
Prospero

News from the Satellite Applications Catapult

Laura Gonzalez Llamazares,
Space Systems Engineer

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 and what drives them personally.



LAURA GONZALEZ LLAMAZARES

This month, we sat down with Laura Gonzalez Llamazares, Space Systems Engineer here at the Catapult. We explore her career journey across Spain, Australia, and the UK, her work on establishing new manufacturing facilities for the space industry, and why it's so important we start teaching the younger generations about the power of space.

Tell us a bit about the start of your career – how did you get started in space and systems engineering?

I studied aerospace engineering in my hometown, León, Spain, doing my third year at the University of New South Wales, Sydney, Australia. After that, I was awarded with a grant to study the masters in Madrid, where I worked for a few years before moving to the UK to work at the Satellite Applications Catapult.

Throughout my undergraduate and masters studies I participated in a diverse range of international collaborative engineering projects (3D printers, rockets, light displays, cansats, cubesat, Formula Student) both abroad and in Spain. Thanks to these extracurricular activities I discovered my passion for technology, teamwork and management. Moreover, I chose to create a student maker society, so that my colleagues could learn practical skills by developing projects, with great success. These collaborative extracurricular projects are very enriching, since they allow you not only to apply what you learn at university but above all, to learn how to work in teams and develop other very important “soft” skills like communication, leadership, time management – and it's fun!

In addition, I've always enjoyed building things. I did an internship at the manufacturing department at university while doing my bachelor thesis researching on additive manufacturing and before that I put together my own 3D printer – I'm a bit of a manufacturing geek!

I enjoy the Space Systems Engineering discipline because it coordinates, from a technical perspective, all the other spacecraft subsystems (power, communications, attitude control, etc) so it requires you to understand the technical aspects, working with a team of experts and allows you to see and work with the “big picture” of the system – which I find extremely interesting. After my masters, I had the opportunity to join the Systems Engineering department at INTA (equivalent of the Spanish Space Agency), working as AIT (Assembly Integration and Testing) Engineer for two ESA science missions. It was so exciting working in the cleanroom integrating prototypes of spacecraft that will eventually go to space!

Furthermore, after discovering a need of more agile thermal analysis tools in the nanosatellites segment, I co-founded the start-up Radian Systems, where I act as the Chief Marketing Officer. I'm also finalizing my Executive MBA, complementing my technical background with business, sales and marketing knowledge and experience.

What does your role involve? What does a typical day look like?

At the Satellite Applications Catapult I've had the opportunity to merge my two passions: space and manufacturing. I have been leading the procurement, installation, commissioning and operations of advanced manufacturing and metrology equipment for space at Westcott, from laser cutters to 3D printers – including a large metal additive manufacturing system.

During the year and a half that I've been at the Catapult I've worked across a variety of projects, supporting microgravity commercialization programmes, exploring emerging concepts and energizing new markets like In Orbit Servicing and Manufacturing engaging with industry and academia through working groups, and providing technical feedback in business support programmes.

There's no “typical day” at the Catapult! Some days I'm working with UK based propulsion start-ups building rocket engines in metal with additive manufacturing, other days we are planning a future robotic UK space station or workshops with industry and academia... I am lucky because I have a very dynamic and flexible role with a lot of hands-on work as well!

You've volunteered with the Space Generation Advisory Council, how did your relationship with them start? What sort of initiatives have you been involved with?

In my free time I volunteer for a few non-for-profit space organizations (SGAC, Mars Society, Spanish National Space Committee) and STEM organizations which aim normalize the role of female engineers, going to schools and talking about space and the projects I've been involved with in my career (Inspiring Girls, Stem Talent Girl).

I'm the National Point of Contact of Space Generation Advisory Council (SGAC), the largest worldwide network for space young professionals and students (18-35), with more than 16,000 members across the globe. SGAC was born to give young generations voice in front of the UN and industry, and now they have a lot of project groups and events. I got involved through the first local event in Spain in 2019 and since then I've organized a few events nationally and internationally, like the European Space Generation Workshop. I really enjoy this type of events and get a lot of energy from them; it's very inspiring to see other young people working in cutting edge space projects all around the world!

Another SGAC activity that I have worked in this year is the Global Satellite Tracking Initiative. This is the first hardware/hands-on activity from the organization – which is usually more focused in events, reports and recommendations for the UN, etc. The initiative aims to support students and young professionals from around the world to set up ground stations to download real-time data and images from satellites flying above their regions.

During this first pilot phase, 10 teams were selected upon receiving almost 200 applications from more than 60 countries. The selected winners, based in space emerging countries like Benin, Bolivia, Egypt, Ethiopia, Nepal, Peru, Philippines, Rwanda, Vietnam, and Zimbabwe, have received a basic ground station kit consisting of a dipole antenna and a Software Defined Radio (SDR) that they are currently setting up to download images from passing satellites. The objective is to empower space enthusiasts and promote the space sector through hands-on activities, showing that space is not as hard as it sounds! Hopefully this will also inspire the younger generations and arouse interest in science, technology and space.

Why is it so important to engage with younger people about space, and wider technology, industry?

Space inspires, encourages innovation and curiosity and we need these skills to keep advancing as humanity. Studying STEM related subjects, science, technology, engineering and mathematics is important for the young generations to be prepared for what's coming in the next years – which will include space travel and so many more technological advancements!

And space is not only for genius, it's not all rocket science! Passion, eagerness, and effort are sometimes more important than being technically brilliant. Furthermore, we need everyone in the space industry. Not only engineers or mathematicians, but other skills and disciplines are needed and will be more and more relevant in the following years: space law, regulations, business development, marketing... we need diversity! Diversity in disciplines, backgrounds and also gender – we need to normalise women in engineering and related fields.

It's such an exciting time for the space industry! Space technology and applications make our lives easier daily and provide us with answers to humanity's biggest problems
