HOUSE OF COMMONS

Defence Sub-Committee

Oral evidence: Developing AI capacity and expertise in UK defence, HC 429

Tuesday 19 March 2024

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Watch the meeting

Members present: Mrs Emma Lewell-Buck (Chair); Sarah Atherton; Richard Drax; Mr Mark Francois; Jesse Norman; Sir Jeremy Quin; Gavin Robinson; John Spellar.

Questions 90 - 149

Witnesses

I: James Cartlidge MP, Minister for Defence Procurement; Paul Lincoln CB OBE VR, Second Permanent Secretary, Ministry of Defence; Lieutenant General Tom Copinger-Symes CBE, Deputy Commander, UK Strategic Command.

Written evidence from witnesses:

– Ministry of Defence [DAIC0022]

Examination of witnesses

Witnesses: James Cartlidge, Paul Lincoln and Tom Copinger-Symes.

Q90 **Chair:** Good afternoon, everyone, and welcome to our final Defence Sub-Committee session on developing AI capacity and expertise. Minister, I wonder if you would like to introduce your team to us today.

James Cartlidge: Yes. In keeping with the technological theme, I have two loyal wingmen with me. To my right—

Paul Lincoln: I am Paul Lincoln. I am the second permanent secretary at the Ministry of Defence.

James Cartlidge: And to my left—

Tom Copinger-Symes: I am Tom Copinger-Symes. I am the deputy commander of UK Strategic Command.

Q91 **Chair:** You are all very welcome. As you are all aware, the Department has lots of different bodies, strategies and frameworks around AI and defence. We have the Defence AI Centre and the Defence AI and Autonomy Unit. We have strategy reports such as the AI defence strategy, the Command Paper and the promised skills framework. We have bodies such as Commercial X, jHub, Defence Digital, the DSTL and the Future Capability Group, all trying to co-ordinate AI adoption across MoD.

What we have heard quite strongly in all of our evidence so far is that there is a "say-do gap" emerging from the MoD, where the rhetoric is not always matched with the reality. Minister, considering this and the lack of obvious metrics to measure delivery from all of these groups, how are you measuring the success and progress of the strategies and frameworks that you have in place?

James Cartlidge: Thank you for inviting us today. This is the first time that I have served under you as Chair of this Sub-Committee, which is a pleasure.

It is important to get the context right. If you will allow me just to set some of that, AI proliferates. It is not a single entity. You could use the word "computers" almost to the same degree. Just as there are many aspects to digital and computing, there are many aspects to AI.

In terms of how we measure output, the most important output is to deliver better outputs from defence. That is greater lethality and survivability of our platforms and capabilities. But we are looking across a whole range of areas, and I would accept that not all of them are easy or straightforward to measure.

If I may give you some examples, at the military sharp end, AI will assist and is contributing to the greater effectiveness of our cutting-edge capabilities. You will have heard reports about how AI could work with

drones and uncrewed systems. While I cannot comment on any operational aspects, this is something that we are very cognisant of. In the way that we, as a country, have started to work with uncrewed systems in Ukraine, supporting our allies and learning the lessons for our uncrewed strategy to inform UK procurement, that has been incredibly cutting-edge, and there is no doubt that AI will play a role in that.

It will also assist with what might arguably be described as more mundane but still incredibly important functions. I will give you a specific example. I recently visited the Royal Navy air base at Yeovilton, where I watched a presentation on how AI is assisting with maintenance and support to the Wildcat helicopters there. That means that, for the given number of platforms that we have, we have greater availability and more of them in the sky.

On that single use, there would be a way of monitoring and recording the output in the way that you describe. Capturing that across the whole of the enterprise is not straightforward, but I am happy to bring in the second permanent secretary with some further thoughts on that.

Q92 **Chair:** Just before he comes in, you mentioned the drone strategy. Is the £4.5 billion for that all for AI?

James Cartlidge: No, absolutely not. The £4.5 billion is for procurement of drones. We were clear about that. While the AI budget is linked to drones, it certainly will not be the only place that we use it. As I said, it proliferates right across defence, from relatively back-office areas to support such as I described in Yeovilton with the Wildcat, right out to potentially assisting on the frontline. I should add another important one, which is keeping personnel out of harm's way—for example, assisting with remote bomb disposal and detonation, etc. But no, that budget is specifically for uncrewed system procurement.

Q93 **Chair:** Thank you. Paul, you were going to come in.

Paul Lincoln: Thank you, Chair. I refer back to the strategy from 2022, which helpfully sets out, on one of its opening covers, the four strategic objectives that we looked to try to achieve as part of that. There were a series of actions listed under those as the primary actions that defence were going to take. We have made substantial progress in delivering on those. If it is helpful, I can run through some of those with the Committee. In that sense, we have been delivering as we have set out, although we recognise that, as the Minister said, in a complex world where artificial intelligence is going to change both society and more widely, we need to make sure that we operate at pace to deliver what we have set out.

Q94 **Chair:** On those four points, would you be able to write to the Committee?

Paul Lincoln: Yes, of course.

Q95 **Chair:** In terms of the AI strategy, all the frontline commands were required to set out their own plans for development of AI. We have seen that the Army has published its own strategy. Are we expecting strategies from any other frontline commands? If so, when?

Tom Copinger-Symes: Particularly in Strategic Command, where we have a number of what we call defence functions—for instance, intelligence, digital, logistics and medicine—we will probably publish specific approaches for each of those areas. For digital, that might be a lot of the underpinnings that we will, no doubt, talk about later, whether that is access to secure cloud or the data platforms that we are building, so that all of defence can ingest common datasets. For medicine, it is going to be bespoke to medicine, and you will be aware of a lot of the dual-use approaches to AI in the medical area. It is more likely to be not just at command level, but in some of those bespoke areas too.

Q96 **Chair:** What we have been struggling with throughout the inquiry is that, as was alluded to by Air Marshal Stringer in his evidence, there seems to be a lack of leadership or clear direction. Who is in charge of all of this? Is it the DAU? Is it StratCom? Who is it?

James Cartlidge: Just to be clear, ultimately it is the Secretary of State, in terms of the Department. Day-to-day, operationally, Paul is responsible for AI within the Department.

Paul Lincoln: The strategy set out the governance for this. As the Minister says, the Secretary of State is ultimately responsible, but there are a series of boards that the second permanent secretary is ultimately responsible for within the Department. The structures work such that the Defence AI and Autonomy Unit, which is a policy unit in head office, reports into me. There is then a military capability set of delivery organisations that sit under Lieutenant General Rob Magowan as the DCDS for military capability. The cross-cutting digital coherence is provided by the chief information officer, and the Defence AI and Autonomy Unit is responsible for championing, integrating and delivering coherence across the organisation as a whole.

Q97 **John Spellar:** Presumably, Paul—if I can follow up on that before I come to my main question—you have a whole number of responsibilities, of which AI will be an important but relatively small part. Who is driving through the process? As this is expanding, who is saying to each of the sections within MoD, "How does this apply to you? What are the problems that you are facing? Are there ways of improving that? Will AI enhance that?"

Paul Lincoln: Like many other organisations, we have adopted a hub-and-spoke approach to this. The centre sets out the policy, the way in which we are going to set standards, and the mechanisms for coherence. Along with the way in which defence currently delivers against the rest of what it does in military capability, individual TLBs, as set out

in the strategy, are responsible for delivering against their own requirements.

That said, we are required to hold them responsible for that in the same way that we would any other part of military capability delivery. We also have an AI delivery group, which I chair but which, in terms of its military capability part, is most cohered by the Deputy Chief of the Defence Staff (Military Capability).

Q98 **John Spellar:** Let me give you a real example that we keep bumping into in different ways, which is problems with vetting—not top-level security vetting, but ordinary, mundane, joining-the-Armed-Forces vetting, or ordinary, mundane, being-able-to-work-in-the-agency-dealing-with-housing vetting. That would seem absolutely ideal for AI. Is anybody driving that?

Paul Lincoln: The Cabinet Office is responsible for vetting across Government.

John Spellar: They are not doing very well.

Paul Lincoln: They have restored their previous service standards as of this month and are currently working on what might be a renewed transformation programme. AI, as I understand it, will be considered as part of that.

Q99 **John Spellar:** So we can be reassured that none of the problems with recruitment into particularly the Army are now down to failings in the vetting system.

Paul Lincoln: The service standards that the Cabinet Office works to have recently been restored to their previous service levels.

Q100 **John Spellar:** How long is that?

Paul Lincoln: I do not have those figures off the top of my head, but we can probably get them by the end of the session.

