Catapult Researchers in Residence (RiR) Programme:
Opportunity Description

Technologies for advanced spacecraft operations

Name of the Catapult(s)	Satellite Applications Catapult
Location(s)	Harwell
Description of the Catapult(s)	*sa.catapult.org.uk* *We help organisations make use of, and benefit from, satellite technologies, and bring together multi-disciplinary teams to generate ideas and solutions in an open innovation environment*

Description of the Challenge	The Access to Space team focuses on supporting businesses that aim to exploit space-based systems for new commercial applications. The last ten years have seen the growth and wide-spread acceptance of new technologies that enable small, agile businesses to own and operate on-orbit assets for commercial purposes, in particular through the use of small satellites. The future of on-orbit operations will require increasing sophistication of mission control systems, communications technologies, spectrum management methods, software architectures and advanced mission planning and control solutions. These technologies will be fundamental to enabling new commercial concepts that are based on the use of mega-constellations, formation flying, on-orbit servicing and debris removal systems. To this end, we are interested in proposals from leading researchers on projects addressing the following technical challenges, with the objective of identifying and testing potential solutions with direct commercial impact: • Advanced mission operations techniques – scalable operations solutions and techniques for deploying, coordination, operating and maintaining mega-constellations, on-orbit servicing and other co-orbital applications. Alternatives to GPS and enabling technologies for future rendezvous and co-orbital motion needs • Robust SDR development for mission operations – identifying and optimising SDR development methods for robust, reliable and resilient radio solutions that are low-cost and accessible to new entrants to the industry. Quantifying performance of existing technologies (e.g. GNU radio), proposing and demonstrating standards or reference designs for common TT&C modem architectures • Reference software architectures for small satellites – engaging with various standards bodies, ESA, UKSA and industry etc to establish future methods and approaches to software development that enables easier regulatory and technical compliance/interoperability. Ideally this topic would support the two preceding points with regards to applications for future commercial mission operations needs Please contact us to discuss you project idea before you submit your application. Nafeesa Dajda :- Nafeesa.Dajda@sa.catapult.org.uk

Researcher Specification	Candidates should have extensive knowledge of some or all of the following: • Satellite systems engineering • On-board data handling • On-board software engineering • DSP engineering Ideally with experience in the use or development of COTS flight products and/or small satellite/CubeSat technologies. For this call, we are following the EPSRC Eligibility Criteria, if you have any queries about satisfying this criteria please contact us or EPSRC directly prior to submission
Other Details	Project duration is negotiable but ideally delivered over 12-24 months with time spent in the Catapult spread over regular intervals. Specific outputs to be defined at project KO but will include co-authoring of white papers, conference proceedings or other formal dissemination methods. Opportunity to develop experimental or proof of concept demonstrations using in-house hardware and equipment at the Catapult premises.
Closing Date for Applications	17:00 (GMT) Friday, 21 September 2018