**Project: Public Sector Future podcast**

**Detail: Episode 50**

**Olivia Neal (host), John Price (guest)**

**OLIVIA NEAL:** Hello and welcome to Public Sector Future. This is a show for anyone who cares about using digital approaches in the public sector to deliver better outcomes. I’m your host, Olivia Neal, and together we explore stories from around the world, where public servants have been successful at delivering change. Throughout the series we discuss technology and trends, as well as the culture aspects of how to make change happen.

I’m joined today by Detective Sergeant John Price, of West Midlands Police, which is one of the largest police forces in the UK. We’re going to be discussing Digital Forensics, and how he and the team have introduced new cloud-based technology, to manage the ever-growing volume and complexity of digital evidence and how this is supporting victims of crime.

[TCR 00:00:00]

**OLIVIA NEAL:** Thank you so much for joining us, John.

**JOHN PRICE:** It’s great to be here, and it’s great to have the opportunity to talk about the great work that’s been taking place between West Midlands Police and Microsoft.

**OLIVIA NEAL:** Maybe we’ll get started by just giving our audience a little bit of context. Could you share a bit on what is the West Midlands Police Force? What area do you cover? Who are you serving?

**JOHN PRICE:** Yes, the West Midlands Police, it’s literally at the center of the United Kingdom, and we’re made up of around about 10,000 police officers and police staff. We currently police a community of around three million people. We also provide a digital forensics division for Warwickshire Police, and they have about a thousand police officers, and about a half-million population. So if people ask where Warwick is, just think of Shakespeare, and that’s the home ground for him, really.

**OLIVIA NEAL:** So maybe you could start by giving us a bit of help to understand what is digital forensics? What do we mean when we’re talking this topic?

**JOHN PRICE:** Yes, so digital forensics, in my world, is a branch of forensic science that focuses on identifying, acquiring and processing and the reporting of data stored electronically. That data covers almost all criminal activities, and digital forensics support, crucial law enforcement investigations. It’s estimated, really around the United Kingdom, that around 90% of our crimes have some form of digital footprint, either that’ll be computers, mobile phones, CCTV, drones, internet of things in the house, and we report upon that, so there’s a lot of data there, really.

So our main digital forensics is to extract data from electronic devices, processing into actionable intelligence, and produce that back for courts. But there’s also a world of digital forensics, outside of policing, really, which is more around digital forensics incident response, which is identifying and investigating incidents within corporate environments, for example, cybersecurity incidents. And that can be anything from looking at dead-box forensics, which is devices that switched off, anywhere from looking at security information, event monitoring logs, firewall routers, overlaying all of that data to look at that security incident, and how do we deal with it, and look at what data systems processes are being impacted. So two main elements to digital forensics, really.

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**OLIVIA NEAL:** So that was really interesting in the first part of that, where you said that in the UK 90% of crimes roughly have some element of a digital footprint within it. And – and I assume that that must be a growing trend or something you’ve seen increasing over the past decade or years before that. And I’m curious as to how technology is changing and increasing challenges, but also increasing opportunities. How have you seen that coming into play?

**JOHN PRICE:** I look back to when I joined the police, and if you’d go into a house search or a premises search, you would probably go there and you’d be lucky to find it, you know, computer in one room of the house and a mobile phone. And that wasn’t a smartphone. It was just a normal conventional, you know, old style Nokia phone, for example. Whereas when we go into a house nowadays, you know, we’re going into a house and we’ve got, you know, Ring doorbell systems, for example, which is capturing people’s movements. We’ve got so many Internet of Things devices, where, you know, you’ve got Alexa devices, Google devices.

You’ve got smart TVs. Everyone seems to have tablets, smartphones, fridges that have got, you know, data contained upon them. It’s – it’s literally we can capture now so much more data around, you know, people, incidents, profiling, compared to 10 to 20 years ago. And we don’t ever see any of this getting dis-invented. All we ever see is that this is going to continue, you know, that innovation cycle is going to get more and more where our lives, again – you know, against that stage where they’re a lot more technology, a lot more footprint, really. So yeah, definitely, I think this is one area that’s just getting bigger and bigger around digital investigations, really.

**OLIVIA NEAL:** And so as that amount of data increases, you and your team must be having to adapt and find new methods of using technology that you have to deal with that, as that’s growing to respond.

**JOHN PRICE:** Yeah, absolutely. And you know, I look back around about 2010, and we were dealing with hard drives, for example, where the size – you know, the average size of the drive was around about 500 gigabytes, where we’re seeing now devices coming in of about 1.5 terabytes. An average case, for us, for example, is probably around about four terabytes. So dealing with that sheer volume of data coming in, we have to look at ways of how can we innovate to deal with these, you know, the amount of volume of devices coming into us, but also that sheer volume of data that we’re having to go through to make sure that we’re not missing anything, you know, of real keen interest, really.