Q101 **John Spellar:** It would be very useful if you could send that through to us. We know that this is holding things up and, in a tight labour market, is leading to people going off and choosing other careers. That is part of the reason, although not the only one, for the shortfall in service recruitment.

Paul Lincoln: We will either get you the figures by the end of the session or write with them.

Q102 **John Spellar:** Okay. Coming to the main question, since the strategy was published, there have been rapid advances in commercial AI technology and an acceleration in its deployment in the field in theatres such as Ukraine. How has defence's approach to AI changed during that time?

James Cartlidge: It is a very good question. I appreciate that we will talk more about procurement reform later, but, when I made my statement about reforming acquisition, I hope that I was clear that we need to see an emphasis on how, as a Department, we have a continuous feedback loop of data from what is happening in Ukraine as well as from the war-gaming exercises that we run as a Department and how, in turn, we have a constant feedback loop into industry to understand the art of the possible.

There may be a problem such as vetting, as you say, but you have to have an understanding—and it is a bit of a push-and-pull situation—of where solutions might exist. A key part of ensuring that we stay updated as technology moves so quickly is having that strong relationship with industry. The level of engagement between MoD and industry is really ramping up, as well as at secret level, so that industry really understands our requirements. That is a key way of doing so.

I would also say that uncrewed systems, which have had a huge amount of coverage, are an example of a technology where AI will undoubtedly play a role, if it is not already doing so. It certainly is not the only area, but that is a good example of where the UK really is hoovering up and learning from the data from the frontline in Ukraine. Our brilliant defence SMEs are playing a key role in that, so that they can come up with capabilities not just for Ukraine but for the UK.

Q103 **John Spellar:** I have an almost impossible, slightly wide-ranging question—

Mr Francois: That's not like you, John. Welcome to the House of Commons Defence Committee!

John Spellar: I am normally more specific and critical, but on this one, which will be a problem for people in the industry, what developments in AI does the MoD envisage being on the horizon in the next couple of years, and also in the longer term? How will those change the nature of defence?

James Cartlidge: That is a very fair question. I mentioned earlier the areas where we see AI having a great impact. A key one is simply around the ability to hoover up data and to analyse it at a far greater scale and far more quickly than if you relied on traditional methods.

I also gave the example of the Wildcat helicopter, which, in many ways, will add value in areas that are—and I use this phrase guardedly, because I am sure that, if you were a Wildcat pilot and your helicopter was in the sky more than otherwise, you would be delighted by this—relatively mundane by military standards, in the sense of not having to do with frontline warfare.

I think you will see many such applications. In fact, we are working on some of those projects within the MoD. The most important one is data

and how we use it. Data is going to be absolutely critical in any integrated battle space in the future.

Q104 **John Spellar:** Once you establish that, how do you ensure the pace of roll-out? It was talked about as operating at pace. If I can put it gently, that is not the normal modus operandi that we have experienced from Government or from the MoD.

James Cartlidge: That is entirely fair. When I got the job—I think that I have said this before to the Committee; I certainly said it in the House—lots of colleagues congratulated me and then said, in the second part of the phrase, "And you have Ajax." I have this deep sense of the history that we have had to get to this point. These are complex programmes, but there have been major programmes that have experienced issues and that we are familiar with.

I also said in my statement what my most uplifting experience as Minister for Defence Procurement was. I was referring to a UK SME that has provided drones into the Ukrainian theatre, received feedback about their operation, and spirally developed those drones within days to return to theatre, so that they can out-compete the enemy. That is the key: the idea that, rather than waiting years for product development, you are constantly—and I hope this word proliferates—spirally developing them, so that you maintain your competitive edge. That is the key to it.

How do you change that within MoD? We need our culture to change. I am seeing a lot of evidence of that. Across the Department, there is an awareness that we need to move more quickly, and there is a lot of work that is probably not visible publicly that we are doing as part of acquisition reform to ensure that, as an institution and a corporate entity, we are able to work in a more agile fashion, particularly around the principles of spiral development. When the new acquisition system goes live at the beginning of April, we will be issuing our new playbook, which is, essentially, our guidance to people who work in MoD about how to make the most of spiral opportunities.

Q105 **Sarah Atherton:** Minister, you have mentioned how important AI will be in uncrewed systems, and there is no doubt that AI will transform the face of modern warfare, but we are constantly told that, in every scenario, there will always be meaningful human control. What is your definition of meaningful human control, and how can you incorporate that within future defence procurement projects like GCAP?

James Cartlidge: The phrase, which I hope will also proliferate, is context-appropriate human involvement. *[Interruption.]* Mr Norman is laughing, but it is an incredibly important phrase. I should add that the three of us appeared in front of a House of Lords Committee considering ethics and autonomy. We had a really good session there—particularly my interaction with the Bishop of Coventry about ethics.

I will make two fundamental points about this. First of all, in answer to your question, you have to consider what we call the lifecycle of whatever the capability is, because there are already capabilities such as Phalanx, which is a naval gun. I am not a naval warfare officer, so I will put this very crudely. If it is turned on so that it could be deployed, it can function at its own behest in response to certain parameters—certain incoming munitions, etc. You could say that that is autonomous, but, as far as we are concerned, there is this key context-appropriate human involvement that sets the parameters by which it works to determine what it shoots down, as well as turning it on so that it is in that mode. It is looking at the lifecycle right back to the manufacture of these capabilities.

The second point that I would stress, which is a point that I made in that Committee session, is that, while we are 100% confident that we will always work within the realms of international law and that our systems, when they have autonomous elements, will comply with international law, we have to consider the other side of this, which is that our adversaries will potentially not pay such attention to such norms, and we have to be able to out-compete them. That is not to say that we should act outside international law, but we should be wary of overly restraining our development efforts, because we need to have competitive capabilities. There is a balance to be struck.

Q106 **Sarah Atherton:** I agree, Minister. I would like to dive into the weeds a bit more about how defence delivers AI. We heard your introductory comments, but we have also heard considerable evidence that the defence AI ecosystem is "nascent", with pockets of excellence but lacking in scale and cohesion. Is that a fair description?

James Cartlidge: It is certainly nascent, by definition. Paul has described the structural aspects. Madam Chair, as you said at the beginning, it can feel like there are a lot of different organisations, strategies and acronyms, as we have a habit of having in the MoD, but there is good reason for that. I would stress the previous answer that Paul gave, about the hub-and-spoke model. It is because, in the MoD, you have central function, but then you have the frontline commands with what we call the delegated or federated model. That creates this sense of, "Here is the central strategy, and here are the implementations out in the frontline commands." So I do think that there is that central cohesion, which is really important.

The other aspect of it is about how you learn from your experimentation and from all the data that you are receiving, deploy it effectively, and be sure that you are doing that across the frontline commands. That is where I do think that Strategic Command is really important. In the new procurement system, there is a reason why it is called the integrated procurement model. We recognise that, while we want to have frontline commands that are developing their capabilities and are experimenting and so on, you ultimately have to have integrated capabilities in order to fight. For example, if you develop AI and drones, the three frontline

commands will have to be able to communicate with each other. They will have to have common data standards and data links and so on.

Tom Copinger-Symes: It is going to be a balance between moving quickly on your own and going a long way together. That is the challenge that every large organisation has in implementing AI, by which I mean that you have to have the warfighter at the heart of it. Whether it is a soldier, sailor, aviator, intelligence analyst or cyber-security person, you have to have them alongside the coder, if you like, making sure that you are building stuff that is going to be really useful.

The great temptation for them, because there is a mission imperative, is just to do what they need to do, go really quickly and buy their own cloud and tooling and so on. That is very tempting, and we do a lot of that. Your "pockets of excellence" is not a bad way of describing it.

The balance is that, of course, we want to build an enterprise. We do not want to pay for cloud 15 or 50,000 times across defence. We want to provide that as a shared service across defence. We want to buy single datasets, and we would not be the only large organisation that has bought datasets from lots of external companies to then find that they are multiple. That does not do anything for your efficiency or coherence as an enterprise. You have to balance going quickly on your own and going a long way together, which is quite tricky.

Just to pick up on the integrated procurement model, the reason why we have created the Integration Design Authority is to try to work across defence and across the domains, as we call them, of land, air, maritime and cyberspace, to make sure that our systems are interoperating with others, so that we are moving to a system-to-system rather than an individual platform approach.

There is no doubt that that is a tricky balancing act, but, if you want us to fight across all five domains, if you want us to be able to interoperate with our allies and partners, if you want us to be able to work with intelligence agencies, and, as the Minister said, if you want us to be integrated with industry, which is one of the big lessons from Ukraine, we have to be able to get those things in place. Otherwise, we are just atomised and incoherent.

