Location Matters Episode 25: The Role of data in the future of WA

Sarah Butler: Welcome to Location Matters, the podcast from NGIS, covering the world of mapping and location technology.

Sarah Butler: Welcome episode 25 of Location Matters. I'm Sarah Butler, and I'm pleased to be joined today by the Vice Chancellor of the University of Western Australia, Professor Dawn Freshwater, and Paul Farrell, proud UWA alumni and Managing Director of NGIS.

Sarah Butler: Today we're going to be speaking about vast amounts of data available here in Western Australia, how location intelligence can be applied to data, and what these insights could mean for the future.

Sarah Butler: Dawn, I had the pleasure of hearing you speak at an event here in Perth about the future of work, which looked at the impact of technology on the Western Australian workforce. In your speech you focused on the opportunities for WA and made reference to how data rich we are. What kind of data were you referring to?

Dawn Freshwater: Well, thank you, Sarah. I might just start by saying that, in terms of the future, of course the future is already upon us, but we often think of ourselves in that as passive recipients of the future. We are both the inventors of the future and invented by it. And in the middle of that is a significant opportunity for Western Australia in the context of what is, I think, often seen as our strength. So for example, mining, technological innovations, the way in which we think about remote operations. FLNG is one example, looking at the way in which we can take advantage of Radio-Quiet Skies and collect data in that way. To think about that as building on the strengths of the state rather than thinking about that as a way of inventing the future, not only for the state and for the nation, but to really have an impact on the global future in terms of data technology, and, as you referred to, digital footprint.

Dawn Freshwater: From our point of view, and I was referring to the data that you're talking about, I was thinking much more about the ways in which as a state we are collecting and collating significant datasets, not simply from what we're doing in remote operations, but also what we're doing in machine learning applications, which will also have the unleashing machine learning has significant potential for the redesign of jobs. It will really have an impact on whether or not people are tethered or untethered in the future of work in terms of working practices, and it will transform many workers.

Dawn Freshwater: So, I'm thinking about data, not just in terms of what's collected through some of our geographical strengths, location matters, of course, but actually also around the ways in which the corporates, the universities, the not-for-profits and government might work together in this state and across the nation in

order to be able to really apply that data in unique ways and in different ways so other people could translate into their own environments.

Dawn Freshwater: So when I talk about data, I'm talking about large datasets coming into the state, Square Kilometre Array is a really good example of that, but not just simply using that and applying it to space and technology, but thinking about the impact that that could have on oceans and then how the impact of that data that we're collecting and oceans has an impact on sustainable communities, remote communities, and then thinking about the future of those in terms of work, for example.

Dawn Freshwater: So it's bigger than the sum of the parts is what I would say. And I would argue that as a state, we've taken a lot of advantage of those independent strengths geographically. If we really take a helicopter view, then we might think about the gig worker completely differently.

Sarah Butler: Paul, you've made a living talking about data and being able to interpret data in a meaningful way. What are the opportunities you believe that WA has when you consider that huge amount of data that Dawn's referred to and what it could mean for us?

Paul Farrell: I totally agree with Dawn. There's individual pockets of the state, whether they are a company or initiative within the government or whether it's from academia that are tackling this. The opportunity in front of us is to do it a holistic way. There is enormous amount of data being collected, there's an enormous amount of data that is sometimes collected but not available, and I think it's up to everyone across all parts of the society to ensure that we've got data collected but also data available. And I think WA needs to reflect on what it is and what makes it different. And we are one of the most regionally dominated parts of the globe. WA has 33% of the Australian continent. If we were measured in the country size, we'd be in the top 10 in terms of country size. We've got two and a half million people of which 2.1% live in Perth. So that's 400,000 in the rest.

Paul Farrell: I had a German friend here who lives in Singapore. I managed to convince him to come down here for a holiday, WA, as his first holiday in this region. Blown away. He had no idea the amount of vast [area] ... and he thought going to Margaret River was a big journey, and I just said to him, "Well, you're lucky I didn't suggest you go north." So we've got some unique challenges, and I think we should point all our innovation in that direction.

Paul Farrell: Now, for a mining company, they can do that in a very, very controlled way on their site. In a farm, they can do it in a very controlled way for their farm. I think it's going to take it a little bit more leadership to do it for the state, because the two challenges we have being so big, we need a lot of eyes and ears on the ground in the regions to collect that information and make it available.

Paul Farrell: The second challenge we've got is when we detect something, whether as an incident or whatever, it's a long way to travel to get to something. So we actually, more than anyone, need the predictive part of what we're doing, of the benefits that you get from data more than any place. So I really do think that whole regional aspect of how we collect that data and derive our data, that's what the WA should focus on and that's where we're going to get a lot of benefit from.

