S2 E4 – Data and Digital Energy Transition

Baringa's Energy Innovators Podcast

James:

Hello and welcome to Baringa's Energy Innovators podcast where we help you make sense of the energy transition's greatest challenges and opportunities. I'm James Constable and in this podcast series I speak with the leading industry experts to learn how they're putting people first and creating impact that lasts to fuel their energy transition. Does National Grid have a view of what data is going to be most valuable? When, at what point, or are we still working that out?

Gavin:

It very much depends on your perspective and your interest. And actually, I often find that there are unexpected benefits, particularly for sharing or integrating data across different domains. So, for example, you can look at the data around consumption and combine that with weather. So, if we're looking at solar and wind to make a contribution, then modelling climate and the weather data and combining that with maybe customer behaviour.

James:

Hi, and welcome to the podcast. Today we're joined by Gavin Goodland, National Grid's Chief Data Officer and a client of ours at Baringa. Gavin's a digital technology leader and his career has been in both the supplier and buyer side of the market across countries and continents within the digital and business function.

We're also joined by Anne-Laure Mercier, who's a specialist in data exchange and leads Baringa's practice around digital spine.

So today we're going to be talking about the role of data and digital within the energy transition. It's a topic that we've talked about before. We're very lucky to have Gavin with us today because of his experience and his role in National Grid. So I think just to start with, it'd be really interesting Gavin to hear about your career background and also your role in National Grid. Then we can pass over to Anne-Laure and you can give us some insight into what we're doing in Baringa on this area.

Gavin:

Well, thank you very much for inviting me in, James. Pleasure to be here and meet you both.

Yeah, my career actually has mostly been and started in oil and gas and I worked for many years both for major operators and some of the service companies that work in that sector, and that's quite a data intensive world. A lot of acquisition of data to reduce risk and make sure that operations are safe and reliable and so on. And that gave me quite a lot of experience in interesting parts of the world in Russia and South America and the US and so on.

And I've done my own personal energy transition now; I'm working on that and working at National Grid to really put data onto the list of the things that they consider to be their superpowers.

James:

Great, great. That's super. And what about your role in National Grid? Just to give the listeners a view of what spans.

Gavin:

Sure. Well, National Grid is a network company. Of course, what we do is we connect power generators to consumers through transmission and distribution. Increasingly that is a digital experience. As well as electrons flowing around that network, there's a lot of data flowing around that network. And I think in order to achieve our ambitions for the energy transition and so on, we need to be really dominant on that data topic and understand how we can maximise the efficiency of that for a clean and fair and affordable future for everybody.

James:

Super. Thanks, Gavin. Great. And Anne-Laure, do you want to just give us a view of the work we're up to in Baringa in this area and then we can get into the meat of it?

Anne-Laure:

Yes. So in the area of digital transformation, we're doing lots around both retail network and on the core energy side, but also into the part are more central in the enterprise IT as well around procurement, for example, supply chain, finance. So there's really lots going on around digital transformation across the whole value chain for energy companies.

James:

Cool, cool. Okay. So just for context, when we're talking about data and the digital spine, my, I suppose, dumb interpretation of that is I'm literally thinking of some infrastructure that anyone can access that enables almost public sharing of data so that we can speed up the energy transition.

Is that a fair interpretation of that?

Gavin:

Yes, I think so. Look, there are many stakeholders in this network in the endeavour we have in order to keep the lights on in order to be really efficient about that and so on. We've got a lot of points where data is collected and shared across the supply chain with regulators, with customers, of course.

I'm sure you've got your own personal experience of looking at your bill in new and novel ways and where you can see insight from how you may be using your power supply and so on. So there's the increasing amount of data measured every turn. And in order for us to really change the grid, how we think about that as it's becoming more complex and it has to include more renewable energy, then we've really got to become more effective about how we manage the flow of information, but in a secure way as well because this is critical national infrastructure.

So, my understanding of the digital spine is that there's very much at the heart of that is a trust framework, which is a kind of a fancy concept for essentially a set of registries and directories where stakeholders can register their interests so that if we are sharing data in that ecosystem, we know exactly who we're sharing that data with for what purpose so that we're not inadvertently sharing data about critical national infrastructure to unknown parties.

James:

Okay. And what are the kind of challenges and, I suppose, risks associated with implementing this maybe in National Grid? Because maybe wrongly you could assume it's the modern age, the data's there, maybe we should be easily able to get it, there's AI, could we just get this data and pass it on if

we need to? What are the challenges facing that? And I'm sure it's way more complicated than that, but just talk us through actually the scale of this challenge.