Q107 **Sarah Atherton:** Do you have the resources and skills to keep up with the speed of advantage and relevance?

Tom Copinger-Symes: The easy answer is no. The nation does not have the resources and skills, and it is an international challenge. It is probably a western challenge, if we are honest, so we need to see it in that context. Are we doing the right things to go about increasing the availability of those resources and skills? Yes. Are we moving as quickly as we would all like? We are not yet, but we are doing all the right things.

The Haythornthwaite review of Armed Forces incentivisation has probably been briefed to the Committee separately. Things like zig-zag careers, greater access to reservist skills, allowing people in the military or civil service to go out into industry and come back with those skills, working much more closely with academia, which is central to this, and increased apprenticeships, will all be part of it. That is all in the hopper. Is it moving as quickly as I would like? Not yet.

Q108 **Sarah Atherton:** What part of AI does defence do really well compared with our global allies?

Tom Copinger-Symes: If I was to predict where we are going to have the earliest impact, I would quote Bob Work, the former Deputy Secretary of Defense in the US, who did the commission for Congress and said that the clue is in the title "artificial intelligence". Your ability to churn through large amounts of intelligence data is, while not very visible to you, probably where we have a good history from Bletchley onwards, and where we are going to continue to be pretty good. I do not want to be cocky about it, but that is going to be very important to us.

The flip side of that is cyber-security. Again, I do not want to predict that we are going to be really good, because I am a superstitious soldier, but that is where we are going to have to be really good, because that is where I see the threat going up day by day.

Paul Lincoln: It might also be worth noting that we have published an AI playbook, which sets out the likely areas where we are currently doing work or see work out there. It talks about the problem spaces. We set out a whole series of examples around some things that are more mundane, such as spare parts failure, but which are really critical in terms of making sure that we maximise our current fleet, and looking at AI at the edge, in terms of intelligent search and document discovery.

We are doing some significant work on object detection in satellite imagery. We are also looking at what we are doing in terms of operational planning, assisted decision making and large language models, on top of what we are doing internally within the Department, and things such as last mile resupply. Those are all areas that we would expect to think about quite quickly.

It is probably worth saying that we are also using autonomous surface vehicles currently on Op Kipion in and around Bahrain, which utilises those in mine-hunting capability and which is trying to offer our own people better protection by not having to do, as we describe it, dull, dirty and dangerous tasks.

Sarah Atherton: That sounds very positive.

Q109 **Richard Drax:** Good afternoon, gentlemen. We have tiptoed around some of this question already, so you have perhaps answered some of it, but some of the criticism that the MoD has got is that there are areas of

expertise in AI, and that it is quite siloed and not really too joined up. In that regard, the defence AI strategy is clear that MoD needs to become an AI-ready organisation. How far along that journey is the Department, and how far is there still to go? The strategy mandates that senior leaders should have "a foundational and strategic understanding of AI and the implications for their organisation". Is that the case today too?

James Cartlidge: I would like to think that I am a senior leader in that respect. As you can imagine, without trying to avoid answering your questions, there are a number of programmes in this field that are quite sensitive. From recent visits, I have seen a number of what both you and Ms Atherton have described as pockets of excellence, and they are really positive. They are, dare I say it, almost entrepreneurial military activity that is experimental and really at the cutting edge.

I always ask the question when I am in those environments, "This is fantastic, but how do you know that you are not duplicating, and how do you integrate with the rest of the enterprise?" We have common resources that ensure that. For example, you may have different programmes in different parts of Defence, but DSTL will tend to be a singularity that links them, and so there is cohesion. Could we go further? As the general was saying, there is always this tension between letting a thousand flowers bloom and having central control. To me, the answer is that you want to encourage experimentation, but you also have to have an integrated system, so that you can work as a cohesive whole if you need to.

Just on wider leadership in the enterprise, there is huge awareness of this. Paul, you might want to say more on what we are doing internally.

Paul Lincoln: There are two things that I was going to say on that. One of the things that the defence Command Paper required us to do was to set targets for AI readiness by 2025. Internally, we have been defining that as the tipping point when key enablers reach the point of maturity where we can scale AI delivery at pace, moving from niche to enterprise and from specialist user to widespread adoption, which takes account of some of the points about centres of excellence and going wider.

In layman's terms, that is about people, processes, tech and data being ready. A lot of this is underpinned by where we are on the defence digital strategy, which has three component parts around the backbone, around the foundry, which is software, and around skills; there is quite a lot on skills. On that, last year we met 93% of the milestones, as I reported to the PAC recently.

In terms of senior leaders, we have put about 40 of them, including four-star and three-star, military and civilian, on a digital leaders learning programme, of which we have had six sessions so far, including one on artificial intelligence.

Q110 **Richard Drax:** Is the MoD AI-ready? That is the question, Minister.

James Cartlidge: My answer to that would be that we are deploying it in a number of really important areas, but are we yet at the stage where we can say that, in every aspect of MoD, we are at the highest level of AI preparedness? No. I would like to go a lot further. As Tom said earlier, we have to recognise that it is a challenge for all of our global allies and, dare I say it, adversaries to make the most of this software. I have seen some fantastic examples, some brilliant programmes and some very good leadership. We are now working harder at integrating that. That is the underlying principle of this new procurement system that we are driving, because that will generate pace and agility.

I would like to be able to come in front of you again in a few months' time and say, "Since then, we have made much more progress," and I am confident that we will be doing so. The rate of progress is very good, but I would never be relaxed and say that we are now in a steady state that is entirely satisfactory.

Q111 **Richard Drax:** Mr Lincoln, you hinted at this in your previous answer. The strategy suggests that the MoD may adopt a policy of mandating that equipment programmes be AI-ready. What would that mean in practice?

Paul Lincoln: We are mandating that the approvals bodies, such as the joint requirements oversight committee and the investment approvals committee ask that programmes and SROs explain why, if they have not, they have not made their capabilities AI-ready. We expect, almost in the same way as you would do digital by default, for AI to be tested as part of that. It will not be sensible for everything, but we need people to explain why they think it is not, if they are going to progress through those gateways.

James Cartlidge: I said that, in the new procurement system, we need to have checks and balances, so that we can ensure that we are not missing opportunities. One of the reasons that Strategic Command is setting up the Integration Design Authority to have oversight is because it may simply be that whichever part of defence is coming forward with requirements does not have the SQEP to know that they could have applied an AI solution. That is a good thing, and we are seeing where there are opportunities to add it in.

To the extent that it could almost be by default, that is, in a sense, implicit anyway, because, on any given programme, within reason, you should be seeking to maximise the effectiveness of your capability, and AI is clearly going to play a huge role in that.

Q112 **Richard Drax:** We had a very private briefing just recently, which I am not allowed to go into too much detail about, from a defence AI company. They gave us some examples of what is going on in Ukraine, and it seems to us that it is changing almost by the day. The MoD is very aware of this, and is looking at and rolling it out as far as you can, right across the MoD, to make sure that everyone works together, and that this huge advance is being spread across the whole of the MoD. I take it that is all

going on, is it?

James Cartlidge: Yes. It will vary between areas. One of the reasons that we have to accept why there has been this really impressive level of rapid procurement into Ukraine, as I was saying, with UK SMEs learning the lessons really quickly, is that that is, dare I say it, what happens with warfare in a live theatre. You have that absolute pressure constantly on you to compete and to enable your ally, who we are supporting indirectly, to fight. That gives that extra pressure, which means that you are constantly upgrading.

Would the same pressure apply in looking at back-office solutions that lead to productivity? It may not be quite as fast. I do not know. I am using that hypothetically, but it does not mean that we are not making progress there. As I said, there will be a huge range of uses, some of which will be very mundane and some of which are about getting people out of harm's way. They will not be the headline-makers, but they are really important to defence. The most common will be around data and how we scale up our ability to absorb and analyse it. There will then be some very cutting-edge capabilities.

I recently visited the RCO—the Rapid Capabilities Office—in the RAF, which is quite a sensitive programme. I am pleased to say, Mr Robinson, that there was a company involved from Northern Ireland, which I had met at DSEI. They were now on contract, supporting this capability with an AI programme, and it was really effective. There are some fantastic stories out there, but we are keen to go further.

Q113 **Richard Drax:** Can you think of any examples of equipment programmes that would not benefit from being AI-ready?

James Cartlidge: Golly. I will look to you, Tom.

Tom Copinger-Symes: The obvious one that we will have to be very thoughtful about is where we have involvement in our nuclear programme, from both an ethical and a practical perspective. I do not think that we are going to talk about that here today, but that is a very obvious one.

