due to system failures.” - U04

“National grid page - system warnings were not updated during an important crisis, with generators finding out vital information from the press.” - U03

“What you tend to find is, individual sites get a problem with data, but that tends to just impact running settlement. So I had a client last week they got second by second metering at their site. And because National Grid hadn't come pulled the data off their metre, their meter crashed with too much data.” - U03

Recommendation:
Understand the extent to which these operational issues affect “close” v. “distant” users, and further understand the severity /exclusivity of this issue in this same context.

Standardisation

Standardisation

There is a need for common, agreed definitions to ensure consistency of how data is being described across the industry - and this needs to be flexible to be ‘future-proof’

"Ensuring consistency of units, data and sources. Ensuring you're not comparing inaccurately from the point at which it's obtained." - U04

“New types of tech coming forward - register of the assets - storage doesn't say much about what it is. 30 mins or 6 hours of export. they're different and need to be broken down. we need to agree what those definitions are.” - U03

“If you go through the industry codes, I would expect the information to align with the legal definitions.” - U03

“Standard reference - each power station has a National Grid and Elexon name - this being standardised would help make it clear if you're talking about the same thing.” - U04

Recommendation:
Continue to validate this need and identify what the highest value areas for common definitions across “close” and “distant” user groups are.

Standardisation

There is a need for standardised formats for the data alongside common definitions for the data, in order to ensure data can be shared more readily

“[In reference to REMIT data] ... formatting to say, you know, my, my site only works if it looks like this, your site only works for looks like that, which can get annoying.” - U01	“You can sanitise the data as well - hopefully it’s in a standard format and cleaned as you’d expect.” - U02	“[In reference to standardisation] they are in standardised formats. So generally CSV or exchange.” - U02	“And some of the data in some providers is exposed via the kind of a data back end with with particular formatting others isn't. So we have to find out how to access the data we need.” - U01

Recommendation:
Further understand the different formats that different users expect to consume data in, from “close” to “distant” users.

Standardisation

The benefits of standardisation are understood as being cross-referencability of data, improved understanding and use of sector data, and organisational efficiency / reduction of errors caused by manual processes

"The main one is just being able to put the different sources of information together. Mm hmm. So whether it's, you know, whether it's putting into standardising on different locations or developing a single hub, which has already done that standardisation and alignment would obviously enable those different sources to put together with less additional effort. Yeah. So so be able to more quickly do things with them and produce answers.." - U02

[without definition, demand can mean different things to different people] if you made the assumption, probably missed something. Or you might start putting that with something else and coming up with a different answer to say, what's the right one, you just come up with a different answer - U02

"there is a lot of scope for manual error with updates and referencing… we have a big auditing department too, but if the industry was better standardised we could save time there" - U04

"Oh, value [of standardisation], for me is the ability to transfer and manipulate data. And once you've got that, it reduces the need for human integration to manage the transfer, which can then reduce errors in the quality of the data. [Standardisation] then enables you to have a more efficient, quicker process in sharing data with other parties and making it accessible." U05

Recommendation:
Research whether these benefits outweigh the perceived costs of standardisation for organisations, and how to mitigate if so. Identify any other benefits in further rounds of research.

Standardisation

One user noted that there was a move to ‘standardisation by value’ within retail contexts

“The customer operations stuff is always operating on the basis of the public good, because the energy still operates in this kind of space in half public good and half a commercial enterprise... those standards all energy companies are trying to adhere to almost for the good of the customer rather than any commercial advantage to themselves.” - U01

Recommendation:
If possible, talk to suppliers / retail arms of Big Six to understand exactly what the value of such standardisation was understood as being

Standardisation

The costs of standardisation are broadly seen as being technical, financial, governance-related, and even competitive

"Because part of if you think about the people who make money from data, take Enappsys ... they are a company who's very, very good … at [presenting] BMRA data … They're never going to want to get a standard that cuts out that that that value added - U01

"you either need mapping removed from the internal representation to an external representation, or to update all the internal systems with the agreed standard." - U02

"All stakeholders together to get agreement will take time. Whose system is the right one?" - U02

"who would be responsible for owning the change? who has version control? when is it done? document change control would be key for us." - U04

standardisation would be a good thing... however we've build systems around data hierarchies. changes could mean those systems need changing - U05

Recommendation:
Investigate these costs further. Are costs unevenly distributed across organisations? What's the specific nature of these costs? Are some costs more severe than others?

