

Workforce Foresighting Hub Episode 5

Emily Brennan: [00:00:00] Hello and welcome to the Workforce Foresighting Hub podcast. I'm Emily Brennan, communication manager and host. In this series, we explore the intersection of future skills and innovation, uncovering how emerging technology is shaping the workforce landscape. In today's episode, we turn our focus to the dynamic UK space sector.

We will be diving into the satellite application catapult cycle, examining how it's driving the future of active debris removal. Join us as we speak with key industry players about the challenges they face, the insights they've gained and the recommendations they have both for organizational and occupational evolution in order to position the UK as a leading force in the space industry of tomorrow.

Welcome to the fifth episode of the Workforce Foresighting Hub [00:01:00] podcast. I'm really excited today to have some more colleagues with us to talk about another practical example of a cycle. And this time we're talking to our colleagues from the space sector. So I'm going to come to my colleagues now.

If you could introduce yourself, Kathie.

Kathie Bowden: Hi, I'm Kathie Bowden. I work for the Satellite Applications Catapult where I'm their skills manager. I've come to the sector. Actually, I came to the sector a very long time ago. I started off in industry as a geologist, but I became an earth observation specialist quite quickly, and then began to apply my knowledge of that across different aspects of the space sector.

So I can happily say that one way or another, I have worked in all facets of it. Industry, academia, science, And government. And now I'm happy to find myself in a place at the catapult, which combines elements of all three, which is great fun.

Emily Brennan: Yeah, that's brilliant. Thank you, Kathy.

Bethan McAulay: And Bethan. Hi, I'm Bethan McCauley.

I'm head of talent for [00:02:00] AstroScale. So we are a space sustainability company focused on cleaning up space through in orbit servicing. I joined the

space industry just over five years ago. And worked in lots of different industries before that as a recruiter, including things like pharmaceuticals and can safely say that space is the most exciting place I've had the pleasure to work.

Emily Brennan: I can imagine. That's brilliant. Thank you very much. So let's first set the scene and get some context about the space sector in the UK. And what has the developed? What have the developments been over the past 10 years? Maybe, Bethan, if we come to you first.

Bethan McAulay: Absolutely. Certainly we've seen the rise of new space companies.

So quite. For much of Spacer's history, a lot of the work was done by institutional players or bigger primes who also did defense work. And then we started to see private companies and smaller companies start to crop up and almost challenge the work that was being done [00:03:00] in the space. And so we've seen the industry grow, particularly in the UK, the demand for activity and the number and variety of companies in the sector has hugely grown even in the last five years that I've been in it it's been incredible to watch it grow.

But that brings with it a challenge. Because there are only a finite number of people who have the skills or who know about the industry. And so it does create quite a challenge as we keep trying to grow the industry in having people to actually do the work.

Emily Brennan: Absolutely, and Kathy could we have your view please?

Point as well, please.

Kathie Bowden: Yeah, of course. And I think one of the things that all of us forget is how important space is to every single one of us in our daily lives. We, I got here by a sat nav today. We use increased connectivity. We're talking about autonomous vehicles. We're seeing autonomous vehicles and without position navigation and timing information [00:04:00] from satellites, helping us guide and know exactly where those are.

We have, we wouldn't have the data or the applications that we have today. You look at climate change, for example, more than 60 percent of the essential climate variables are only measurable from space. So space is incredibly important to us and we can't do without it. So we need to make what we're doing much more sustainable as Bethan has commented on.

And it's also quite a big market in our, in. In the country, but also an opportunity for exports, significant exports overseas. So the sector's got more than 42 and a half thousand people working within it. And those are the people who are directly involved that doesn't take into account all the other people who are working across space, who.

couldn't do their jobs without space data. So what we're trying to do is make sure that we're covering all bases. And what I've seen [00:05:00] particularly over the last 10, 15 years, is that we've always had an element of struggle to recruit people in particular areas. Some are spaces really hard and you can't do it without experience and knowledge and bringing those people to the fore and enabling everybody to work better is really becoming bigger and bigger.

Emily Brennan: Yeah, that's fascinating. And bringing that relevance into everyday life, I think is really important message. To convey. So that's fantastic. Okay. So you talked about some of the challenges there and already as a recruiter and seeing, the sector growing even more and supporting other challenges that we're facing.