As the Minister mentioned, we were grilled by the House of Lords on where, ethically, we would and would not integrate AI and what context-appropriate human involvement means through the lifecycle. There are a range of issues there. We have a principled view that, when it comes to killing people, you want to have human involvement quite close to that decision. Would we rule it out fundamentally outside the nuclear exchange? I cannot think of many offhand, except for those ethical considerations.

Q114 **Richard Drax:** The moral issue is quite interesting. If our future enemy uses it in a way that we think is unethical, but it is extremely effective against us, do we sit there and say that we are not going to do the same thing to them? It is an interesting one, is it not? Do we say that we are

terribly moralistic and that we would not quite do that?

James Cartlidge: You are absolutely right and it is a key question. It has been the case for centuries, and you can think of recent wars where, while AI may not have been a factor, our adversaries have acted in a way that we would have described as barbarous and in which we would never have acted, and yet we were still able to triumph militarily. The fundamental point is that you have to remember what you are fighting for, and we would be fighting for a set of values which, if we were to denigrate in our own behaviour, we would reach a point of questioning that.

It is a balance. It is why I said earlier that the way to address this is to be wary of overly restraining our capabilities because of being overly presumptive. The core of our modus operandi is to comply with international law and to be a democratic nation that is accountable—and that is why we are sitting here in front of you in Parliament—but to want to have competitive capability and not to lose that competitive edge. That means really leaning in on AI and on other areas like complex weapons, lasers and so on, because they will give us operational advantage.

Paul Lincoln: There are two very clear points that Ministers have made on this before. First, we are not using AI in nuclear weapons systems, and, secondly, we are always going to comply with international humanitarian law, no matter what type of weapons systems we use.

Richard Drax: You want to keep manual control of the nuclear arsenal.

Q115 **Sir Jeremy Quin:** You answered 75% of this in your responses to Mr Drax, but, on procurement, the focus is on ensuring that we are using AI to maximum advantage. In the excellent integrated procurement model, on which I congratulate you, Minister, you talk about how major projects have to ensure that they get full expert advice and proper consideration at that pre-concept stage. How are you ensuring that AI is fully baked into that? There may be a completely different way of achieving your objectives by different specification using AI. Is that through the Integration Design Authority? Is it through DSTL? How are you achieving that real thought-through about AI at a very early stage?

James Cartlidge: That is an excellent question that I am pleased to be able to answer. You are absolutely right. I talked in my speech about the idea of the second opinion—the idea that you thrash out the core policy issues at the start of a programme, so that you set it up for success, and then nail down your policy and ensure, as far as is reasonably possible, that it is not reopened, other than for very good reason, so that you can allow the commercial teams and so on to go forward at a gallop.

To explain it in practice, we said that the system will go live on 8 April. From that point, were there to be such a major programme where this was relevant, and if it was at the very outset, I would expect to receive this revised form of advice, which will have a particular emphasis on

technological viability. You referred to DSTL, which would play a key role in that.

I do not want to overplay the idea that this is challenge. It is about having checks and balances. We want to kick the tyres on programmes. Really, it is about driving a collaboration and discussion about the art of the possible, because the reality is—and you have been in my position—that it can be highly pressured. You have votes in Parliament. You have trips abroad to see allies, etc. Suddenly, the brief is there and you have to clear it in a few hours, apparently—

Gavin Robinson: Never fall for that one, Minister.

James Cartlidge: And it is about a very significant procurement with a substantial amount of public money. The lesson that I learned from that was, "Hold on a minute. There is a lot of presumption here." I am not going to say that there was an assumption that my role is a rubber stamp, but, to a certain extent, it can feel like that is the presumption.

I take the view that our job is ultimately to represent our constituents and the taxpayer and to ensure that they get value for money, but also that we are not making the mistakes that, arguably, we have made on previous programmes. It is about this thrashing out of the issues. DSTL will be a key part of that.

The Integration Design Authority will have the role as Tom described, but, in particular, as a failsafe watchdog, as in, "We have really missed something here. Hold on, guys. You have to look at this." I do not think that that exists in the current system. Ideally, it should not be used in that sort of function, but, now and again, there are bound to be those sorts of issues, and it means that we can look at them afresh. I cannot see how this idea of having a challenge in the system and kicking the tyres properly on programmes can in any way be a negative thing.

Q116 **Sir Jeremy Quin:** I entirely agree, and I know that you are not a rubber stamp, Minister; that is the last thing that you are. I am more worried about rubber stamps at earlier phases, and so the one thing that I beg of all three of you is that you have, around the table, literally and metaphorically, people who do have that view that you do not necessarily get—and no disrespect to the uniform—from years of brilliance inside public service. There are people out there who need to be brought in. It is about that completely left-field look and saying, "This whole thing is wrong. We can do it completely differently and more cost-effectively."

James Cartlidge: Just to reassure you, I had a meeting on this very point this morning with the team who are delivering our procurement reform. It really is about building a situation where you can imagine all of the consultants working out what to do. That is the model that we want to have. It is collaborative. To give examples, we will have the expert opinion of DBT and our export team on exportability. There is no

question—and you know this from your experience—that that is not emphasised anything like enough.

If you consider that from the beginning and you have proper, robust data on the potential international market of that platform, it gives you two very powerful things. The first is that it means that it is less likely that we are going to pursue these very bespoke and, dare I use the word, exquisite requirements, because the likelihood is that they will start to reduce the appeal internationally, for obvious reasons, because there is a tension there.

The second point is that I go to quite a few defence shows out in the Middle East or in partner nations, such as Turkey, and it has always struck me how you go to the stands of your international competitors and they have capabilities for sale, as it were, which are years away. Therefore, if we have that information at the start of a programme, we should be thinking about starting the sales programme very early on, because that is how long procurement decisions can take in partner countries. It gives you a number of advantages, but, to be clear, it will definitely be broadbrush and will ensure that proper, valid second opinion.

Q117 **Sir Jeremy Quin:** You referred earlier to the strong working relationship with industry, which is an absolutely key point to make. One of our problems with AI and all innovative technologies is that the brilliant solution may not be being created—in fact, it probably is not—by one of the five, six or seven primes. It is almost certainly going to be done by somebody playing around at university or in a tiny company in the middle of nowhere that has the idea.

We all know—you will have heard it, and I certainly have, Minister—that it is just impossible to do business with the MoD: "It's so difficult. It's easier to do business with the Pentagon than it is with the MoD." We have heard all the stories. In this area, it is absolutely core. How are we ensuring that we are open to SMEs with a bright idea that could be revolutionary?

James Cartlidge: This is a question that I feel very passionate about. I ran an SME. It was not a defence SME, but I know that feeling. I was involved in a couple of quite big procurements. I lost one and I won one, and I know how it feels, so I place particular emphasis on this. I hold my own SME forum. The last one was in Rosyth, with Scottish SMEs. I am clear to the Department that we have to enable them to engage with us as much as possible.

If I may give some really positive examples, we are ramping up engagement at "Secret" with industry. We recently held a general industry day for the defence sector. We have had some more specific ones. Yesterday, Strategic Command held one with companies that are involved in electronic warfare. Again, we are holding that at "Secret". The impact that electronic warfare and jamming has had on the battlefield in

Ukraine is staggering. There are companies out there that may not be defence companies and may be in the dual-use space, where we can bring them into the ecosystem, share the data as sensitively as possible about what is happening, and let that natural entrepreneurial flair deliver us potential solutions.

While I accept, because I have seen the correspondence, that there will be SMEs that feel that they have not had a particularly good interaction with the Department, I can tell you that there are plenty of very good stories. I spoke about KX, the SME from Northern Ireland that is helping the RAF with AI, and it is working really well. The drones that I was talking about, which we have sent into theatre in Ukraine and not used ourselves, were from a UK SME. One of them is Malloy, which is well known and which I visited recently in Maidenhead with our colleague the former Prime Minister. It is doing brilliant things. Its quadcopter is resupplying the Ukrainian marines on the banks of the Dnipro and has been sold to the US marine corps. I am always open to how we can work better with SMEs and industry of all sizes. We have our SME action plan and our defence suppliers forum.

When I go to defence shows internationally, I always make a point of walking around the stands. You will always see lots of boring pictures on Twitter of me at the stands of the UKDSC with those companies. When I was in Saudi Arabia recently, there was an IT SME that had an AI programme that had massive backing from our embassy. They were really pleased with the support that they had had from the UK Government as a whole, and were then successfully selling that programme in the Middle East.