[05:52]

**OLIVIA NEAL:** And so, in the UK, there is a digital forensic science strategy. Could you tell us a bit about what objectives that sets out and how that’s aiming to address some of these challenges?

**JOHN PRICE:** Yeah, so back in July 2020, there was a national digital forensic science strategy, that was released. And that sets out the goal, really, for the United Kingdom digital forensics between 2020 and 2030. And there were three core challenges that were really identified within that. And that was dealing with the volume of data and devices that we’re seeing coming in. Dealing with the complexities of that data would be around, you know, encryption, different types of devices, the legitimacy that, you know, even though we’ve got those devices, you know, does it make it right, for example, we’ve got that is it lawful, proportionate? Once we’ve got that data, how do we lawfully deal with that?

And then there were other pressing issues around that, that were linked to those core challenges, which were, you know, as we said, the sheer volume of data, the competency of staff? How do we deal with the quality? And really, so it was sort of encapsulating all those areas and saying, to senior leaders in place in the UK and the government, we’ve got to start acted upon all these areas, really, to start making a big impact around digital investigations.

**OLIVIA NEAL:** And then, so thinking about those challenges of volume, complexity, legitimacy and quality. How have you and the team in West Midlands been using technology to try and meet some of these objectives to try and put yourself on the front foot in addressing their challenges?

**JOHN PRICE:** Yes, I think, really, if someone said to us, what’s the most call-out point, really, and you know, what’s that immediate thing you can do to make an impact? It’s dealing with that volume of data. So back around 2020, we commenced work really around looking at how we implemented a digital review tool into West Midlands policing. And from that, we worked with three partners.

So one of those partners was Microsoft. A second partner was a company called Exterro, and a company called Risual, a managed service provider for us. What we wanted to do with the ability of all that data we capture within the digital forensic lab, we wanted a way of allowing officers, investigators out there to remotely be able to review the data we hold in the DF lab, therefore reducing the amount of time it takes for staff , to review that data, dealing with the issues where they may not have CD burners, Blu-ray discs, DVDs, on the laptops, for example. They may not have the right codex; they may not have the right skill level. So it’s something really simplistic for staff to use.

So back in May 2022, we went live with our review tool for certain elements of West Midlands Police, to how we can deal with some of that volume of cases coming in really.

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**OLIVIA NEAL:** And then so you mentioned that one of the areas you’re hoping to address is the time to review that evidence. So are there other metrics that you’re looking at to measure whether this type of tool is actually being successful in meeting those challenges?

**JOHN PRICE:** Yeah, absolutely. So know, we’re really governed around our service level agreements and looking at the benefits, and what we’ve done around, you know, this procurement piece and the time we’ve put into it. So if I give some figures.

So from May 2022, when we went operationally live, until December of last year, we’ve processed over 70 cases in the review tool, and this is equated to 120 mobile devices, 135 computers, but also what’s been really good from that is, as a byproduct of hosting the review tool within Azure, we’ve been able to leverage storage, further storage now for our evidential data.

And since August of last year, we’ve pushed up over 400 cases, into Azure, which is, you know, pretty groundbreaking, really, and the benefits of that, around management of policing information, how can we securely deal with that, how can we control how long we can keep that data for, which has been a really good byproduct of that.

So we’ve been really, really impressed with that, and also, it makes us more compliant to the forensic science regulator codes, which we’re governed by within the UK. So where they’re saying you – you must have, you know, an offline/off-site backup, we’ve been able to do that with Azure by hosting that data off site in a secure environment.

**OLIVIA NEAL:** And just thinking about that, kind of coming back to that challenge of increased volume of data is using a cloud hosted tool, in this case a tool hosted on Azure, is that a part of addressing those volume challenges as this amount of data grows and grows, being able to think about storing some of that in cloud-based environments versus on-prem environments? Is that one of the ways you’re tackling the volume challenge?

**JOHN PRICE:** Yeah, definitely. And you know, funnily enough, I was having this conversation with a manager not too long ago, and when I took over the team in 2016, and someone said to me, "We’re going to give you a substantial amount of money, and you can buy on-prem storage," I would have been, "Hey, great, fantastic, let’s do it," and then all of a sudden it lands, and you realize you’ve got to look after that yourselves, and the support contracts around it. And it’s a lot of pressure, and it takes us away from our day job of being police officers, police staff and investigators doing digital forensics.

So you know, the benefits for us, within our digital forensics unit, has been that scalability of flexing that processing power on demand, the ability to scale up our storage within a very short period of time, you know, ever increasing complexities of managing multiple servers, file servers, (inaudible), all that type of stuff on-prem in – in our data centers in DF. And even you know what – what we do finally, you can have more server storage, but then it’s the associated have we got the physical racking space available in the server room? Have we got all that power? Have we got that air conditioning? So all those hidden costs.