Could we talk a little bit more around how you see the skills challenge impacting the growth of the sector?

Kathie Bowden: As I said we've been doing work over the last 10 years looking at skills issues across the sector. The dial probably hasn't moved significantly [00:06:00] in many of those areas. We need people who are smart, people who have attention to detail and people who have the right knowledge and skills.

We're bringing people in through apprenticeships, but probably not enough, and we need to do more than that. And of course, as we move forward. forward, we're also looking at emerging technology areas where we've really, we've got to make sure that we are skilling up the people now for those technology areas to hit the ground running in the three to five years.

And that particularly is where this Work that we've been doing focuses in

Emily Brennan: and Bethan.

Bethan McAulay: Yeah, I can certainly echo a lot of what Kathy's experienced and certainly we're, we talk a lot at the moment and there's a lot of dialogue conferences in an industry about the challenge that the skills gap is causing the industry.

And yet we've been looking at the same skills gap for the last 10 years [00:07:00] and we haven't managed to do much about it. It's great that we're starting to see a lot more inspiration activity take place and we're getting a lot of students come out of university or look towards apprenticeships with a want to join the industry.

But a lot of them are finding there's not as many opportunities to get involved once they have the skills and they've done the study. And so I wonder if we will actually make a difference to the skills gap moving forward if we don't do something significant now. Because the biggest gap we have is at a mid career level.

And you don't magically appear at mid career level, you have to work your way up to be a mid career professional. So if there aren't the early careers opportunities it doesn't hold much hope for filling more of the roles at mid career level.

Kathie Bowden: I think one of the things I might add to that is that to some extent that filling the gaps at mid career is really describing the success of the [00:08:00] sector because the sector has grown so dramatically that the people who were employed as early career people, Five to 10 years ago and now spread across twice as many companies as they once were.

So that's the fundamental problem. We've got to see about whether we can bring more people in from other sectors, whether we can reskill them and upskill them and how we can make that happen. But we've also got to make sure that we are. Dare I say, almost over training at the bottom.

Emily Brennan: With the Workforce Foresighting Hub project coming along, what was it that really enticed you to get involved with this cafe?

Kathie Bowden: So I guess I was involved or interested before it became the hub. I'd spent quite a long time sitting on a trailblazer group, working with a trailblazer group to look at to develop a new standard for space engineering. And that took a heck of a long time. [00:09:00] The gray hairs are probably due to that.

But what I've also, what I also found as we began to delve into the foresighting work, I could begin to see that This could be a real game changer. But then we came to this particular challenge and the ramping up of interest in this particular area, which I think you'd agree with as well. And to the point that this year we had the first.

conference to address in orbit servicing and manufacturing held in the global conference held in the UK. Okay. Sponsored by ourselves and the UK space agency, which was phenomenal. Great interest from across the board. And suddenly you've got a lot of people talking about it and renewed efforts. And we really need to make sure that we've got the right skills coming through.

Emily Brennan: Brilliant. So For people who are not familiar with in orbit servicing and manufacturing, maybe Bethany, you could give us a bit of an overview of this. [00:10:00] This is what this particular workforce foresighting cycle focused on, but could you give us a flavor of what that means? Absolutely. So there's lots of different things that fall under quite a broad umbrella, but ultimately it's trying to look at How can we more sustainably use the space environment that we have?

Bethan McAulay: So we've been great at getting things into orbit for the last 70 years. We've been really successful at that. But now there's a lot up there. We are continuing to launch more and when we look at all orbits, but particularly if we focus on low Earth orbit, it's getting very congested, and so we are, the conversation is starting, or has started, that do we need to keep launching everything brand new?

Or is there a way to do more with what we already have? So that could be repairing satellites that are already up there. It could be repurposing them. It could be moving them [00:11:00] to new orbits or inclinations. It could be refueling but it also could just be clearing them out of the way. So getting them out of the way to make way for new objects or where they've disintegrated or broken down over time, or there's been collisions and they've broken into smaller pieces, they start to pose a threat.

To one another but also the more congested it gets, the harder it is to safely launch more objects and the harder it will be for us to continue to use space in the way that we have become comfortable using space and so it poses a great opportunity for a new industry, but it also lets us continue with a lot of the industries we've already developed for space.