Standardisation

Most organisations do take efforts to standardise as per codes and best practice, but issues around common definitions highlight that these efforts aren't aligned in a way that makes data consumption easier

"The external data is standardised in terms of what we provide, but not for the entire market." - U01

"data definition documents... when we say demand on that, because you can demand me many different things. Yeah, we're saying exactly what it does contain what doesn't contain what all the columns actually mean." U02

"interface definition documents to show the format [and specifications of the data]" - U04

"Active member of European Association of TSOs (ENTSO), which is quite strong in developing the common information model." - U05

Recommendation:
Understand why efforts are disjointed. Understand what motivates joined up efforts where these exist, e.g. Gas Demand Forecasting. Further explore challenges to a joined up approach to standardisation in the context of data that is extremely context-specific (could be a deterministic model). Explore further if there are specific approaches being used, e.g. Dublin Core - and why.

Standardisation

Some users were unable to fully articulate the meaning of the terms “data catalogue” or “metadata”

“I wasn't sure if metadata was was kind of the almost imagining a sort of a pivot table where you've got some some some summations. And then if you double click to expand it, you then get all the bits below. I wasn't sure off the top level was metadata and the rest was whatever the the subset is” - U01

“what do you mean by a data catalogue? I assume it’s a list of the data...

I just want the data!” - U03

Recommendation:
This is an interesting semantic issue, since it is possible that users use definition documents of some sort without explicitly viewing these as catalogues - we need to continue exploring this with research. However, it’s an initial indicator - alongside insights around access - that a data catalogue *alone* is not enough to make data discoverable, searchable, and understandable

On-going presumed open activities

On-going presumed open activities

Some organisations are currently working towards a presumed open framework, however this is typically within the constraints of current licenses and processes

"It's a funny one this because there are already some things that you might say, could be classed as confidential and proprietary, but people do share. So for example, when our demand forecasting teams are looking at trying to feed into the industry, algorithm production for gas demand. So this particular algorithm that's used to set gas demand and to kind of flex it according to weather and things like that, and it's of course imperfect because you know, it's trying to describe something stochastic or something deterministic. So the demand forecasting team will talk to their counterparts, British Gas, EDF, etc, to try and cooperate in a way that will improve the outcome." - U01

"We are taking on board the presumed open framework as recommended by the data taskforce." - U02

"Currently adopting an open data approach where data is requested and triaged." - U04

"We're working with a presumed open approach but it's in accordance with what we're licensed to do." - U05

Recommendation:
Continue to explore how other organisations are working towards a presumed open framework in order to understand how we can better align these efforts across the sector.

On-going presumed open activities

Recent changes in organisations have allowed data to be published and shared in a machine readable, downloadable format for consumers - making data more usable to consumers.

“ESO has recently set up a Data Portal this year, so we'll be sharing more information on that going forward. So from this year's publication, we should be sharing through that and CSV formats and accessible via API calls and so on.” - U02	“Some data we do process, we take in the data and combine that and then publishing the results.” - U04	“It is machine readable and stored on servers.” - U04	Differing rules for archiving - some data is kept for 2 years, some for 7 years, some indefinitely - U04

Recommendation:
Ensuring data is machine readable and downloadable will be factors we need to explore the need for further with consumers to understand what they need from these functions and why.

On-going presumed open activities

Organisations are predominantly sharing data to be visible as it is regulated and therefore they had to provide the data for this purpose.