Paul Lincoln: Taking that recognition on board, we need to do more with non-traditional SMEs in this space. The Defence Artificial Intelligence Centre is in contact with about 500 companies and runs an annual AI Fest. We are now in the fifth year of that. The last time that it was run, we had 1,000 delegates from 20 or 30 countries on it. We will be running another one next year. We get all sorts of non-traditional people as part of that, because we recognise that, in AI, the base of many of the solutions that we may have will be dual use. If you think about autonomous vehicles, the code for an autonomous car will be very similar to that which we would then incorporate into a military autonomous vehicle, so we need to work with others who we would not necessarily have worked with in the past.

Tom Copinger-Symes: None of us feels that we are moving quickly enough for SMEs. We can be truly proud of Commercial X, which is a small, disruptive band within the commercial function. It is supported from the top, but generated from the bottom, and I would be surprised if many SMEs do not recognise that they are helping. They will not be happy that it is not there yet, but that is making things better.

We are not just sharing secret lessons, but sharing absolute datasets with SMEs that either cannot afford to buy them for themselves or want to be developing on our own infrastructure with that dataset. It is getting better. I would be amazed if we ever get good enough that the SMEs tell you that we have got it right, but it is getting better and we just need to double down on what we are doing.

James Cartlidge: I will give some explanation on the very good point on Commercial X. Jeremy, you know the importance of the commercial function in MoD in this. Commercial X means that you can bid for a contract at a certain level. Thereafter, there is freedom up to £50 million to, effectively, be reprocured without having to go through the full procurement process, so it is a much more rapid way of getting more work out of an SME and gives them a real incentive to perform and deliver those software improvements.

Q118 **Sir Jeremy Quin:** That is an incredibly important movement, because it means that you do not feel, "I am going to throw everything at this particular contract, I will get a million quid out of it, and then it will go out to re-procurement and, at that stage, a prime will nick it off me."

On that, there are two things that you have not specifically touched on and which it might be helpful to elaborate on. The primes tell us that they are very fair in their dealings with SMEs, and that you cannot have dual profit and, therefore, they look after their SMEs. I just wondered if you wanted to comment on that, because one way is going out directly to SMEs and one is ensuring that the primes, when they tap into these SMEs and use their facilities, are doing so on a fair basis.

The second is DASA—the defence and security accelerator fund—which has not been mentioned. Not a huge amount of funds have been distributed through it, and most, from memory, are going to the primes again. Is that something that we could be expanding, or does Commercial X mean that we are doing it in a different way? Do you have any thoughts on both of those themes?

James Cartlidge: First of all, if you got a group of defence SMEs together, you would never find them all 100% complimentary about the MoD. Equally, I do not think that they would all be 100% complimentary about their experience of working with the primes. Most of our contracting is done through primes. We have these frameworks for the commercial approach. There will be mixed experiences on that. As you know, there will be SMEs out there that have been doing this for donkeys' years. They have a vast percentage of their income from exports. I can think of a couple of examples that have a real specialism and are vital to key areas of defence and very good at winning contracts.

Part of this is about helping you get that break, which is why it is very important to respond to your second question about DASA. When I held this SME forum in Rosyth recently with 13 Scottish SMEs, five of them had had DASA funding, which was really positive, but it is not easy taking

a company in that situation, getting them through what we terribly call the valley of death, and ensuring that you guarantee that you will have a procured output at the end of it.

It may be that, ultimately, they sell that internationally, but it is a key point about DASA. By definition, it is not there with a guarantee of a programme of record procurement from the UK MoD, otherwise you would not go on that programme; you would be procured. That is something that I want to look at in terms of what more we can do to ensure that there is a greater pull-through rate. Part of that is, again, this greater sharing of data and links into the system, because the more those companies understand our requirements, the more likely they are to deliver experimental capability that then delivers for the frontline.

Paul Lincoln: It might be worth giving you a couple of statistics. In 2021-22, we spent £1.52 billion directly with SMEs, and about £4.2 billion with SMEs through primes in addition to that. About a fifth of all the money that goes through DASA has gone on AI projects, and there is some pull-through, as the Minister says. A good example is a company called Flare Bright, which has done some work with the RAF to create a digital twin of some of the things that we have been doing. If you were to be jammed, you are in a position where you can continue to track where you would have otherwise done in terms of predictive learning. That has been on contract, not only with us but also with the Americans.

Q119 **Gavin Robinson:** Minister, good afternoon to you and your colleagues, and thank you for mentioning a good Northern Ireland company that has been doing the rounds quite a lot recently. I have bumped into them a few times in London, and they are doing well.

I sometimes wonder whether we may over-rely on another acronym, "SME". When we think SME, we think of a small, niche family start-up burgeoning into something a little larger than that and into the medium sphere. The definition is fewer than 500 employees and a turnover of less than £100 million. When we talk of SMEs and trying to boost innovation at low scale, we are really fooling ourselves in that sense, because it does encapsulate such a larger growth. Are you concerned about that? We sometimes talk about pump priming or putting billions of pounds into SMEs, but we are really talking about companies that are tipping into prime territory or beyond SME territory, rather than the small, niche start-up that we are talking about pump priming here.

James Cartlidge: It is a fair challenge. When I think of SMEs, it means small and medium enterprises.

Gavin Robinson: Of course it does.

James Cartlidge: My experience is that you will have the company that specialises and is often very niche. The SME that I had was niche. That is the way that businesses have a competitive advantage. There was a business that I met recently that made an aspect of one of the

mechanical lifts on the frigates. That is quite a specialism. I do not know how many staff they had. I doubt that they would be micro, but, equally, probably not large.

It is a good point, because, in many ways, it would be good for defence if we had more primes and more competition. Perhaps something that we have not looked at enough is enabling those that are in between in terms of threshold. I can think of a couple of companies that are neither small nor, by definition, at BAE or Babcock level, and we could benefit from that.

The only answer is to ensure that we are supporting UK defence with a sovereign defence base, so that they have maximal opportunity. We can never guarantee that people will win a tender, but it is about this openness of the relationship. That is why, in the new procurement model, the importance of the relationship with industry is absolutely central. I have given some examples of how we are engaging ever more closely, and we will continue this ramp-up. The core of it is data exchange, so that we support innovation and, therefore, the purpose of procurement, which is the competitiveness of our capabilities.

Q120 **Gavin Robinson:** The intention is not to turn on its head the definition of SME, but you do understand the point of utilising DASA appropriately.

James Cartlidge: For the record, I did not know, until I became an MoD Minister, that "SME" has another meaning, which is subject matter expert.

Q121 **Gavin Robinson:** I am certainly not one of those. Minister, what I could do is encourage you to meet with another Northern Ireland company that just won an innovation award in ADS but was turned down for DASA. Without giving any more details, you would be quite interested in what they have to do.

James Cartlidge: I am always open to hearing about the experience of UK SMEs, especially in Northern Ireland, where we have had some very good results recently.

Chair: That is a good pitch, Gavin.

Q122 **Mr Francois:** Someone once said that, ultimately, all politics is local. Congratulations on the integrated procurement model. When you read the document, it is very promising. As ever with these things, the proof of the pudding will be in the eating, but it appears to be a very positive start. On that, I have heard you say before that, whatever it says in the document, it will not work unless there is a change in culture.

James Cartlidge: That is correct.

Mr Francois: That is not just in DE&S but throughout the Department as a whole, to an extent. I think that the Committee would share that sentiment from our own different experiences. For the record, would you

like to expand on that comment, given that it is, effectively, germane to everything that we are talking about this afternoon? You have done the document. How are you going to change the culture?

James Cartlidge: This is fundamental. We publish many strategies in the MoD. How do you ensure that they become manifest in the day-to-day activity of the Department, so that we deliver the change that we want to see? That is partly why we have these new checks and balances. I hope that we will not really need to use them in the sense that we understand that phrase. You almost think of the judiciary and the US constitution, etc. They will enforce the types of activity that we want to see more of and, therefore, help embed better culture.

There are a few examples. I probably bang on about this quite a lot, but, if you take the export one, when I took the job on, it was an afterthought in procurement. If you have this requirement to robustly review it at the beginning with expert data, that will strengthen the cultural point, but it is not just that. I was recently in both Qatar and Saudi Arabia at their defence shows. The Army had a really strong showing for land exports. They were out in force promoting our land capabilities.

It is fair to say—and they would admit this—that that is a change for them in terms of really embracing the export side and understanding, because of the lesson of Ukraine, that you have to keep your supply chains hot, which shows the importance of export. There are some signs of cultural change already. If Andy Start was here, you know what he would say, which is that change has been happening.

We could take the really important point—it is not so much part of my reform; it is something that you will know from the Sheldon report—about psychological safety and having the confidence to speak up. That is really difficult to embed. There is no particular lever you can pull for that. The Integration Design Authority can pronounce that a programme is not fully integrated with the other frontline commands, but how do you pull a lever to ensure that people feel psychologically confident? It is not easy. There is a challenge.