Emily Brennan: Okay. Now that's really helpful. That really paints that picture. Thank you. Okay. So talk to us about the actual cycle that you were involved in. How did that work in terms of who was involved and what was the sort of process you went through? So we brought

Kathie Bowden: [00:12:00] together folk from three distinct communities.

One were the subject matter experts, those who were involved at the sharp end of active debris removal. Or in orbit servicing and manufacturing because it's a smallish community at the moment and we wanted to bring together that expertise. Many of those were also employers or also academics because there is intense crossover when you're at this stage in a, in emerging technology area.

So we bought, we picked out people who would be subject matter experts to start with. We then brought together a group of employers who were working in that area, and then a group of academics who were working in that area. And importantly, not only were doing the research in that area, but also teaching it.

And [00:13:00] that's been really important. Fascinating to see how that picture has developed. And it was great because we had a number of great colleagues from Astroscale who absolutely knew what they were talking about. Absolute subject matter experts who could work alongside subject matter experts from the catapult and others to really bring out the rich data that we needed to collect.

Emily Brennan: Yeah. That's brilliant. What was some of the key findings from the process that you went through?

Kathie Bowden: What was interesting was to begin to define the different value chains that we had. So we were talking about the operators of the target satellite. We were talking about the operators of the active satellite that was going to be doing the [00:14:00] service, if you like.

We were talking about those who were building both targets and service satellites. And we also included the infrastructure related to all of the above. Those who were delivering the ground infrastructure principally, but it was also what was going on here that was affecting up there and a small cohort from the defense community, which I think was really interesting.

Fine tuning and teasing out the differences between what those different users and different areas needed was really critical.

Emily Brennan: Okay.

Kathie Bowden: Because not all the skills are the same.

Emily Brennan: And what were some of your insights at that stage of the process?

Bethan McAulay: I think it was particularly interesting to see how many of the companies we know of now actually crossed [00:15:00] multiple of those value chains.

So we'd originally started to try and look at them very distinctly and to treat them as separate populations. But then when we worked them through as, okay, if this was us, where would we sit? And actually we were ticking many of the columns. And I think it was the same for a lot of the companies that we could already bring to mind.

They were operating across multiple value change, which makes those skills harder. Because we're needing the skills from lots of different perceptions and different viewpoints. Yes. Which is hard then to put into one individual when you're looking to raise a profile for somebody. I think also the trying to put yourself in the future and imagine the skills you need to develop or to deliver a technology that doesn't yet exist, or, we're only starting to have [00:16:00] existing is a challenge in and of itself.

And so it, create, it requires a different mindset rather than considering how would I deliver this now and freeing yourself from this is the way that we've always done it. Which was a challenge certainly in that first session.

Kathie Bowden: Yeah. I think that's absolutely right. We, you'd sit down and people would say we need more of the same and actually it was sitting down and actually talking about what do you, what capabilities do you really want in this person?

What do you want that to look like? Which was when it began to get exciting. Because that's also one of the things I think you'd agree with me that makes space interesting is the ability to work on this particular project. today, but be able to work on a different one next month or next year.

Emily Brennan: No, it's always going to be evolving and changing and yeah, that's really interesting. And those future occupational profiles a result of going through this process. What was some of the sort of [00:17:00] maybe some more surprising ones that came through?

Bethan McAulay: I think we focused initially very much on the technology ones.

And I think we were surprised to see how many non technology areas were needed that currently are a gap that we I think tried quite hard to squeeze into

some of the technology profiles until we looked at the kind of skills that sat behind them. And we recognized that actually these aren't going to need to be different individuals.

We cannot assume an engineer will also be able to do the regulatory piece. We'll also be able to do the softer skills pieces, some of these are really hard to ask the same individual to deliver everything. And I think it was a real recognition that actually we had a bias towards the technical when we'd first started out.

So it was great to see that start to diversify as well as we went through the process.

Kathie Bowden: I think that's a really interesting point because [00:18:00] it was a, there is the regulation piece that we You know The government's working on but it's not there yet And we need those subject matter experts to help to support that to describe how that's going to work So that's going to be a it's a collaboration there are going to be neat legal issues that are going to come up.