"It's not requested of us, it's more that there is a an obligation to submit it." - U01

"There are some obligated data exchanges between the ESO and the TO, to real. And also some some bits for the Gas TOs as well, DNs. Again, we're sharing that type of information through there." - U02

"We share data publically on the balancing website. mandated by the code - freely available on an open data licence." - U04

Recommendation:
Continue to explore how best to balance regulations with other motivational levers and incentives in order to make the most impact.

On-going presumed open activities

If data is not publically available, providers expected there to be a request process for the ask to be reviewed and prioritised in order to ensure the benefit of sharing the data is worth the cost

"They can make a request, but then we would need to look at how we make that information publicly available if it's not already publicly labelled." - U02

"Data requested would be made publicly available not just to the person who requested... in principle people will request data and a panel will evaluate impact." - U04

"Depending on the data and business process will depend on the request… we're a regulated entity so the regulator can always request data." - U05

Recommendation:
In Alpha, research the end to end process for a request, and how this will be managed and financed.

On-going presumed open activities

One organisation has worked towards reducing the cost associated with data, however believed the charge for the data would need to be reviewed depending on the data being requested.

“Data can be requested and there would be a cost depending on the data.” - U04	“We did recently make more data free and reduce the cost of other data - from £3,000 to £1,500.” - U04	“Other data specific to the market - sent directly to them through two grades of messaging - expensive/cheaper.” - U04

Recommendation:
Carry out more research around why data has costs associated with accessing it. Explore how this potential barrier to access impacts the consumer.

Missing data

Missing data

Users explained that the data unavailable to them was from the distribution networks and therefore they do not know the real demand of energy for consumers

“Because we only have the metering information for what comes off of the transmission network, we don't know what the real demand is, we don't see what people are actually using, we see a net position.” - U02

“They just weren't visible to the transmission side of things. But that's improving, it could still be a lot better and clearer. And then if you get into the really microgeneration as well, so behind the metre things, again, our sight of that is not very clear.” - U02

"The missing data is from the distribution companies." - U03

"At the moment we don't know the demand.. we only know the transmission network." - U03

Recommendation:
Carry out research with users from the distribution networks in order to better understand their needs and what could influence data sharing.

Missing data

Even where data is visible, there are gaps with regards to the details given, therefore this leaves some consumers wanting more

"I can see they've traded, and the volume of trading but i can't see who it's with." - U03

Individual half hourly smart meter data - this is missing - but what would we use it for? - U04

“Moving from managing peak demand to looking at things like wind/solar. behaviour and technical changes so data isn't consistent with what we need.” - U05

Recommendation:
Continue to explore the difference in transparency for different organisations and how this impacts the consumer.

Missing data

One driving force for data visibility and granularity is increasing consumption of electricity. This breakdown of data will be needed to optimise the process and ensure we can meet the demand

"There will be what there's likely to be an increased electricity demand in the future, on account of domestic heating, that in itself is related to the level of insulation in people's homes, and obviously occupation levels and what people are doing. Again, that kind of information doesn't seem to be available and great resolution." - U02

"On the transport side of things, again, because we're looking out into the future we have. Obviously, we know there will be a growth in electric vehicles. But exactly how those will be used becomes tricky as well." - U02

"New types of tech coming forward - register of the assets - storage doesn't say much about what it is. 30 mins or 6 hours of export. they're different and need to be broken down. we need to agree what those definitions are." - U03

"Some questions about covid could be answered more easily what are people using and are they in a situation where they can't afford electricity any more." - U04

Recommendation:
Continue to explore what future needs there are and how data visibility will be essential to meet the needs efficiently.