I do not want to throw the challenge back to you, but it would be a real help to me if we could work with the Committee to say, "These are some of the tangibles and milestones that will show that this new model is starting to have an impact." If we work on that, if you hold us to account and we respond to that, we will make progress. I am more than happy to do that.

Mr Francois: Minister, speaking for the Committee only because I have the floor, I suspect we would very much welcome that. We would welcome the spirit of your request. I am sure, between us, we are going to want to take you up on that.

Q123 **John Spellar:** Minister, if a company said, "We have been told that, if we complain about an aspect of this process, it will be held against us on this

and on future conflicts," will you, through the organisation, assuming that it stands up, come down on the individuals involved and responsible?

James Cartlidge: If I may say so, psychological safety is primarily about the employees within DE&S and MoD rather than companies we might contract with. That is important, but the legal responsibility is within the Department and its companies.

I did a town hall, which is where you address all the staff, at DE&S about psychological safety. I was as open as I could be. I stressed the importance of this. Ultimately, I am reliant on all the aspects of the enterprise to join in with that, to understand the importance of the concept and to be as open as possible about it.

Paul Lincoln: It is probably worth saying that all of the single services have signed up to make sure that psychological safety is built into their procurement processes, particularly wraparound support for SROs.

Q124 **Sir Jeremy Quin:** If I could pick up on that, the frustrating thing about Sheldon is that we have been around this point before after Haddon-Cave. The recommendations of Haddon-Cave were deeply embedded in the RAF. At the time I was told that after about five weeks one of the other services said, "We have done the lot now." Again, it is just a point on culture. I have no doubt that the recommendations of Haddon-Cave were implemented. I know from Sheldon that they were, on paper, there during Ajax. It is one thing to have it on paper; it is another thing to have it in practice.

James Cartlidge: Yes, totally.

Q125 **Sir Jeremy Quin:** I will go straight back to the same point that Mr Francois raised, which we all endorse and I know all three of you do, around culture. It is one thing to have it on a piece of paper that you can go to that part of the chain of command to express your red flag or your concern. It is another thing for people to have the confidence to do it. I know you are recognising that, but it is about getting that culture right.

James Cartlidge: This is such an important point. Let me give you one of the most fundamental examples of this. The equipment plan gets a lot of attention. This is the 10-year programme of our future equipment. Yet when I look at what is happening in the uncrewed space and technology, I question whether that horizon is valid any more.

There will always be longer-term programmes, such as nuclear submarines, carriers and so on. To a certain extent, particularly with the debate on Thursday in mind and the possibility that we may be getting closer to a warfighting situation that we had not expected a few years ago, my challenge is about whether we should focus more on things like how to protect our existing platforms from drones or how to deliver what we would call spiral development. That is not the next new platform; it is what you do to strengthen, in the near future, the lethality and

survivability of your existing platforms or those that will be in the line quite soon.

That is a cultural point. There is no question, in my book, for reasons that are perfectly sensible and to do with how you have to plan programmes, that the culture has typically been to make iterative and platform-based assumptions around the future rather than, dare I say it, artificial intelligence and the massive importance of technology.

Q126 **Mr Francois:** This is an important conversation. In the second world war, Alan Turing had to fight a massive bureaucracy for well over a year in order to get the resources to break Enigma. If he had not had that utter, single-minded and almost obsessive determination, we would not have broken Enigma and the whole of the course of the war could have been different. He had to be a total maverick to do it.

General Mattis, in the US, talked about acting in the speed of relevance when he was Secretary of Defense. That means two things. It means comprehensively changing culture. My friend Sir Bernard Jenkin, the Chairman of the Liaison Committee, would say we should put everyone involved in procurement through Shrivenham, give them all one course and, until they have passed it, do not let them go back to work. It is a very interesting suggestion. He is Chairman of the Liaison Committee, I remind you.

The other thing is, as well as changing the culture, increasing the speed. If the skies darken, we have to do all of this quicker. Is there merit in any of that?

James Cartlidge: Yes, absolutely. When I made my Ajax statement in June last year, I think I said to you that this is not about what has happened in the past, although you have to learn those lessons, or political point-scoring. The reason we have reformed procurement is because of the threat that we face and because we have to compete with our adversaries or they will out-compete us.

To me, technology is moving so fast that we have to find a way, as I said, of creating this constant loop that I have seen with these drones. It has happened in practice. They are out there in the theatre. They have spiralled rapidly at the behest of MoD through UK SMEs. That sort of culture is starting to happen. The most powerful reason is nothing to do with anything I am doing or my colleagues are doing; it is the circumstances in which we find ourselves in Ukraine.

Mr Francois: We did have that conversation, and you kept your word. For the record, Minister, we are the House of Commons Defence Committee, and we are here to help.

Tom Copinger-Symes: Just on the subject of culture and how we flip this round, there are two bits of good news. First, agile is a thing. Almost every large business organisation is working at how to become data-centric and flip from a platform to a system-of-systems or data-centric

point of view. We are not the first people to do this. Everybody is doing it. There are plenty of lessons to learn.

All the agile cries out there, such as, "Think big; start small", "Be prepared to scale or fail" or, "Work in the open" are all about experimentation and learning, as Edison found out, in terms of the thousand ways not to build a lightbulb before you finally get there. That is good news. In industry, everybody is at it. As we integrate and bring new people into the supply chain, if we can do that fast enough, we get that benefit.

As an infantryman—if I was a sailor or an aviator, I would be saying the same thing—the really good news is that this is exactly how we behave on operations. It is exactly the same way. You might say, "Why is it taking you so long to embed that in the organisation?" That is the really good news because that is exactly how we behave when we are forward. We make mistakes, sadly, the whole time. We learn lessons very quickly. Nobody cares what rank you are. If you have a good idea or you can identify the problem, it is got in harness and we get on with it. Those are two signs of help. They tell me that we are ultimately going to win at this.

The last thing is about your speed of relevance point, which is often made. Yes, that is about keeping up with SMEs, but for us that is about keeping up with and getting ahead of the adversary. Again, we have some hope there too. We have an amazing base in this country. We have very skilled people. We have very motivated soldiers, sailors and aviators. We have very skilled civil servants. We can get ahead and stay ahead of the adversary, if we get this right.

Mr Francois: I would just add that there should be some way of taking all of that innovation that you have in those SMEs, all of those bright sparks who think outside the box and all the other clichés—you know what I mean—and Bletchley Park-ing it. There should be some way of taking all of that intellectual power and entrepreneurial spirit and turning that into, for want of a better word, a defensive weapon—the defence of the realm. I can see some nodding going on here.

Q127 **Chair:** Just before you answer that, Minister, that comes back to what I was going to jump in on, which is making defence data available to developers. They tell us that it is inaccessible. We have all talked today about how important this data is. What plans do you have to make that more accessible to developers?

James Cartlidge: I have two very expert heads on that particular point. Just before I pass over, I was going to answer your previous point, if I may. For the culture to change, you have to have really clear direction. We have that. As you can see, there is strong political support for change. To make it manifest, we have to be able to show you what is happening. I cannot emphasise enough that the thing that is driving that, above all, is simply what is happening out there in the world, as we find it today. We do not really have a choice.

The good news is that we do have those brilliant SMEs. The Bletchley Park-ing that you referred to is DASA and particularly DSTL. Operationally, again, we have to be careful about what we say, but they have played a role in ensuring the success of those companies getting out into theatre and doing stuff. As far as we are able to, within the quite justified restrictions because of military sensitivity, we share all the time to ensure that they achieve success. We cannot do it every time. As I said—I am very conscious of this point—there will be SMEs who feel like they have had good ideas but have not really been listened to, etc. We need to work on it.

Who wants to come in on data?

Paul Lincoln: On datasets, Chair, you are correct to raise that with us. We recognise that sharing data, whether it is with industry or academia, is really important to make sure we can all benefit from this. Over the last 12 months, we have invested in trying to create some environments where we can do that. If people have the right secure links and the right vetting, if we are talking about data that may be secret, we can use those environments to provide datasets. We have been provisioning over 60 different datasets, which is 1 million gigabytes or 1 petabyte of data, to provide to developers on this. We have just started doing that now at higher classifications.

It is absolutely an issue that we recognise. We have started to do some work on that with others. We also recognise that this is not something that we want to do by ourselves. We are also now, through the Defence AI Centre, signposting developers to high-quality open-source datasets that might be representative of MoD data types. We are also looking at working with industry to think about synthetic labelling so we can look at our datasets and at where we can increase the datasets that might be available to support that kind of development.