Gavin:

Yeah, sure. Well, data is a bit of a... It's a thixotropic substance, right? The more you stir it, the harder it seems to get. I mean, some of the challenges of course of just the quantity and the complexity with instrumentation and measurements now possible, the increased digitization of all of the equipment, and the sort of standards are associated with that. All of that leads to the complex ecosystem.

I think we need to take a more modern approach than simply perhaps these long burning modelling approaches that perhaps we've taken in the past to a much more of a sort of data fabric where there's individual data products that are registered and provided by different stakeholders in that landscape. And we break down the problem, but we use some central coordination to share that and make that efficient.

Anne-Laure:

Maybe to build on that, there's also a question of consent for sharing the data that needs to be also considered in what you were saying about cybersecurity and keeping the data to only the necessary users and not beyond that. So all the governance around data.

James:

The GDPR and all that other personal information and all that, but also-

Anne-Laure:

GDPR, but also just data that belongs to customers that may not need to be shared or need consent before it's shared. Yes, indeed.

Gavin:

Well, I think there are some industries that we can draw parallels to. So oil and gas, for example. Oil and gas has been routinely sharing data amongst joint venture partners for years. I remember making computer tapes and putting them in a cardboard box and sending them in the post to different joint venture parties.

And of course, that's moved online now. But that industry worked very hard to make it easy to share data amongst all stakeholders through initiatives like the open subsurface data universe, which is a bit of a mouthful.

James:

What is that?

Gavin:

Well, it's a long way of really describing the set of data standards that make things interoperable for the businesses to lower the cost for everybody of being able to share data in a standard way.

James:

And who sets sets that? Who is the architect of that universal standard?

Gavin:

Well, I think it was created by a consortium of the operators themselves, plus facilitated by bodies like the Open Group who provide the mechanism, the governance processes and so on that help the actual direct stakeholders to do the work and crowdsource that work really.

James:

So when we saw that happening in oil and gas, are you seeing the signs of that starting to happen now or where are we proximately to that? Obviously it's great. It's really interesting you've been through that already. Where are we?

Gavin:

Well, I've been having some interesting conversations recently about the development of the same in our industry, and I think there's an opportunity actually to leapfrog and do things in a more modern way.

The idea that we would have a trust framework, which the inspiration has come from banking for that, open banking. And if you talk to other luminaries like Gavin Stark and so on, he's been working with others to create that concept that could be applied in our industry. And I think that is very interesting because what we don't want to do obviously is provide data to people that shouldn't have it, but also artificially increase the cost for everybody by creating copies of data everywhere. We don't want to do that.

James:

Right. Yeah, okay.

Gavin:

It has to be super efficient. And so how you share the architecture of that, I think is quite an interesting problem technically to solve.

James:

Yeah. That's fascinating. And what are we seeing on our side?

Anne-Laure:

Well, what I'd like to add to this is that there is a really important need for use cases and to not create data and duplicate data for no specific usage. So there's a need to develop these use cases in the industry and for the energy transition, there's lots of different type of users that we can see that can be from suppliers of parts or components to transformers, for example. That can be from installers, that can be use cases for energy suppliers or for the end consumers or for the networks and enabling the balancing of the network for example.

So keeping the use cases in mind will really allow for developing the right framework around the data to make sure only the data that is useful for these use cases can be made available and can be made available for the right participants in the market.

James:

And I can think of, even in the work that I do with large end users and B2B suppliers, investors, I could think of an endless areas where data needs to be improved. So do we have a view already of

the waterfall of biggest most valuable problem that needs to be fixed now in line with the energy transition plan? And do we have a view on that in Baringa or does National Grid have a view of what data is going to be most valuable when, at what point, or are we still working that out?

Because do you start, for example, at the consumption point, so helping, for example, CPOs understand where EV charging demand is greatest or whatever, or do you start at the TSO level looking at, as you say, transmission costs and OPEX, et cetera?

Gavin:

I think it very much depends on your perspective and your interest. And actually I often find that there are unexpected benefits, particularly for sharing or integrating data across different domains. So for example, you can look at the data around consumption and combine that with weather.

So if we're looking at solar and wind to make a contribution, then modelling climate and the weather data and combining that with maybe customer behaviour consumption, the capacity of the network and so on, you can do these complex integrations to create new insight and values.

