

University of Warwick Satellite Engineering Team 2017-18

WUSAT Selected to attend ESA pre-FYS Training Programme!

We are very excited to let you know that our WUSAT-3 satellite and its wildlife monitoring mission has been selected by ESA to take part in a 'Fly Your Satellite' (FYS) training programme. Following a project submission by Project Director **Bill Crofts** and individual submissions by team members **Ben Olsen, Naomi Dobson, Tony Hogan, and Ben Taylor**, we recently learned that the WUSAT-3 team has been chosen to receive training in Concurrent Engineering methods of Space technology design. Three team members will travel to ESA's Concurrent Design Facility (Redu, Belgium) on 16th January 2018 to commence training.

This programme of training has been specifically devised to prepare a satellite team to work on the FYS launch programme. WUSAT-3 is being designed for launch to the International Space Station via the FYS programme. The fact that ESA have now seen, and chosen, our WUSAT-3 satellite and mission design is a major milestone for the team, including all of our valued partners! Still a lot to do, but we're definitely on track!



WUSAT Team 2017-18

Back L-R

Prof Julia Hunter-Anderson (Co-Director/Systems Engineer),
Oli Vavasour (PhD Advisor),
Sean Perry (PhD Advisor),
Ben Taylor (Mech Eng),
Ben Olsen (Mech Eng),
Sam Croote (Elec Eng),
Dr Bill Crofts (Project Director)

Front L-R

Tony Hogan (Manu/Mech Eng),
Sophie Clarke (Electronic Eng),
Sam Tucker Harvey (PhD Advisor),
Naomi Dobson (Systems Eng),
Marina Shcherbakova (Systems Eng)

In late February, an additional ESA training week, 'Hands-on Training for Small Satellite Design and Testing', has also been arranged to assist in FYS preparation. This programme covers most of the major topics in satellite design from Space Systems Engineering, software, communications, through to satellite operations and testing. One of our Electronics Engineers, **Sam Croote**, has made a submission to attend, and we hope he will be successful. This will form a substantial grounding to our FYS launch programme progress.

Report on Bio-logging Symposium BLS6



As reported in the last newsletter, **Marina Shcherbakova** (Systems Engineering student) and WUSAT Co-Director **Julia Hunter-Anderson** attended the Bio-logging Symposium BLS6 in Konstanz in September last year. They used the opportunity to meet up with key WUSAT-3

collaborator Martin Wikelski. As well as being the Symposium organiser, Martin leads the ICARUS Initiative and the Max Planck Institute of Ornithology in Germany. Crucially Marina and Julia were also able to talk with ICARUS CEO and lead System Engineer Walter Naumann along with key established bio-logging and tracking technology systems and tag suppliers, such as Argos and Biotrack/Sirtrack. In order to better understand the potential mission requirements of the User community, BLS6 provided an ideal opportunity. As a leading Symposium for diverse wildlife researchers (terrestrial, avian and marine) actively using tagging/logging technology to aid their research, it was apparent that it has huge untapped potential for wildlife research and would benefit from more diverse and stable system options in the future. As with users of other scientific and operational satellite data, such as climate and weather data, interoperability was a key concern going forward. Fresh efforts are being coordinated both within the BLS community and in conjunction with other biodiversity observing communities like GEOBON (part of GEOSS).

New Collaborators

As a low budget project, we are always interested in mutually beneficial collaborations. Most recently, we have been working with more collaborators that are fantastic.



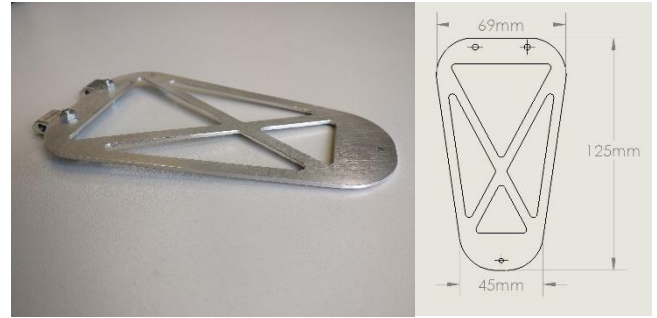
Rhea Group are providing great support to implement a Concurrent Engineering (CE) process on WUSAT-3, including use of their new tool CDP4, released in November 2017. The WUSAT team will provide feedback on implementation within an academic, smallsat, multi-year project. The tool is consistent with ECSS CE standards and ties in well with the team's training opportunities at ESA's Concurrent Design Facility, especially useful as we build up to the 'Fly Your Satellite!' opportunity.



We are also pleased to be using AGI's System ToolKit (STK) software. This is a very useful tool, both for bringing the team up to speed on topics such as Mission Analysis and the impacts on sub-system design, as well as communicating our mission to non-specialists.

3rd Year Project – Deployable Antenna Design

Ellen Daly is continuing to make good progress with her 3rd Yr Project investigating the possibility of using PCB materials to combine the structural and connectivity requirements of WUSAT-3's deployable payload antenna arms. Working with our collaborating partner, **Steve Jones of EuroCircuits**, Ellen is hoping to manufacture, test and evaluate a number of different designs this term.



WUSAT Team to Attend ESA Space Educational Activity Symposium!



WUSAT Co-Directors **Bill Crofts & Julia Hunter-Anderson** have had a paper abstract accepted, and the **2017-18 WUSAT Team** have had a poster/paper abstract accepted for the next SEA Symposium being held at The University of Technology and Economics, Budapest this April 2018.

As a result, arrangements are being made for us all to attend the Symposium to present our work. We will of course be representing the important role of our partners and collaborators in the work we do!

Space Shorts!

Very best of luck to Martin Wikelski and the ICARUS team who are fitting their antenna into the launch rocket in -20°C at Baikanor, Kazakhstan this week. The launch will deliver it to the ISS where the ICARUS computer system was delivered late last year. We hope WUSAT-3's complementary system will be joining you soon. Good luck!



Congratulations to the SSTL team on the successful launch and contact on first pass of their Carbonite-2 satellite! Carbonite-2, has been successfully placed into low-Earth orbit after it and a communications spacecraft, were launched onboard the PSLV rocket from the Satish Dhawan Space Centre in Sriharikota, India.

I can just spot ex-WUSAT member **Ben Donnellan** (red arrow). Well done Guys!



Andrew Little

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