Q128 **John Spellar:** Seamlessly moving on from that, a lot of companies have told us that secure cloud computing is needed to enable AI to deal with classified data. When will they have access to this? Is there possibly scope for Government to have an overall umbrella contract as part of which they could have access in order to undertake that work?

James Cartlidge: First of all, it is absolutely clear that we are having far more engagement with industry at a secret level and sharing data. In terms of the actual technology behind that, I will defer to the second permanent secretary.

Paul Lincoln: We set out in the AI strategy that we would have a secret cloud within defence. We have had a secret on-premises cloud installed and operational since early 2023. As the Minister said, we have too many secret cloud capabilities. We are moving to a single convergence at the moment. We are looking for a commercial cloud provider to bring on board for that because commercial cloud means you can also utilise some

of the more sophisticated tools that you would not be able to use if you were doing this either yourself or with industry.

There is not too much more I can say about that because of commercial confidentiality, but we are in the process of doing that.

Q129 **John Spellar:** To what extent are you looking at making that available not just for your own internal communications, but for companies that are either providing or indeed in agreement with you to provide possible projects in order for them to be able to do that in the most efficient environment?

Paul Lincoln: As I said a moment ago, we are looking to make sure we are able to share datasets and/or test environments at a secret level, not just at an unclassified or "Official-Sensitive" level.

Q130 **Sarah Atherton:** Paul, can I just ask for clarification on this? It says here that some SMEs, in order to access "Secret" and above information, require specifically constructed and secured sensitive compartmented information facilities, but it is prohibitive for them to access those. Is that correct?

Paul Lincoln: If you are going to access an MoD system at "Secret", you need to have the right security protocols in place in order to do that because we will not compromise on national security.

Q131 **Sarah Atherton:** I understand that. When we are looking at, as Jeremy has mentioned, enhancing AI in smaller SMEs that have the expertise that, quite frankly, we all need, is there any way that the MoD can overcome that? The suggestion here is that they have a shared SCIF to overcome this. Is this something that the MoD could do?

Tom Copinger-Symes: Yes, theoretically. To one extent or another, we already do. A SCIF is just a secure area that is authorised to hold data in a system to a certain level. We have people who come in and work on our systems, just as intelligence agencies will and so on. That is normal. Is it as much as people would like? No, probably not, given the question. That is fairly normal.

To scale that, though, we need to go back to the second permanent secretary's point about SMEs having the right security credentials and capability to be able, let us say, to connect to a secret cloud and then work on our stack with our data and their IP to develop the solutions that we need.

Secure cloud access is not everything in this space. There is an awful lot that can be done at "Official-Sensitive" in terms of training models and then, in due course, bringing them into our environment at "Secret", if necessary. Not everything has to be done on secret data to develop the models. As we improve our creation of synthetic data, that will become much more efficient too. We can create synthetic data that does not need

to be secret and allow them to train models at "Official-Sensitive", on the public internet, and then bring them into our environment.

Q132 **Gavin Robinson:** I want to go back to SMEs again, Minister, but this time I mean subject matter experts. How is the MoD getting on in attracting talent to deal sufficiently with AI?

James Cartlidge: The irony is that we are talking about AI and uncrewed systems a lot, and yet the biggest challenge is still people. As General Tom said right at the beginning, in many ways this is an international challenge. It is not straightforward.

There are an awful lot of programmes and activities in place—I will get Paul to talk about those—but I want to assure the Committee that, from the Secretary of State down, we are keenly aware of the importance of addressing the general recruitment and retention point. It is a top priority for the Department. It is why you have seen Haythornthwaite. In terms of our personnel, not necessarily our subject matter experts, this is why it has been so important to invest more into accommodation, because that is part of the offer that we make. There is a lot of work happening on the wider offer to people. Paul, did you want to talk about AI?

Paul Lincoln: As you say, this is a national issue. It was set out in the Department for Science, Information and Technology strategy that this is a national endeavour. We build on a strong AI base in order to do that. As a country, we are rated fourth globally. We employ some 50,000 workers across 3,170 different companies as part of that. We are rated very highly in terms of universities. The ecosystem from which we are looking to recruit is quite strong.

We also recognise that defence is a skills accelerator. Even if we do bring people in and then lose them, we are one of the employers with the largest amount of education and skills. We have 20,000 apprentices, for example. We are the largest apprenticeship employer, certainly in the UK and potentially in Europe. We are taking people in and training them.

We are doing a huge amount on skills. As we mentioned before, we are doing that from the top, but we have also signed MOUs with Microsoft and Google to utilise their tools to train our people both in DSTL and more widely. We are trying to make sure, as some other Committee members said, that this is built in at the start. We are starting to do work, for example, at Staff College and Sandhurst. We are thinking about rolling that out in the other initial officer training academies so that people are thinking about digital, data and AI from the outset.

Just very briefly, on top of that we are doing other things, like centres of excellence. We are also sponsoring 100-plus PhDs that are coming through. We are doing a lot in terms of trying to make sure we are generating skills within the organisation and retaining that talent. To the degree that we do not, we will strengthen the wider national ecosystem, once we have pulled people through.

Q133 **Gavin Robinson:** In the AI strategy, there was mention of an AI pay premium and a recognition that commercially you probably cannot compete in salary terms. There was the suggestion that you would supplement what is on offer. Where is that proposal? Are you doing that? Is your answer there suggesting that you do not need to because things are going well?

Paul Lincoln: We implemented last year a pay framework on data and digital.

James Cartlidge: It is DDAT.

Paul Lincoln: It is data, digital and technology. Broadly speaking, it offers the median private sector rate. It is across three key grades: grade 6, grade 7 and SEO. The additional salary that that might attract is as high as an extra £18,000, depending on which grade and what type of role you are in.

Q134 **Gavin Robinson:** In our discussion earlier, Mr Spellar drew a comparative suggestion from the United States. They recognise that they may not attract somebody on a six-figure salary into the army, the navy or the air force, but they are able to encourage those individuals to contribute through the national guard, as an example. Are there any plans to do something similar with our reserves? Are we doing anything to recognise that somebody like me is not going to do very well on an assault course but might be able to navigate their way around a system?

Tom Copinger-Symes: We might make you better on the assault course too. We will sign you up tomorrow.

Chair: We will all join you, Gavin.

Mr Francois: As long as it is an assault course in Northern Ireland.

Tom Copinger-Symes: We already do this and we want to do more of it, but we already have a whole range of reservists who are paid part-time. We have an amazing amount of very senior and less senior people with really precious skills in this space and in wider areas of engineering, cyber-security and so on, who come and give us their time for free.

Q135 **Gavin Robinson:** That is great. Are those reservists who then adopt and deploy skills outside of the reserves, or are those people who have skills and are then encouraged to come into the reserves?

Tom Copinger-Symes: It is both. Particularly when I talk about specialist reserves, it tends to be the latter. These are people who work in cyber-security. They might not have had anything to do with the military. They might have been in the Royal Signals for three to five years but left to build their executive career. When they have the skills and some more time available, we bring them back in.

There is the broadest possible range. Again, the Haythornthwaite review talked about the spectrum of service, from the 19-year-old infantryman

whose whole life is the military through to the 54-year-old or whatever who has different requirements in life and a lesser commitment. We have that whole spectrum already. We are trying to put petrol on that and make it even stronger.

James Cartlidge: Mr Robinson, it is not new that defence companies are often rooted in former service personnel. I was at the Marines base in Stonehouse recently. The Navy has an in-house software team, which behaves just like an SME. They are either serving personnel or a number of former naval personnel who come in and work to create software.

The extra premium to employ people with skills is important, but, going back to the point we have made frequently about the other type of SMEs, small businesses, they will tend to be the biggest residue of talent that we need to harness without directly employing. It is both. It is about being open to it; it is about having the incentives; and it is about the top-level strategy, which I am confident that we have in MoD.

Q136 **Gavin Robinson:** General, you were talking about specialist recruitment. We are all aware of the need for lawyers, doctors, dentists, engineers and skilled folks like that. Are you able to share with us, maybe after this session, the number of individuals, whether regulars or in the reserves, across the services, who are specifically retained because of their cyber interests?

Tom Copinger-Symes: Yes, I would be delighted to.

Q137 **Jesse Norman:** Can we talk about AUKUS and AI? There is a tremendous potential to apply AI both to pillar 1 and pillar 2 of AUKUS. Who within MoD co-ordinates the approach to developing defence AI through AUKUS?

James Cartlidge: This is DG AUKUS. It is Damian Parmenter who co-ordinates this effort. As ever, ultimately, the leadership is from the Secretary of State, who is going out to Australia as we speak.