We're going to need those people. We need to have You know people who are going to be able to make sure that we can You know Relocate the technology pieces that we're building in one place to another place. Are they going to be able to pack and transport correctly? The wealth of data that comes out of this, that, that comes through.

And it's not just about building a piece of kits. I think, The other thing that's really increasingly important is the software engineering side of things, particularly as we go towards designing and maybe repairing satellites that are in orbit, you [00:19:00] might not actually swap out a mechanical piece for another mechanical piece.

You might swap out that mechanical piece for a. a piece that is software engineered. Yeah. And that's going to be that is already a big project. Direction of travel.

Emily Brennan: Yeah. So this, this information is so valuable for industry in planning ahead, not just in terms of their workforce, but you've also identified sort of organizational changes that need to happen, which obviously then impact the workforce.

It's really powerful data to be able to go back into industry with.

Bethan McAulay: Absolutely. Into industry. And it helps us inform some of the wider conversation we have, whether that's with government, if we need to invest in making organizational changes as an industry, does that need a government backup?

Do we need more surety in the programs that are coming out of government? If we're going to need to upskill or change or move [00:20:00] around our workforce, we don't want to do that and find out that actually the government investment or interest in that particular program ends after two years, and we've uprooted kind of a lot of people's lives to make that happen.

And so it allows us to have more confidence when we go into those conversations to know. Why we're asking for these kinds of things. Is there a reason we need a five year contract, not a two year contract? And what difference does that allow us to deliver? What value add can we offer for that technology that we're developing that service, that program that otherwise we might not have been confident enough to do.

Emily Brennan: So from the data that you've received from the process, what are some of the other valuable insights both to industry and wider stakeholders?
I

Kathie Bowden: think it's been really fascinating to see how industry has really seized on some of the points that have come [00:21:00] through. We had at least one company who were involved, who described the fact that the data that's coming out helps, would help them make, better job descriptions that would help people understand what their career pathways might be and how they themselves can influence the skills that they develop as they're going through their career.

The, one of the things that's coming up, come out of the space partnerships, workforce space, workforce action plan is this. need for better published career pathways. And this is one fantastic mechanism that is giving us what those pathways might look like. And it's something that we can all adopt from there.

The other point I think that was really [00:22:00] interesting talking to the educators who are crucially important when it comes to taking this to the next level is that they see this as being a really useful tool to take to their senior leaders to say this is evidence of what industry needs when it needs it and therefore they can begin to influence the courses that they're offering now.

I would suspect it's not new courses. It's about tweaking existing courses to make sure that they include this new knowledge and new skills that

Emily Brennan: we're going to need. Yeah. That's brilliant. So the benefits to the data that's coming out are threefold, really, both to the the workforce, to the educators and to industry, and ultimately to, to the sector and the UK, competing [00:23:00] in a global industry and being a leading player.

Yeah. That was one thing that you were saying earlier, Beth, and that the UK is really. In this particular areas is leading because they saw the opportunity early and made that investment, made that commitment.

Bethan McAulay: Yeah, so I think the last number I heard was that in orbit servicing was going to be worth about 11 billion pounds by the early 2030s which is a huge growth for an industry that 10 years ago didn't really exist.

And it's great that companies like Astroscale have come and set up in the UK and part of that is because the UK was an open and welcoming environment to, to do a slightly riskier and a slightly wild technological activity. But realistically, that needs to continue we can't now take our foot off the brake and take for granted the fact that we have become we're at the forefront of in orbit servicing as a, [00:24:00] as an industry.

And so we can't presume that just because we've started out that way that others won't come and take over that position. We have to keep pushing it forwards if we're going to keep growing it and we're going to get hopefully a big slice of the 11 billion pound pie. Yeah, that sounds like a good pie.

Kathie Bowden: And I think it's what, we've certainly been working closely with organizations like Astroscale and others in the sector to, help them identify what they need to support the business growth as it happens and to carry out elements of research and testing that needs to be done. And I think that's only going to grow and grow.

Emily Brennan: It's a fantastic opportunity for the UK. Brilliant. Okay. So following the cycle, and I know you're already looking to book in your second cycle and future cycles going forward, but following this cycle, what have been some sort of the immediate quick wins and [00:25:00] takeaways that have happened as a result of the data?