Centralisation of access

Centralisation of access

Users have experienced challenges of creating a central source of data within their organisation and therefore are unsure how this will work at scale

I think probably on average, once every three years someone raises the great idea of a data warehouse and says Wouldn't it be great if we had everything, everything in one warehouse where everyone self serve and wouldn't have to go to other teams to get data - U01	It will be consistent, be a single single point of truth, which always has me quaking. - U01	then the minute someone starts to do it, you come across all the real messy problems that exactly describe why no one's ever built this thing - U01	The second, I guess is designing it in a way where you design it for the full spectrum of requirements at the start. And this is something that I think large organisations are guilty of is that usually what happens is the design and the system gets kicked off before the requirements are fully known. - U01

Recommendation:
Continue to research how best to solve the need for centralisation and how this may be implemented in a useful and usable manner.

Centralisation of access

As users just wanted to find data in the same place they suggested having one website where organisations would update their own information but the data would be in one place

"Developing a single hub, which has already done that standardisation and alignment would obviously enable those different sources to put together with less additional effort. So you'd be able to more quickly do things with them and produce answers." - U02

"Currently you might have to go to multiple websites, but if there is one place and everyone knows about that, that would be better." - U02

"Put it all on one website… everyone is responsible for their own data, each party has a page for them to manage.". - U03

"Make the distribution companies put all of their data onto one website… i don't see why as an industry we couldn't co-ordinate that." - U03

Recommendation:
Continue to research how best to solve the need for centralisation and how this may be implemented in a useful and usable manner.

Benefits of data visibility

Benefits of data visibility

Some users felt data needs to be seen as a shared asset (like the physical shared assets e.g. wires/pipes) in order to see the real value of having shared data.

"Depends if you believe in competition... electricity is the perfect example of game theory and you play every 30 minutes." - U03

"We have to share so much already e.g. shared wires. there is no competitiveness in the costs the same way as there would be in another industry." - U03

"We don't know what the benefit will be until we share the data and then we will see the impact." - U04

Recommendation:
Continue to identify what steps can be taken to reach the long term goals, as well as identifying what changes can be made in the interim to demonstrate the value of data visibility.

Benefits of data visibility

Users explained that one benefit of increasing data visibility would be for the industry to better optimise their processes and make better decisions as they would have a fuller picture to do so.

“Combing the information gives us a more full picture.” - U02	“They will make better investment decisions the more data they can see.” - U03	“If you can access the data, you can better optimise to get efficient use.” - U04	“It would be that we have more data readily available on a more frequent basis of the behaviour of the electricity grid throughout the year.” - U05

Recommendation:
Carry out more research to understand what other benefits exist in order to play these back to people in the industry to provide more tangible examples of where value will be added.

Cost of data visibility

Cost of data visibility

All users were able to articulate the costs of making data visible and they wanted to understand how the data was going to be used to ensure sharing that data was beneficial

"In theory, we should be sending National Grid physical notifications of our demand, which we do, but I know not everybody does that. And it says National Grid doesn't do a great deal with it. So sometimes there's data submission that, you know, people aren't using." - U01

"So we would obviously want to make sure that [Cost] is covered, and by covered I don't necessarily mean paid for. Although obviously it does have to be you financed in some manner. But we'd also want that to be of benefit to the consumers as a whole." - U02

"Understanding enough to know that the cost of sharing the data is proportionate to the benefit of the data." - U04

Recommendation:
Explore how we might make communication about data two ways in order to ensure data providers were able to see and understand how using the data was adding value to the consumer.

Cost of data visibility

One users described how staying informed with how their data is being used with other people internally and externally to the organisation helps them to provide useful data, and check it's being interpreted correctly

"Internally it's about control e.g. price forecasting that goes to stakeholders in the mornings, but i need to know what they're going to do with it. E.g. if a plant takes action on the data that's a responsibility of my department... also feedback, if someone is doing something with data, I want feedback so it can impact what i will do. I [also need to know] that it's being interpreted correctly." - U01

"Some companies help us... we buy in their help... "they are an external company... NDA's to show that you're only using something for what you've said you would do."." - U01

Recommendation:
Carry out research to understand what kind of feedback is needed when consumers are external and how best this feedback loop can exist without being burdensome to people.

