
Prospero

News from the Satellite Applications Catapult

Part of our ambition for Prospero is to connect more directly with our community. In each edition, we will be sharing conversations, insights, and expertise from our Catapult team members, exploring how their roles affect us as an organisation, their impact on the wider sector, but also what drives them personally.



PAULA MILLS

Paula Mills joined the Catapult at the start of this year as a Space Power Development Engineer. She talks to us about how her career has led to her working on society-shaping innovations like the London Eye, EVA Space Suit Propulsion, and now Space-Based Solar Power.

Have you always had an interest in space? What sparked your passion?

I've certainly always been intrigued by space and watched Star Wars and Star Trek when I was younger. I think the thing that really ignited it for me was Tim Peake – I remember watching the ESA launch with my daughter and after he'd come back down from space, I went to the Farnborough Air Show where I was actually able to meet him. Whilst I was at the show, I visited a stand for Kingston University showcasing Astro Engineering. They were showing my sons how rockets work and propulsion – all that kind of stuff! I was in the background reading their prospectus and long story short I ended up switching from my degree in Environmental Science with the Open University to Astro Engineering at Kingston. I've always been interested in engineering, so it was really nice to merge those two interests.

There was another time when I was 19 and I was at the London Eye. At the time they were still preparing to lift the Eye into its fully upright position over the Thames, and I was one of six picked out to effectively design and plan the whole operation of the Eye. It was such a cool time being on site with my hard hat on and boots that were five sizes too big and meeting engineers from all over the world.

It's the little things you learn along the way. It's a journey. Once I finished my degree, I thought that in order to be a good space engineering, in terms of design and mission planning, I should have a better understanding of the space environment and geological aspects. So I went on to study Planetary Science at UCL as a Masters. It was really nice to bring those two worlds together again and build a wider view of the space industry.

As part of your degree, you were involved in the EVA space suit propulsion system redesign. Could you tell us a little more about that?

During my degree I had to choose an individual project. I've always been fascinated by human exploration, so I knew I wanted to include the EVA suits as part of my research.

In space, mass doesn't matter, but the bulk of an item does. So I chose to focus on the propulsion backpack and exploring the ways it could be made smaller. Obviously when you're launching things in a rocket you need to be mindful of the space everything takes up in transit. So I took it back to the drawing board and started to look at new types of tanks and flexible feed lines. I was really just trying to make it more effective, and really cool!

I still have all my notes and calculations from those days. There's so many exciting innovations coming in the next few years that I'm sure there'll be the opportunity for me to dust it off again when the time is right.

How did you find out about the Catapult? What made you want to join the team here?

I've been aware of the Catapult for quite a few years. If you're studying space engineering, or working in the industry, you naturally become aware of us through networking and webinars, so it had always been on my radar. I'm such a chatterbox that as I progressed through my studies, I made a lot of new contacts and friends that were already part of the team here.

Additionally, I did work at the Connected Places Catapult for a while, working on drones and sustainable fuels and when this role opened up it felt like the timing was right to move across into the space.

Space Power Development Engineer is a great title. What does your day-to-day role look like?

I've definitely hit the ground running. I'm part of the Access to Space team and we have so many projects going on at the moment – I've been doing a bit of everything! I've been working across multiple areas including active debris removal, mission planning, space robotics, UK launch capabilities, even nuclear power for space applications – but my primary focus is obviously Space-Based Solar Power and working with the Space Energy Initiative.

Can you briefly explain what Space Based Power is, for those who don't know?

Of course. So the Space Power Station will be one of the biggest things ever constructed by human kind and it will sit in sun synchronous orbit, which means it's constantly in sunlight absorbing the power and energy of the sun and beaming this down to antennas on the ground here and then converting that to electricity. It's a huge undertaking, but there's already an amazing group of people coming together as part of the Space Energy Initiative from academia and industry, to make this a reality.

You've spoken about some incredible innovations and the challenges in making them a reality, do you find it's in solving these problems where you really thrive?

Yes, and I think the thing with me is I'm quite quiet when I start a new job. I sit back and listen and absorb so I can identify these opportunities. That's always been one of my strengths. I can often see a gap that we can tap into and then it's a case of not being afraid to go after it and to approach the relevant people.

Earlier in my career, before I started my degree, I reached a stage where I wanted to set up my own business. I had noticed being a mum that there was a real lack of indoor play areas local to me, so I opened my own! We did so well that I was able to open a second location and we began attracting investors. I remember seeing on the news that Mothercare had changed their CEO so – and this is indicative of the way I work – I researched his email address and reached out to highlight how having play areas inside the Mothercare stores would be beneficial. They called me back within two hours to come in for a meeting and within 18 months we had 12 sites across the UK!

Your career journey has been incredible and you've been part of initiatives that have changed the course of both individual businesses and society as a whole. Do you have any final thoughts to end on?

I think one of the things I really like about this position is the potential that it offers. One thing I have been doing recently is academic outreach. We have the opportunity to really influence the next generation of people that are coming through university and to embed some of things we're doing at the Catapult into teaching modules. The UK will be world-leading experts on Space Energy, so it's wonderful to have this unique opportunity to attract as many people as possible to help shape the future.