Kathie Bowden: I was blown away by the fact that very quickly the space agency asked us if they could use the recommendations to embed in their their

upcoming strategy. There's a long way to go to that, but to have been able to influence their thinking as they move towards that, to me was absolutely priceless.

And what we're also, we've also been lucky in that a lot of the evidence that comes out of the report compares the skills that we're going to need, the, those capabilities that we're going to need, it compares them against existing apprenticeship standards. We know that the closest apprenticeship standards, unsurprisingly is the level four space engineering standard, which as it happens is up for review at the moment.

So we've been able to influence the way that develops and to [00:26:00] our information and this data into the development of that, or the review of that standard. So that's really exciting. It, I just, I can't quite believe that we've actually Managed to hit the sweep spot, I hope, on that

Emily Brennan: one. And that's great to hear.

And from your point of view, Bethan, what sort of steps have been taken by industry following the results?

Bethan McAulay: I think it's been useful to have something to anchor conversations about workforce planning around. So it's historically been quite a nebulous art. And much like a lot of forecasting it's a fairly finger in the air exercise.

Nice. So to have something more concrete in terms of the types of profile to build that off, it has made a difference to that, similarly to what Kathie was saying earlier. We've done a lot of work on career pathways this summer. And have our own to be able to publish shortly which will be a really great step for us as a small [00:27:00] company as well.

Not so small anymore. But as a growing company to give people that confidence that actually this isn't just a job, it is a career and there is a way to grow and develop and to be able to use the data that's come out to, to be able to do that. anchor that future prospect in something a little bit more tangible.

Kathie Bowden: I think one of the things that we've also seen that I think is exciting is that those conversations with educators who are delivering aerospace engineering or other suitable degree courses is that they can look at the outcomes and they can tweak their courses or offer additional modules. And that's in the shorter term, I think that will probably also mean that organizations

like yours and mine are going to step up and go we have those subject matter experts.

Now, how can we share that knowledge with a big group of [00:28:00] people, bigger group of people, so that we can help those in universities to deliver the courses they want to do, how we can Deliver short courses to individual organizations who might want to begin to be upskilled in some ways. Dare I say it it's almost you're upskilling the opposition, but at the same time, what you're doing is supporting the fact that there isn't so much poaching going on.

There isn't so much concern about losing your own people because they're seeing the benefit of what they're doing.

Emily Brennan: The evidence that comes out is really valuable because. As you say, it's less kind of opinion based. It is based on the workshops that you do with multiple people. And then it's compared against global data sets as well.

So you're getting that real rich data evidence to then take the next step and inform influences in the industry.

Bethan McAulay: I think maybe some of the challenge we did have in this cycle was [00:29:00] a reasonably limited pool of those opinions. And As we go into next cycles, it would be great to see more opinions come in.

And more of those viewpoints and a diverse range of employers or experts. It was great to get to be so involved as Astroscale. And I'm sure for some of the others who took part as well, they also see the value of the time that was invested in what came out in the reports. But I certainly think for future.

iterations, having more voices in the room will make that even more valuable and it will continue to develop the worth that comes out of the reports at the other end as well.

Kathie Bowden: I think that's a really good point because having those extra voices gives you more data, it makes it easier altogether.

It was very pragmatic and I think particularly for the engineers, I think they really like that. The other thing I think that is makes this so different [00:30:00] from The skill surveys that are churned out on a frequent basis. And I've been responsible in the past for commissioning those reports as well is that, if I look at space skills reports for the last 10 years, they talk about, we need more RF

engineers, we need more systems engineers, but the reality is that a systems engineer for space is a bit of a different beast from a systems engineer for.

nuclear. So being able to tease out that those differences, that data that is particularly pertinent to what we want to do, it also means that when you recruit that person from, say, nuclear, you know which bits of the jigsaw puzzle they could do with a bit of help on, which makes a huge difference as you're going forward.

Emily Brennan: Yeah, absolutely. So in terms of encouraging more people to get [00:31:00] involved with this process, both for your next cycle and for any of the other catapults and convenors that are looking to put a cycle together, what would you say are some of the main benefits to those people and being involved?