Cost of data visibility

The process for getting Distribution networks to share data will be slow as all organisations have to agree before any will change their processes and share their data

"Distribution companies won't just provide data until they all agree on what they are doing." - U03

Recommendation:
Carry out research with these users in order to understand their needs for data sharing, and better understand their concerns.

Cost of data visibility

Due to the current complexity and barriers to accessing data, companies who understand how to find and compare/put together data sets have a competitive advantage. Some users will be opposed to making data visible if this affects their position in the market

> “The data is all there. It's just getting into a wrestling into a form that's usable and tractable, which is the the issue. But of course, that also means that if you can do that successfully, you've got an advantage.”. - U01

> "You can't have one company doing it with another company that can't be arsed." - U03

Recommendation:
Continue to research the costs and benefits to different users to help create the case for data visibility that overcomes/mitigates the loss of competitive advantage

Cost of data visibility

If data has to be requested, users explained that organisations would need people with the capacity to review and answer the request and that they would need a process to prevent using data/time that they did not need

"For requests you need to have resources available to extract the data." - U04

"More queries about the data coming in so you'd need more resource to answer the questions." - U04

"You might need to stop people taking data they don't need."- U04

Recommendation:
Research what a request process would look like and how we could ensure this gives people what they need to make a decision on the request without it requiring excessive time and effort.

Cost of data visibility

Users were conscious that the end customer receiving energy cannot be impacted by any changes in the industry to make data open. The costs would need to be covered elsewhere in the industry.

> “There has to be a net benefit to Great Britain.”. - U02

> “We need to be conscious that anything we spent money on from the IT side to make this information available has to be paid for by consumers. So if they're not getting value for money, then we shouldn't be doing it.” - U02

> “The consumer needs to be shielded from the added data... common standard but allow parties to ensure consumer benefit.” - U05

Recommendation:
Carry out research to explore who or how the financial cost of making data visible could be covered by the UK energy industry, without impacting the end consumer.

Cost of data visibility

In order for non-regulated data to be shared externally, the perceived legal constraints that users are weary of would need to be overcome before data can be made visible to consumers

Some companies help us... we buy in their help... “they are an external company... NDA’s to show that you’re only using something for what you’ve said you would do.” - U01

There is some data that we hold as ESO which is protected under the SOFI obligation - U02

There are several bits of legislation that the distribution companies claim [perceived risk] does not allow it to allow them to put make publicly available data. So you can't if it if the monopolies don't publicly produce it, you can't get it and have and the government can't get it. - U03

Recommendation:
Continue to explore these perceived legal constraints to better understand what can be mitigated and where we may not be able to change.

Cost of data visibility

Users also felt commercially sensitive data could not be shared due to the impact this may have on the wider organisation and their market position

"Lines will be drawn when it comes to trading positions ... it's commercially sensitive." - U01

"And we would need to make sure we don't share things that are sensitive about security." - U04

Recommendation:
Continue to explore what data is perceived to be sensitive and why. Understand what can be mitigated and where we may not be able to change.

Cost of data visibility

Users experience technical problems when sharing data internally and find these are heightened when sharing externally.

> Other than that, it's generally formatting to say, you know, my, my site only works if it looks like this, your site only works for looks like that. Particularly if you've gone and got a third party system involved as well, which you perfectly in your rights to do so. So that's really some of the problems that we get on external ones. It's more to do with I suppose there's a bit of firewall type stuff that needs to get sorted. - U01

> the problem we do have is the classic one of the firewalls. So no, I might try and send something to you. And I think that should be fine because you in my company,... but this particular file doesn't work because there'll be some firewall in place that has to get fix that once identified, it might take seven days to get it changed - U01

> So for example, the when we send data to and from that grid, it is it is particular lines there are there are physical routers in place that are, you know, purely for that job. And they go particular protocols, they go over particular parts of the network, they involve perhaps three or four different jumps. When that goes wrong, it's absolute nightmare because the person that understood it or might have left E.On 17 years ago. - U01

Recommendation:

- Continue to explore what technical problems exist and how they are overcome.
- Test different approaches to share data in order to identify the best way to share across different systems.