And you know, for us, it’s been pretty simplistic, really, you know, using the Azure portal to spin up those services and those applications. It’s quite straightforward, really, quite intuitive, so for us, it’s been quite easy to sort of land into that zone, moving away from looking after, you know, x-amount of petabytes of storage on premises really.

I think one of the big things at the moment around police and in the cloud, is that ethical question of can we store data in the cloud? The process for us was, you know, before we done this, we took it to our legal services. We fully – you know, they fully went through, can we do this? We then thought, right, we know legally we can do it, that ethical question is it the right thing to do? And I think it’s a really good question, really.

So, the issue for us is, do we just stay static and, you know, what we spoke about before, keep trying to buy more and more on-prem servers, more and more on-prem storage, where we’re just then buying more and more racking to back up all the (exhibits?) that we can’t deal with, or do we look at a more positive way of saying, right, let’s try and deal with this more effectively, you know, by scaling that process in a way to enable us to get through that data quicker, really?

So, you know, we went through that legal journey with getting the sign offs. And it makes me feel comfortable with the fact of we’re holding true to our beliefs, our values, and the fact of we are massively trying to make a difference.

And that difference for us is getting those exhibits through in a secure environment, and to be absolutely crystal clear here, to get data from the DF network into Azure is, you know, as robust as I think it can be. And with all that governance, all those levels and all that security in place, that may not have been there as before, and all that auditing. So, you know, when we look at that wrapper, that pen test and the governance, and all that, it gives a lot more confidence, knowing that where our data is going is a lot more mature than it has been previously, if that makes sense.

[13:38]

**OLIVIA NEAL:** That makes complete sense. And thinking about this kind of first stage that you’ve been taking with the current digital review tool, and you talked about the number of cases that you’ve had so far, are you seeing this as the kind of first stage in testing it out and understanding how people are responding to it, how it’s integrating, and are you seeing a future greater rollout for this?

**JOHN PRICE:** Yeah, definitely. So within West Midlands Police originally, it was going be just a proof of concept, so we originally went for that proof-of-concept stage. We then put this into an operational production model from May last year. And I think what’s really key – so our phase one has taken, you know, what we call our OCSET team, and that’s our online child sexual exploitation team, and it’s taken on a few more sensitive teams in full. So if we just deal with the OCSET team, first, what’s been quite interesting is, for the vast majority of offending, we’ve seen devices coming in – they’re mainly computer-oriented exhibits, and computers by sheer nature have that larger increase in volume of storage.

If we were to look across the rest of the force, the different top crime types like murders, homicides, kidnapping you don’t really see that activity taking place in the computer world, it’s more mobile based. So even from phase one, I think what’s been really sort of satisfying for us is to think we’ve automatically encapsulated a massive piece of that storage data requirements, even from phase one alone, And I think also knowing the teams that it’s gone to, as part of that phase one, around the sensitivity of data, you know, to go through all those security hurdles, vetting, and all that pen testing has given us, you know, the confidence we know what we’re doing is the right thing.

[15:15]

**OLIVIA NEAL:** And I think when we talked about benefits before and time for police officers to review cases, when you mentioned that the fact that online child exploitation is one of the first areas that you’ve been looking at with that, and you think through the benefits to the – kind of the outcomes and the endpoints, it becomes really significant if you can be addressing cases more quickly, making prosecutions more quickly, giving officers the right information more quickly, the potential positive outcomes of that for people who could be impacted are so significant.

**JOHN PRICE:** Absolutely, and on the whole, this project, and the delivery of this, it is solely around our victims, nothing more, nothing less. It’s solely around our victims, and unfortunately, there are really sad occasions, and if we looked at our roles, as is model, when we were working, if the – what we call THRIVE, which is our threat, harm, risk, investigations, vulnerabilities, if a device coming in submission and it’s said to us, for example, the report is a person is downloading indecent images on the internet, we would go into that with low risk of score, and that data would have been acquired. It would have been processed. It would – then would have sat on our server storage for a minimum of six months downstairs until a report writer becomes free, and then they pick it up. But within that six months, realistically, no one is looking at that data due to the sheer volume size and the amount of jobs.

However, what we found in the Review Tool is because we put that information across one of our databases called CAID, which in the UK is our child abuse imagery database, we’re able to recognize and pre-categorize any indecent images that are flagged whilst it’s processing on the fly. So, it can be any, you know, instantaneous, but it’s also flagging up, for example, any indications of what we call live abuse, where those images haven’t been seen before, and children are at risk.

So, we have been able, through this tool, to identify, you know, children at risk a lot sooner to take that safeguarding and deal with those offenders, you know, a lot quicker than we have done previously, using our old methods.