I am really pleased that you raise this. While I appreciate the point that we have to solidify and turn much of pillar 2 into actual programmes—by its very nature, it is nascent—there is an incredible opportunity here for UK AI.

Q138 **Jesse Norman:** So the SoS has the overall responsibility; Damian is running the vertical, if you like; and then there is presumably a horizontal coming in about the co-ordination of AI across the rest of the defence estate.

Tom Copinger-Symes: There are a bunch of different thematics in pillar 2, but AI is led by the head of the DAIC, who is a naval one-star who works with her colleagues in Australia and the US.

Q139 **Jesse Norman:** For us, is that within the Army?

Tom Copinger-Symes: It is within Strategic Command. The Defence AI Centre is a three-way partnership between DSTL, our scientists; the DE&S future capabilities group; and Defence Digital, which sits in StratCom. That sits with us. Rachel is working with her colleagues across AUKUS to refine the problems that we need to solve.

The most obvious use case there—I will not go into detail—is sub-surface warfare. This is about how you find adversary boats in a very large ocean using, in this case, AI tools to go through very large amounts of data, look for very small needles in that haystack and do that at the speed of relevance that we hear about.

Q140 **Jesse Norman:** That is very helpful, thanks. How will the relationship work between the work that Rachel is doing and the work that Damian is doing?

Tom Copinger-Symes: The second permanent secretary will probably save me from myself here, but the work that Damian is doing is looking across the totality of AUKUS. Within that, clearly, there are different workstreams. She is leading the AI workstream within pillar 2.

Paul Lincoln: That is correct. Damian is effectively a cross-Government DG who is cohering this. It is not just Defence that is relevant to this. Particularly, there is also a Cabinet Office interest. Yes, she is effectively working with him on that basis.

Q141 **Jesse Norman:** That is great. Just to think about the foundational goal, we are still in the relatively early stages, particularly on pillar 2 and pillar 1. Is the aim to have a single common set of foundations and standards or to have interoperable AI across the whole of AUKUS?

James Cartlidge: A good example of that is the P-8, which is a maritime patrol aircraft that I think I am right in saying all three countries use. They are currently trialling an AI framework for the use of the P-8. Tom was talking about the importance of that to underwater. You know what the role of the P-8 is with respect to that.

Jesse Norman: Yes.

James Cartlidge: That is a good example.

Tom Copinger-Symes: In terms of the foundations or what I call the rail tracks of interoperability across, in this case, that bit of the world, clearly, we work very closely with our US brothers and sisters on the very basic level of interoperability: data architectures, data standards and cloud architecture.

On the one hand, that feeds out to NATO; on the other hand, it feeds out to other frameworks such as Five Eyes or indeed AUKUS. Is that all perfectly in place yet? No. Is it absolutely critical to both pillars? Yes, absolutely. Those collaboration environments are where you are going to build interoperable and data-centric systems.

The P-8 example is a really good one. You do not build infrastructure just for the hell of it. You do not lay a lot of foundations. You find a problem; you solve for that problem and then extrapolate from there. That is exactly what we are doing at the moment through that particular P-8 example.

Q142 **Jesse Norman:** In that sense, would you see AUKUS as being akin to Five Eyes in the depth of the commitment that one is making to foundations and standards across the different nations?

Tom Copinger-Symes: That is one of the useful pull factors. It would be strange if we were to set up standards there that did not also get pulled into, for instance, NATO federated mission networking, which is how we build interoperability in NATO. You will be very well aware of the STANAGs—standardisation agreements—of the old days.

Jesse Norman: Intimately, yes.

Tom Copinger-Symes: You may have written some of them. Clearly, you do not want to literally boil an ocean, but trying to maintain coherence between them, not at the system level but at the rail tracks level, would be very sensible because then you build interoperability across the whole world.

Q143 **Jesse Norman:** Is it an assumption of that viewpoint that there will be a collective capability to overcome the ITAR requirements that the US sets?

James Cartlidge: That is being dealt with separately.

Paul Lincoln: I am happy to pick up the issue. Everyone has been clear that ITAR is a barrier to more effective collaboration. There is good progress being made on that at the moment. As part of the US National Defense Authorization Act before Christmas, there was bipartisan language in there that requires the President to certify comparability within 120 days or explain why not. There is a rolling 120-day process that goes through on that. We have been having ongoing negotiations with the Americans on that. The State Department made some positive statements publicly in February about those.

From our perspective, there are some critical things that we need to see as part of that. We want to see proper industry engagement because we want to make sure we do not overburden industry as part of that set of processes that we put in place as an exemption. We want to make sure the exempted technology list is as minimal as possible so that the widest possible set of things can be done between those three nations.

It is not just about projects associated with AUKUS. It is wider. It is a general exemption for the three countries as a whole. From the estimates that we have done previously, there would be at least £500 million of benefit to the UK defence industry in any given year if we were to make progress on that.

Q144 **Jesse Norman:** In relation to AUKUS, all three countries, or at least the UK and Australia, would be similarly benefiting from whatever relaxation or arrangement was put in place with regard to ITAR.

Paul Lincoln: Yes, they would.

Q145 **Jesse Norman:** Presumably, we might have a slightly different relationship with ITAR in relation to other technologies that were not deployed in AUKUS.

Paul Lincoln: Yes. We might have a difference of view as to what might be on an exempted technology list or not. For example, we are signatories to the Ottawa convention on landmines. We would not want to be in a position where they were exempted. We would say that a licence should absolutely be required, but the Americans would not necessarily put them on that list.

Q146 **Jesse Norman:** Is it possible, in principle, that an ITAR arrangement could be put in place for AUKUS that was not extendable to other relationships in NATO, for example, along the guiderails that the general has mentioned?

Paul Lincoln: The exemption as it stands is for the three countries. It enables AUKUS, but it is not AUKUS-specific. It would be for the defence industry on any set of projects, irrespective of whether or not they are AUKUS projects.

Jesse Norman: That is very helpful.

James Cartlidge: It makes it potentially very powerful, if we get all the detail right.

Jesse Norman: It is extremely interesting. I am very glad we have had this line of discussion. May I ask a couple more questions, Chair?

Chair: Please do, yes.

Q147 **Jesse Norman:** It was very interesting to hear about the procurement process that you were describing earlier. I was just reflecting that the place in the UK where they are developing a flexible procurement system, which does seem to address some of the issues that we have been discussing, is in ARIA in the sciences, which ironically was modelled on DARPA. The way it works is to have world-class mid-career professionals guiding whole sets of processes with substantial budgets over time. They can place bets, bring forward technologies and think about the bleeding edge, if that is not an inappropriate metaphor. Is that a model that you guys have considered? Is that something that might be usefully brought in elsewhere in defence procurement?

James Cartlidge: Whether it is exactly along the lines you are describing, portfolio procurement will play a significant role in the new model. It is essentially part of what you are describing. We have had this with complex weapons. We will probably have it with drones, for

example. You empower the team, as you say. Once there are approvals, they can veer and haul within that, have greater flexibility and—this is crucial for it to work—retain budget for spiral development.

Q148 **Jesse Norman:** They retain some equity in the area, even if they are making progress within terms that they already recognise.

James Cartlidge: Absolutely, yes. You reprocure each time. You have your portfolio; you procure within that. You then have more freedom, after a particular phase—perhaps the outline business case, etc.—to pursue that procurement without having so many checks and balances. It is also about less onerous red tape, dare I say it. We are in close engagement with DSIT on precisely the kind of procurement that you are talking about, which ARIA is doing.

Q149 **Jesse Norman:** There is some interesting stuff coming out of ARIA, which is why we were thinking about it. I have one final question. One of the breaking areas where people are doing a lot of thinking in relation to AI has to do with deceptive mimicry. That can take a variety of forms. Is that something that you guys are fully across, thinking about or embedded in? Can you give us some reassurance that you are taking it as seriously as it deserves? It sounds bad to say it, but it cuts both ways. One could be deceptively mimicking oneself.

Paul Lincoln: It is probably just worth saying that DSTL has been working with DARPA in the US on exactly that, deepfake imagery and deepfake videos. DSTL have identified 90 different techniques that they can use to do that. They are working on that. They are supporting the Defending Democracy Taskforce as part of their work.

Jesse Norman: There are units within MoD that are running that cross-cultural and cross-governmental thing as well.

Paul Lincoln: That is being led out of DSTL and it is being done in partnership with DARPA in the US.

Jesse Norman: Thank you. General, did you want to come in on that?

Tom Copinger-Symes: No, but you would be reassured.

Chair: I think we can leave it there; I had said that we would try to aim for a 4 o'clock finish. I just want to thank my colleagues on the Committee, our staff, the Minister, General Copinger-Symes and Paul Lincoln.