Kathie Bowden: I think one of the crucial things is having your views and thoughts collated with others. I am sure that not everybody who participated agreed with everything that everybody else said, that goes without saying, but the importance is that it gets balanced and challenged through the process.

And we're certainly looking at, and we hope our next cycle will be around communications and connectivity, and that is, it's got to be described better than it is currently, and it's got to go beyond, we need more artificial intelligence folk when we need more quantum engineers. It's [00:32:00] got to be a bit more granular than that because otherwise we can't make sure that the people we need can hit the ground running.

So what's next in terms of the next foresighting cycle for yourself, Kathie? So thinking about the connectivity. Cycle that we're going to do. We won't be alone in doing this. So what I'm really excited about is satellite applications. Catapult will be looking at one particular area around connectivity, the convergence of non terrestrial resources with a 5g, for example, but we'll also be working alongside the compound semiconductors catapult, looking at semiconductor is useful.

Connectivity and the digital catapult, looking at involvement on their side. So bringing together slightly different communities of people in their comfort zones, largely, but all contributing to [00:33:00] the same database, which will accelerate our opportunities to get to the end. Yeah. And the fact that we've got this wealth of data and different, slightly different communities coming together, I think will really be exciting.

The next one for us in this space around in orbit activity will be likely around refueling, but we're very open to ideas of places and areas where people think that this can be. be useful in, in, in similar areas because it might be that we can tweak where we go.

Emily Brennan: We don't want it to be too niche.

So we know that this process involves a lot of time and effort. So in your mind, Kathie has that time been well invested?

Kathie Bowden: Absolutely. [00:34:00] Absolutely. I referred earlier to being involved with a trailblazer group. The trailblazer group that I was part of, still am part of for that matter, has been working on the level four space engineering standard.

We started off well before COVID, and it finally, got its approval from Secretary of State about five years after we began. Now, we could say that maybe COVID influenced that, but those were all one to two hour meetings over multiple years. We've got to the same point. In three months and yes, okay. We brought everybody together for two hour workshops, subject matter experts, three of them, employers, three of them, educators, three of them, [00:35:00] but believe me, It's done in three years, three months.

And what's not to like about that?

Emily Brennan: That's fantastic. That's great to hear. And Beth, then, from your point of view? I

Bethan McAulay: would agree with Kathie that yes, we will absolutely see a huge return on the investment of time that we've put into this. But I still think that the biggest payoff is still to come.

Emily Brennan: Okay.

In terms of seeing that impact happen, you're talking about there's still big steps to take. What are some of the steps that we need to take and where do we need support? I think we're going

Kathie Bowden: to have to put some industry heft behind supporting both further education colleges and universities to deliver that impact.

and develop the additional courses they may need to implement. We need to make sure that we are considering taking on apprentices [00:36:00] and how they can help us in this area. Government is interested in this, certainly hoping to put some heft behind it themselves. But as Bethan alluded to earlier, some of that comes down to knowing that there will be long term programs that people can get their money behind.

And that's definitely going to demand effort from everybody. And as we go forward to following cycles. It's no good thinking somebody else is going to do it for you. If you don't vote, you can't argue about the outcome. And we need to have those voices in the room.

Emily Brennan: And so who's really responsible for making this change?

Bethan McAulay: We all have a responsibility in this, whether you're industry, academia, government, it's going to take [00:37:00] everybody pulling in the same direction to make this change happen. And so there isn't a single point of responsibility for this. We all have different parts to play and it needs us all to play them.

Brilliant.

Emily Brennan: Would you like to add anything finally to that cafe?

Kathie Bowden: I'd echo it entirely. My, my feeling is that it's a response. Making sure that we have the right people in the right place at the right time is absolutely something that we all need to be responsible for. And, as I said at the beginning, part of the reason we do have a skills deficit at mid career is because we have grown and we've been successful.

So we need to keep recruiting at the bottom, but we need to make sure that we are developing our talent in a way that really makes them A, want to stay and B, helps them flourish and our businesses flourish.

Emily Brennan: Thank you for [00:38:00] listening to the Workforce Foresighting Hub podcast. If you would like more information, please look at the podcast show notes or visit our website and follow us on LinkedIn.

Thank you very much.