**OLIVIA NEAL:** Thank you for sharing that. I think that really brings home the importance of using these types of tools to help really drive very significant outcomes. And so, just thinking about the future, we’ve talked about this kind of looking across the other areas of the force for this tool. Are there other areas where you’re seeing the potential for technology to help support your outcomes?

**JOHN PRICE:** Yeah, definitely. So, I suppose one of the ones, you know, we’re looking at it, and it sounds a bit farfetched, but I think people will just say, the Review Tool for us, as far-fetched years ago, is looking at the use of augmented reality. So, if we’re examining devices at a scene or in the lab, or even frontline officers, they can put on, you know, those goggles, or something like that, and they can look at that device. And they get that indication, that information around the best way to secure, preserve, and examine that device, so we can get that data a lot quicker.

If we’re going to scenes, for example, and we’re collecting data, why can’t we start pushing that data up from a scene and start processing that? And, you know, we’re cutting down then on all that journey time, that wasted time. So, when we do go out to a scene, and we’re pushing up RAM, you know, we’ve got that RAM capture, we’ve got, you know, small amounts of data, why can’t we start pushing that up straightaway, and getting that data processed?

And I think, you know, just also, within digital forensics, we hold such vast volumes of data, you know, lawfully. So, when it’s lawful proportionate, why can’t we allow our intelligence teams, for example, to be able to look at that data, and see if there’s any cross references to other offending that’s taking place? So, it’s dealing with that sheer volume of data. And we know the data sizes we deal with probably on a monthly basis, we can range anywhere between 100 to 150 terabytes per month. So, you know, those – that volume of data is quite large, really.

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**OLIVIA NEAL:** I imagine people might be listening to this, whether they are in another police force in another part of the world or in a related environment. How would you recommend somebody get started if they want to start exploring uses of these types of technology for dealing with large volumes of data in this type of way?

**JOHN PRICE:** Yeah, I think even first, at the beginning, was really understanding where we want to where are we and where we want to go. So, you know, for us, it was really sitting down, looking at clearly defining the positive and the negative, so looking at the as-is, how we were are working now, then look at the to-be process about where we want to get to, and how do we define success for the victim, the courts and the police as an organization?

So, I think what’s really important is you can’t just come into this from a digital forensics world to say, we’ve got all the answers. I mean, what’s really key is digital forensics, clearly part of it, but then getting your frontline staff engaged around what they want. And also the voice of the victim is really key, what does the victim want. It’s making sure that we’re supporting our victims.

**OLIVIA NEAL:** So understanding the objectives, understanding the different stakeholders and users who are playing into that, and looking across the boundaries, where you might traditionally see kind of things slowing down, or silos emerging, maybe.And this is an area where technology is continually evolving, where there will always be new opportunities for new approaches to address some of the challenges that you’ve got. How do you stay up to date with what the latest is out there, what tools might be relevant to you? And do you look to other people for inspiration, other police forces, either in the UK or internationally? How do you keep yourself up to date?

[20:48]

**JOHN PRICE:** So for us, it’s always about continuous improvement. And that continuous improvement doesn’t just mean spending money to purchase more systems or more services. It can be your own internal working practices that you tweak, for example.

We encourage our staff to regularly present to the rest of the team around up and coming technologies. And we’re finding that works quite well, because then we create small subject matter experts who can understand those new technologies coming in. And they’re also briefing other teams, and I think, you know, inspiration around looking around.

One thing we’re always doing is, you know, we’re one of the leading force in the UK around cloud use, cloud for policing at the moment in the digital forensics world. But that doesn’t mean we can just stop and be static. It’s always looking to our left, always looking to our right, what are others doing, what’s good practice, what can we take away? Not just, you know, nationally, looking internationally around what’s sort of coming through and where can we do that?

For the UK, for example, you know, most police forces that come to us and asked us for detail, we’ve been quite accommodating and shared what we’ve done with it. And the reason being is, if we’ve gone through that original bit of work to deliver that, it doesn’t make any sense in then, you know, another 43 other forces trying to replicate that, whatever that those services are. So, we’ve shared a lot of our documents around how we got there, because we think that’s really quite key, really.

**OLIVIA NEAL:** Thank you so much or sharing that. I think that’s been a really clear walkthrough. This has been fantastic. Thanks so much for doing this with us.

**JOHN PRICE:** No worries at all. Hope it helps.

[Music.]

**OLIVIA NEAL:** Thank you to our guest, Detective Sergeant John Price, and thank you for joining me today on Public Sector Future. If you'd like to learn more about technology in policing visit us at wwps.microsoft.com, check out our previous episodes on NYPD's real time crime center, and on digital policing in Western Australia. Our goal is for you to learn something new and to be inspired to think differently about your journey. Thank you and see you next time.

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[23:00]