Cost of data visibility

Users felt that making data visible would have differing costs to organisations depending on their technical limitations and the costs associated with moving to a shared standard/capability to share

"The technical side, of course, that there is a cost to hosting and making data available to people. So we would obviously want to make sure that that is, is covered and not unnecessarily painful." - U02

"Increased costs of setting metadata out in the first place." - U04

"If there is huge take up of data being available it might be the increased costs of servers." - U04

Recommendation:
Carry out analysis on organisations digital maturity and data capabilities to better understand their positions. This will help us to understand what the process and change may entail and therefore cost.

Incentives, regulation and innovation

Incentives, regulation and innovation

Users did not feel that the existing codes for data were keeping pace with data needs, due to it taking years for a new regulation to be agreed and implemented

> “Decisions for what will be regulated take years to decide and implement and therefore there are inconsistencies with needs for data” - U05

> “There's questions as to whether the code are keeping up with our requirements for data” - U05

> And, you know, we're moving from an industry which was very much developed to manage peak demands for people… there's a lot of behavioural changes a lot of technological changes that are driving different In usage and patterns for logistics, and therefore, the data transfer [with DNOs] is quite rigid around certain points. - U05

Recommendation:
Carry out research to better understand this problem and how it affects different types of users.

Incentives, regulation and innovation

It will be difficult to balance the need for innovation along with effective incentives or regulation

"What we get [data] is fairly standard and that is the benefit of things being coded information." - U05

"What we [Elexon] do has a monetary impact so there is a reason for data to be right." - U04

"Regulation should be last resort not the first way. There is already a lot of regulation. Regulate where it needs to be regulated but don't introduce the over head where it isn't needed" - U04

"You'll get a faster pace of change with competition driving it but what you will lack then is standardisation. [at the same time] regulators aren't expert in innovation for the consumer." - U05

Recommendation

We need to further understand through research the balance between regulation, incentivisation and innovation in an effort to make data more open.

Incentives, regulation and innovation

As the energy industry is interconnected, the impact changes make to the wider system cannot be ignored if any data sharing service is to be successful

> “It’s not clear what roles people play, what people's responsibilities are... transformations don't lean themselves to standardised ways.” - U05

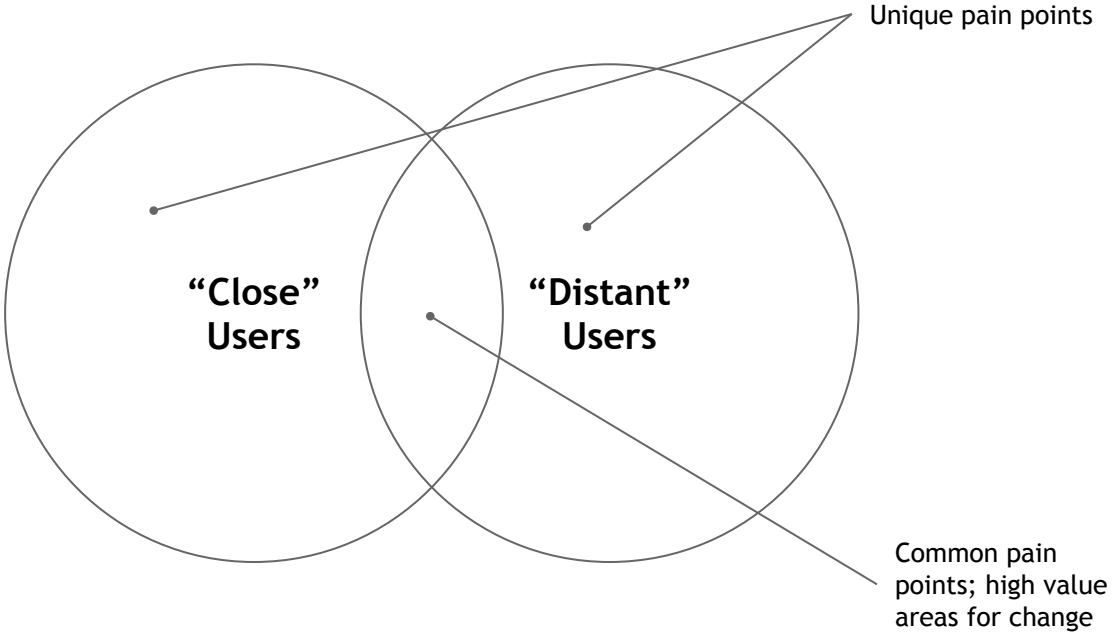
> “Look at the whole system and look at where people are, who needs more support.” - U05