Dawn Freshwater: Can I say, I think that's a really neat segue into thinking about the triangulation of government, the education sector more broadly, and working with industry because within that triangulation, what you're able to bring together of course is data that's used meaningfully in the service of improving people's lives. And of course it also lends itself to making really good policy decisions, which then lends itself to thinking about the allocation of resources.

Dawn Freshwater: So whilst all of this might sound like it's really quite abstract in terms of talking about data, there's a significant proportion of the population that are really quite divorced from these sorts of conversations and think that they're being left out and marginalized. But at the same time they are what we really need to talk about in the narrative around this, is the impact that has on people's lives.

Sarah Butler: We've talked about large sets of data being available to us, and I'm sure that consolidating this data is no mean feat. Paul, how do we interpret that data and what role does location intelligence have to play in this?

Paul Farrell: Well, I think the old saying, a picture tells a thousand words, so I think a map tells a million words, but I think maps are just a very, very neat way of gleaning intelligence from raw data because they just have some facets about them that are amazing. And if I bring it back to the WA context, I've seen so many examples where in the native title space and native heritage issues, gleaning through documents which are a little bit confusing, where language is an issue anyway, as soon as you introduce a map to the conversation, it becomes very, very easy. So it's a very universal language, but then just so easy to interpret it. By just putting data on a map with the human brain, you're able to do your own analytics, you can see patterns and glean intelligence from it very, very easily.

Paul Farrell: The other thing about maps is if you think about it, and I only learned this a year or two ago, I've been working this business for 30 years, they're actually quite memorable. If you think about looking at a map, you do remember it. For example, if you go to a new city or something like that and you're trying to work or work out where to go, and you look at the map and even if you leave it behind, if you're confronted with a situation where you can't go that direction, actually in your mind, you actually remember the map and you remember the direction. So they're a great way to plot a path. But they're also a great tool in that they allow you to change direction and change strategy very, very, very quickly if you're confronted with a barrier.

Paul Farrell: So I just think maps are a great way of distilling enormous amounts of data, which Dawn referred to, into something that can be crystallized into something simple that you can act upon.

Sarah Butler: What are some of the ways that spatial technology can shape the future of the state?

Paul Farrell: There's a few challenges we have in the state at the moment. We're trying to grow things like the agricultural sector. At the same time we are challenged with climate change which is reducing the amount of rainfall that will be available over the next 50 years. So, I think if something like the agricultural sector is something that we still want to be a significant industry, and it's a huge, huge, contributor to not just regional economies, regional societies, the lifeblood of having regional communities. We're going to have to start using data in a way to assist them to be a bit smarter about how they go about things and not tell them what to do, but provide them with the data so they can make better decisions and be a little bit more precise how they manage their farms. So there's many, many examples of how I think we can use data and location intelligence to basically run our state better.

Dawn Freshwater: There's a tantric saying that is: "As above, so below." And I'd just liked to draw on what Paul was saying, which is that when you look both in terms of what we can achieve from spatial technology, there's also a mirror into the oceans and onto the ground in terms of the remote working, remote operations, precision medicine taking place in remote communities, a whole lot of agendas that actually can be delivered on the ground as a result of spatial technology that I don't think we've really conceived of yet.

Dawn Freshwater: There is quite a lot going on in terms of what we're linking both through the gliders and radars that are collecting data in our oceans at the moment through the university's Oceans Institute and linking that to the work that's happening through the Square Kilometer Array and doing quite a lot of mapping. And one area where that's related to what you were saying, Paul, is in climate change, of course, because we're looking at not just what's happening in terms of the warming patterns, but we're looking at the impact on fish stock. So it has an impact on, think about food sustainability in that way. And I think there's more to be done in that. Agriculture is one area, but certainly there's more to be done in terms of thinking about health.

Paul Farrell: Yeah. Yeah, I totally agree. And climate change is a great example. We were lucky enough to be involved in a project where we're helping some Pacific Island nations basically come up with adaptation plans for how they're going to deal with climate change moving forward. And, by simply putting climate change predictions on a map and allowing them to play with the data and see where it's going to be by 2100, it stimulated action. It stimulated care, because like they could see that things were going to change. And for those society, it's not just about losing roads and those sort of things, actually it's their food. It's where they grow their food.

Paul Farrell: And we then went to adapt that to Australia and it's more about property and all that side of things, but all of a sudden people started taking notice. Now, we've got 80 years, so we're clever, humans, we'll adapt, but at least people sit up, take notice because they understand it really quickly. And they go, "Hey, my house is going to be underwater in 30 years' time. What are our politicians doing about this? What are we doing about it as a society? What can I do about that? What can I change in my lifestyle to stop climate change happening so quickly?" So I think it's fantastic.