James:

That is actually really interesting to me because this is something I know about for once. So I was with a B2B energy supplier just the other day and they were talking about this that we were suggesting some work and they said, "Well, no, actually what we really want is to understand which customers have which assets behind the metre so that we can more accurately forecast demand behind the metre."

And I was like that is... See that sounds so basic, but actually if you were an energy trader and you were trying to understand how to optimise your position, that obviously is an absolute requirement, right? So taking that use case, have we seen that start to be implemented or how far away are we from that as well?

Anne-Laure:

So there've been some strong development in the regulatory space, but up to, I think it was October this year, there's been mostly pilots that have been developed in a decentralised way. So there've been different solutions developed, some data sharing platform for some DSOs for NDNOs for example, to share their data on open data platforms. There've been some connection platform as well that Baringa has been involved in with the ENA, the Energy...

James:

Networks Association.

Anne-Laure:

Networks Association. Thank you.

And to enable to gather this data, so that can be made available for the participants that need that data for installers of assets, for example, for the connection, because there's a lot of difficulties in this area. So there have been multiple of initiatives, but what we've seen since October, there have been a new regulation that came that is mandating the usage of the new data sharing infrastructure from 2026.

So what we're going to see in the future is a much more centralised view, and this is for the UK of course, what I'm explaining here where all the participants will have to come towards the same data

fabric or data digital spine, whatever we want to call it, to get this data, to put this data, to make this data available.

Gavin:

The point about what innovations are possible and happening are just exploding definitely from the consumer perspective because there are things... I know in some markets that we operate in, for example, and I'm just reading an article yesterday about our business in America where you have consumers that are generating solar power in the summer when demand is higher and now they're being incentivized to sell that into the grid in order to help the grid to support higher demands through things like air conditioning and so on.

And they're using batteries to provide that drawdown and that requires quite a lot of coordination of data between the parties because the consumer wants to know how much they've sold, and then there's a rate for that.

James:

I guess you take it for granted actually. I mean, you slowly get used to it, don't you? And yeah, I guess you're right. There is so much. There's the half-hourly metre reading, there's the wholesale price data, there's the battery dispatch system, and that's just in one home. There's a lot going on actually. And you do take it for granted, don't you slightly? This may be solar generation that's being captured.

Gavin:

Yeah. And for me, this is the fascinating thing. I mean, it's a big physics problem and it's an engineering problem. And I think traditionally as a geologist, for example, you thought of the grid as being associated effectively in the UK for example, with where the coal fields were, down the spine of the country, south Wales and so on. And that's where the initial grid really developed around the pattern of the coal-fired generation.

But now the power is offshore, and so the grid needs to be developed and connected to these new assets. And these assets are dependable in a different way from the traditional assets. So they introduce a lot more complexity. If the wind isn't blowing and the sun isn't shining, then there is a lot of balancing and management that needs to be done, which requires data and it requires data in real-time. And that is a very significant shift. And this is the increase in complexity of the grid. We're looking to manage through a better view of data as well as different demand patterns, so electrification of vehicles and so on, creating new demand patterns as well as a supply side. So that is a big physics problem to solve and obviously is going to be data driven.

James:

Yeah, yeah. What risks... I mean, maybe this is more of a Baringa view, but what are the risks and challenges to actually achieving this? This is a huge challenge, right? It's a huge problem.

Anne-Laure:

There are lots of challenges around this, indeed. One I mentioned is customer consent for sharing the data. There is cyber and data security of the data, whether it's customer data or grid data or whatever it is.

There are other challenges with the volume of data that will need to be managed and making sure it's going from the right person or the right entity to right entity. There will be other challenges, I

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suppose, on the technical infrastructure to support all of this data sharing. And then there's something around readiness of the various market participants that's going to be critical for this to be a success. That means the people that want to make data available or receive that data, they will have to connect to that system one way or another.

So they need to be able to upload the data or download that data. It's not going to be one data point, generally it's going to be big files and sometimes dynamic data as well. So there's definitely some interesting challenges. But I think with the development of technology today where we are on data teams, it's nothing that cannot be overcome really.

James:

Yeah, I think technically, I'm sure... Yeah. But there is a kind of worry in my mind, maybe cynically that this is a costly exercise. Where's that cost going to be born? You've got mechanisms like the MHHS, the Mandatory Half-Hourly Settlement. We have other policy regulations coming in like REMA, which is going to even further complicate localised nodal trading of power, et cetera. There is more and more data. So you're kind of layering on additional... You said volume and needs to store and manage data on top of existing data platform problems. And obviously that's going to cost companies money to sort out.

