Spaceport Cornwall: Sustainable Launch Internship

Maegan Anderson maegan.anderson@kcl.ac.uk







Sustainability Report

Spaceport Cornwall will be releasing a Sustainability Impact report, outlining our sustainability impacts, commitments and goals. This will be the first of its kind for a Spaceport and is aimed at being one of many steps in the Spaceports commitment to the sustainable use of Space and Earth.

I was involved in draft iterations and reviews which will go towards the final report that will be published. Throughout working on the report I have gained a wider understanding of the technical background which goes into creating a sustainability

I was involved with a lot of the aspects of the report specifically related to reviewing the content and structure Completing this has also involved reading and critically analysing material necessary to complete this report. This included Carbon Impact Assessment reports as well as Assessment of Environmental Effect Part of understanding the sustainability requirements for a Spaceport meant that I did research into the various environmental organisations and charities currently operating in the local area. This was to better understand the areas of concern which should be considered in our report. As well as understanding the current sustainability sector in the space industry.

Conclusion

Being involved with the production of a Sustainability report has showed me how difficult it is to prioritise and understand the sustainable use of space. As well as the difficulty of assessing various factors which may pose as potentially harmful to the environment. For example, how do we anticinate the worst case scenario Overall it was an amazing opportunity to be a part of learning and furthering Spaceport Cornwall's mission to be environmentally

sustainable

Space Systems Engineering Training

Part of my internship focused on Space systems training from two sources. The first was a course called "Understanding Space Online" (USO), which covered the very basics of the space environment to learning some of the technicalities of determining and calculating orbits. The second was development sessions coordinated by KISPE. These focused on a wide variety of specialised topics from lessons on CONOP's to Software in Space.

The USO course entailed 3 sections on e systems engineering, with tests at each section to test progress. And a final exam, which I passed with 92%. For the development sessions, I attended these every week, totalling 10 development sessions, running for 1 hour each. These were run by experts in their respective fields who provided a great groundwork on the technicality of each topic.

Conclusion

This training has provided me with a great technical base in a wide range of space systems engineering. I particularly enjoyed learning how to develop orbits for satellite missions, an activity I completed for USO.

As well as understanding the working requirements for a space systems engineer.

Mock up of the Launcher One rocket, 70ft on a 1 to 1 scale. The back end is real, and has been used tests. This was the main event at the exhibit. LAUNCHERONE



Kernow Sat II Bid Application

I was given the opportunity to lead on a bid proposal application for the Spaceport. I worked with a great team of people to put together a project which encapsulated a feasibility project for future Kernow Sat missions. These Kernow Sat missions will focus on the environmental monitoring of Farth for sustainable use

Involvement

was involved throughout the application from beginning to end, leading from the Spaceport side. It was a collaborative effort with the University of Exeter and South West Centre of Excellence Truro and Penwith College, and KISPE. I was involved in deciding the aims of projects, producing key pieces for the proposal.

The project proposed will be a group of workshops to generate concepts for Kernow Sat 2 mission, Bringing in key stakeholders in a series of workshops to brainstorm ideas to produce a report of future concepts. Then the selected concept would be made into a systems design concept, alongside a report giving an evaluation of the effectiveness of the project.



These included a cover letter, GANTT chart. flow diagrams and organising and detailing how Spaceport Cornwall would be involved in the project going forward. I was also involved in writing and coming up with a lot of the content of the bid. One of the challenges was understanding the technical requirements and language set out by the body who had advertised the bid It allowed me to appreciate how bid's work. for example the deliverables required and how they translate to work packages.

Conclusions

I have never been involved in a bid proposal before and I have enjoyed gaining vital skills involved in a bid process, from beginning to end.



Outreach Exhibition & Evaluation

As part of G7 activities the Spaceport was awarded legacy funding to go towards setting up a number of outreach runding to go towards setting up a number of outread projects. These are aimed at engaging the general public in the Space industry to increase awareness surrounding activity as well as inspiring future (and current) generations towards engaging with a career in space.

I have been involved in a wide range of activities, all of which supported the opening of the exhibit. These included completing a GSATT training course to obtain an airside pass due to venue constrictions, organising the booking system and customer service, supporting the organisation of a business, media and VIP opening event and supporting the day to day running of the exhibit.

The exhibit was opened exclusively to the public from July through to the first week of September, aimed at engaging the public in the Space industry and highlighting the opportunity's available. Through the checkfront account which I managed we had a total of 1593 visitors. From the beginning of September the exhibit will host local businesses and schools, with around a 1000 school students booked in to see the exhibit.

The exhibit included the model of Launcher One, as well as various other displays presenting the different companies and opportunities within the Space Industry. The aim was to show the wide variety of applications and skills needed in the Space Industry to give vistors an idea of the jobs they can do.

Evaluation Report

We carried out a survey over a couple of days, with which I created an evaluation of effectiveness report to find out whether or not the exhibit was successful in its outreach goals. The main aim being to inspire visitors to engage with the Space Industry.

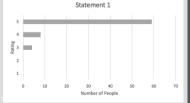
I really enjoyed expanding my statistical evaluation and excel skills. As well as analysing the results and trying to understand what needs improving and what worked well. I focused on evaluating the overall response to the exhibit aiming to prove that the majority found the exhibit a valuable experience. Meeting our goals for an exhibit which was entertaining and educational.

One observation I made was that a proportionally small number of people were still unclear about the job opportunities within the space industry. Specifically how they related to subjects they might already have experience in. This is an ongoing goal of the Spaceports outreach, to show the opportunities available to people are not limited to science based subjects only.

Whilst we had limited data set it was a great snapshot at the potential positive impact of hosting a more permanent outreach facility.

Working in an outreach programme has taught me many valuable skills. From project management, to statistical analysis of surveys, to public engagement and problem





Rating	# People	Perecentage	Name	Value
Nating	w reopie			
1	0	0%	Mean	4.77
2	0	0%	Mode	5
3	4	6%	Median	5
4	8	11%	Standard Deviation	0.54
5	59	83%	Skew	-2.37
Total	71	100%	Kurtosis	4.69