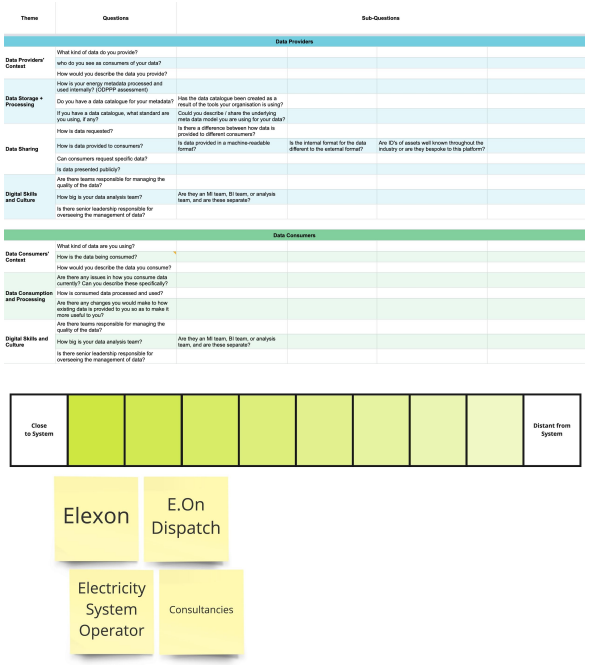
Recommendation:
Continue to do research with different types of users across the industry in order to build up the big picture and their needs to consider all organisations and users in the design of the end to end service

Current Thinking...