Gavin:

Well, it could do if it's not done in a smart way. So this is what we need to avoid is we need to avoid this excitement about the use of data, basically creating another big bill. The consumer will make it to share slice of, right?

James:

We'll land with the consumer.

Gavin:

That is not going to be a good outcome. So there are things that could save us here. So for example, we've been using AI for years in our operation and things like demand forecasting and so on.

And we really looking through different technology innovations about how we can apply that to really reduce the cost of the labour around data and how do we get better at managing data by being more effective by thinking about it in smart ways, but also with this data sharing, how do you establish the architecture in a way that lowers the cost for all participants rather than increases the burden? I think that is an ongoing conversation.

Anne-Laure:

Maybe to add to this, we talked about challenges around setting up this data infrastructure and the data governance, but there's also massive opportunities for many businesses that can be today working in the energy sector, but also could be other participants or new companies. This is about new business models because the usage of that data could help develop new services that don't exist today.

James:

Yes. So new value pools

Anne-Laure:

Creating new value. Exactly. So I think there's something to take into account when these data is made available, is to understand the possibilities behind this data on new services that can be offered to customers or other market participants around that data so that the cost is not carried down to the customers.

James:

Yeah. You can see the case from flexibility, value, et cetera. You need granular data to be able to even enact some of the services I suppose, that really ultimately are for even National Grid to be able to actually run the network with all the intermittent generation that we're going to be seeing. So yeah, I mean it sounds like another huge... It feels like every time we have a conversation, this podcast we're just highlighting a big issue that needs to be solved.

But yeah, it's super interesting. So in terms of making this happen and building the right data foundation, Gavin, do you have any thoughts on the key messaging into the market? What is it that we really need to drive?

Gavin:

Well, I do like visual analogies, which is going to be entirely useless on a podcast, but if you remember your school physics, I do like this kind of the Fleming's left-hand rule, if you remember that you make an axis from your thumb and two fingers. And I think the three things that sit on the axis in order to create motion or progress are, number one, it's about data talent. Our focus is really around being clear and strengthening the access to talent we have. Having a data profession, I think, is super important. You can't have a coherent data experience if you haven't got a coherent profession around it. And that's a frontline, highly valued set of folks that do that work. So that's very much a priority.

Second thing, I used to talk about platforms and the choice of technology that you may use and standardise those and so on, but actually I'm sort of moving away from that because frankly there's a lot of tech at play and we don't control all of that. The partners that we work with all have their own architectures, their own views on technology platforms that they want to use. As the equipment continues to be digitised, there'll be lots of platforms in place. So I think we can predict there's going to be more and more tech.

So what I prefer to talk about now is, well, what are the data products and services that we can organise around and break the problem down into very discrete data products that we can publish, make available, share, and have a contract around to be able to talk. Is that available 24/7, 365 or is it something that only comes out once a month from us and so on. So having a clear set of data products for internal and external use is a key focus for us.

And the third thing is around governance and control. Decision making around data. I mean, governance can be a phrase to chill your heart, right? In the data world, nobody wakes up in the morning and wants to read a data policy. It doesn't happen.

So I think in a more modern way, we can embed some of these decisions and choices at the API level, for example. So how do you systematise the main decisions around your data? And of course there is room for policy and we've just created one for example around the responsible use of generative AI because as a new or relatively new sort of suite of technology that's got some risks and issues, and we want it to be clear for our people about what expectations were and for example, keeping the human in the loop and making sure that we are accountable for the decisions that we make and we can trace back through the system in a non-mysterious way about how those decisions were made.

So that governance and control, I think is in the past maybe viewed as a blocker or a red hand to say stop. But I think I'm thinking about it much more. I want it to be a much more modern sort of end user consumer experience that really helps people to do their job.

James:

Great. That's super, super Gavin. Gavin and Anne-Laure, thank you so much for your time. And yeah, Gavin, we wish you all the best with what it sounds like a very exciting, challenging, and hopefully rewarding role at National Grid.

And yeah, can't wait to see how this all plays out when we look back in 10 years time.

Gavin:

Thank you very much.

Anne-Laure:

Thank you.

James:

Thanks for listening today, and please remember to subscribe for the upcoming episodes of this podcast. Also, do check the show notes for any further information about the topics discussed today and also the speakers that were on the podcast. Thank you.