Sarah Butler: We're living in an incredibly dynamic time, and I'm sure that as the workforce is becoming increasingly technologically driven, I believe you said, at the event that I saw you at, Dawn. I'm sure this is something you think about quite a lot. What's your view about how the way these technological innovations in WA will translate to jobs, and how do you prepare for that with regards to your future students?

Dawn Freshwater: It's a great question, because, really what we're talking about here is the interface between technological literacy, data literacy and human literacy. And if you think about that, as you heard already, I do like the term "triangulation." If you think about how those things work together, universities have a critical part to play as does education more broadly. So it starts very early and goes all the way through, beyond university into the workplace when we start to think about how we bring together skills of understanding and applying technology, understanding and interpreting data, and thinking about that in the context which is actually about serving humanity.

Dawn Freshwater: And those three things might seem at odds, but they can actually work together. And so for us it's about the development of skills that are not simply around the STEM skills and looking at ways in which we might prepare students and graduates of the future to have skills of coding, data interpreters, data scientists, data analysts, we're expecting that we're going to see the development of, and we're seeing this already, of the need for socially responsible leaders.

Dawn Freshwater: Something that perhaps we've taken for granted in the past because it's been part of education, it's been throughout our curriculum, but I think now we really do have to make sure we get the balance right so that we start to talk about moral and ethical reasoning, thinking about the way in which we apply data and use technology in a way that is about communication that's effective, that is using emotional intelligence to understand the meaning of it for us in our lives, that's looking at critical thinking and how we apply it and universities do have a role to play in that, but of course it has an impact on employment practices.

Dawn Freshwater: And I think we have to start to work much more closely so that the boundaries between, employment walls, if you like, and graduates and students and, indeed the work in places where you learn will change. We can expect that through machine learning, that learning will be taking place constantly in all sorts of environments. And it won't necessarily be through formal study. And

some of that's happened in the past. Some of it's happening already. But I think we can see an acceleration of that taking place.

Dawn Freshwater: So that's partly where we see our role in this. We also see an important role in terms of supporting as a civic institution with responsibilities in terms of our social enterprise, in terms of supporting the change and the transformation that needs to take place in society. One example would be this: In the workplace, we'll have so many different generations working simultaneously, many of who will find themselves having differing views in the way in which technology might inform their lives and certainly the way it informs communication. We see ourselves as having a role in terms of supporting not only the transformation, but how we enable and facilitate the understanding of and respect for other in a way that actually lifts people's ambition, understanding and expectations of how we work together as communities. Certainly challenges our notion of future communities.

Paul Farrell: Absolutely. I'm challenged with it at the moment in my own household with 13-year-old daughters who are challenging the boundaries of how they use technology. But even in our workplace, we have 60-year-olds through to 22-year-olds, and it's quite interesting how they use technology. I think in the regions, one of the huge opportunities for us is one of the biggest, with automation and those sort of things in mining and agriculture, one of the biggest communities that we impacted our indigenous communities because that's where a lot of those jobs are. There's a huge opportunity there if you can create a bridge for the younger generation and even some education for the older generation to marry traditional versus the emerging world, and make sure they're not left behind and potentially accelerate the bridge that's being built between the two.

Paul Farrell: And that's where that social license you were talking about, Dawn, where mining companies and those who are working in the Pilbara or the Kimberley, they can play a role because they're all out there and they're all getting digital themselves, remote operations. It wouldn't take much for them to say, "Hey, let's just extend that very thick fibre that we've got out to a few of these remote communities and educate them." And all of a sudden now we've connected those communities. They were once a long way separate, now we've connected them. And we're, at NGIS, particularly passionate about that. I think that's a huge opportunity for WA to lead the way in that.

Dawn Freshwater: I think you've been talking about what my definition of a smart city would be, really. Which is, it's not all about the technology and having all the digital footprint and the connectedness from having the right wires in the right place, it's actually around using all of the skills, the talents and the diversity and the community to really think, work and act smartly. And I think that's a different conceptualization. It's a really important conceptualization, because I like the fact that you're talking about maps. But as a psych, I would always say this because it's sort of founding fathers. The map is not the territory. So the map's great, but the map is not the territory. When you get into the territory,

sometimes you realize the map actually hasn't given you all of the touch, smell feel, all the experience of what the territory is like. And there are so many people in this state and in the regions who have that at their fingertips.

Sarah Butler: Well, thank you both very much for joining the podcast today to discuss all of this.

Sarah Butler: If you have any questions about location intelligence and how it can be applied to businesses and organizations, for example, we've included a link on our website to read some of our success stories working with maps and location intelligence. And if you're thinking about starting a career in science, technology, engineering or anything that we've touched upon here today, please do head to the UWA website for more information.

Sarah Butler: For more Location Matters episodes, head on over to the NGIS website or subscribe to future episodes via Apple Podcasts, Spotify or Stitcher.