User research

User Segmentation

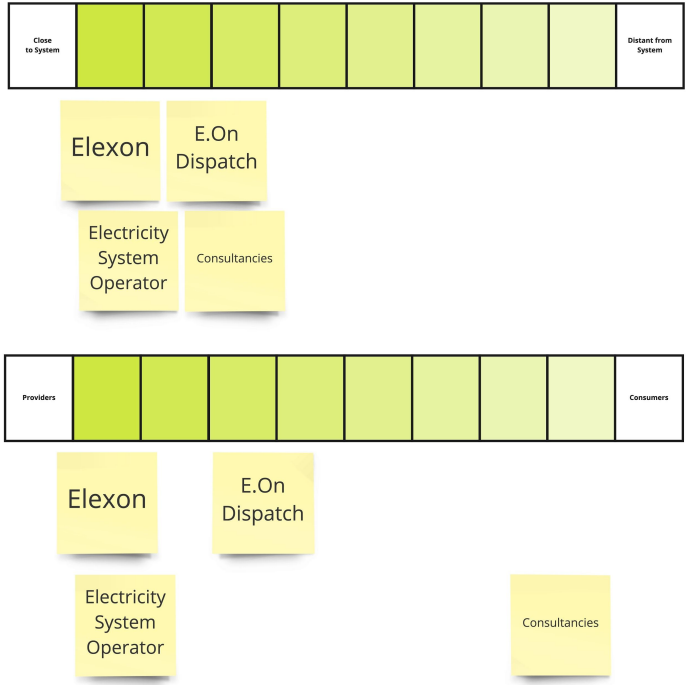


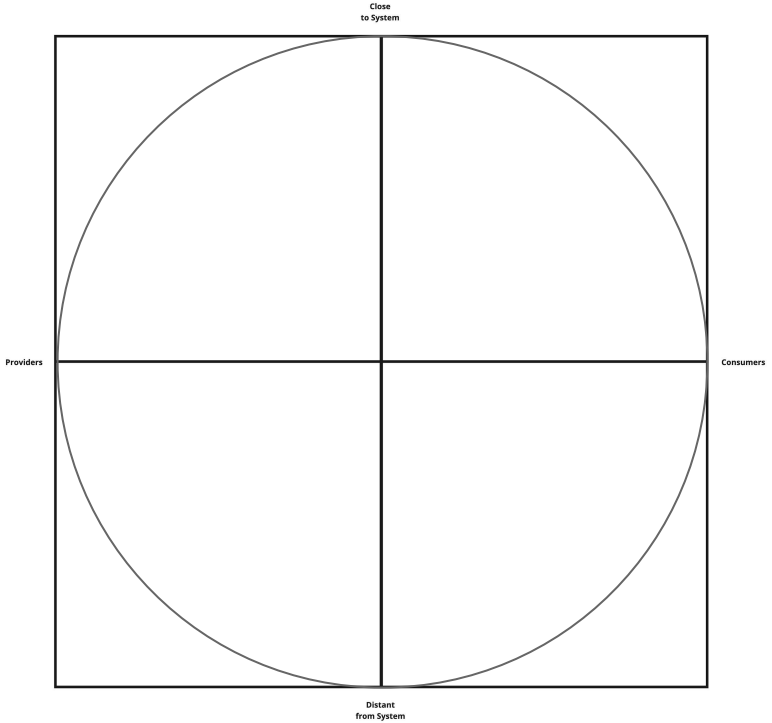


Theme	Questions	Sub-Questions			
Data Providers					
Data Providers' Context	What kind of data do you provide?				
	who do you see as consumers of your data?				
	How would you describe the data you provide?				
	How is your energy metadata processed and used internally? (GDPPP assessment)				
Data Storage + Processing	Do you have a data catalogue for your metadata?	Has the data catalogue been created as a result of the tools your organisation is using?			
	If you have a data catalogue, what standard are you using, if any?	Could you describe / share the underlying meta data model you are using for your data?			
Data Sharing	How is data requested?	Is there a difference between how data is provided to different consumers?			
	How is data provided to consumers?	Is data provided in a machine-readable format?	Is the internal format for the data different to the external format?	Are ID's of assets well known throughout the industry or are they bespoke to this platform?	
	Can consumers request specific data?				
	Is data presented publicly?				
Digital Skills and Culture	Are there teams responsible for managing the quality of the data?				
	How big is your data analysis team?	Are they an MI team, BI team, or analysis team, and are these separate?			
	Is there senior leadership responsible for overseeing the management of data?				
Data Consumers					
Data Consumers' Context	What kind of data are you using?				
	How is the data being consumed?				
	How would you describe the data you consume?				
Data Consumption and Processing	Are there any issues in how you consume data currently? Can you describe these specifically?				
	How is consumed data processed and used?				
	Are there any changes you would make to how existing data is provided to you so as to make it more useful to you?				
Digital Skills and Culture	Are there teams responsible for managing the quality of the data?				
	How big is your data analysis team?	Are they an MI team, BI team, or analysis team, and are these separate?			
	Is there senior leadership responsible for overseeing the management of data?				

User research

The big picture





Next steps

Next Steps

Agreed next steps

- Draft user needs so far
- Carry out research with innovators and academics