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Developing a low-cost, performant microsatellite platform design for all: The Open Source Satellite Programme

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We have initiated the development of a flexible, fully Open Source, flexible microsatellite platform, embracing an open source approach, to create an efficient fail-safe microsatellite platform that is performant, capable, modular and robust.

The platform can be readily tailored for different missions, can be upgraded and configured after launch and can operate with multiple ground station networks. The platform is being developed using COTS parts, processes and tools; and the design will be made available to the small satellite community. We are targeting high performance at a cubesat price: USD1m for a 50kg variant, GBP1m for a 100kg variant, even when manufacturing single or low quantities of satellites.

This presentation will start by defining and explaining the reasoning behind the target performance characteristics: Launch mass 25kg to 250kg; >70% payload mass fraction; Payload volume 600x600x450mm; Payload power 10W to 1kW; 3-axis stabilised; adaptable pointing knowledge, control and agility; orbit 400km to 850km; 5-7 year lifetime; <14 month recurrent schedule.

We will then move on to a discussion of the holistic approach that we are taking to capture and satisfy the diverse technical and programmatic needs of different stakeholders: addressing the requirements for: a modular, versatile, scalable, robust architecture; mission configurability; standard payload and equipment interfaces; dedicated and rideshare launcher capability; ground segment interoperability, a cost-effective ground-based model for development and training and a low total mission cost.

The presentation will conclude with a discussion of the principles behind our business case for the development and exploitation of the resulting open source satellite platform and how we intend to ensure that the design will be made available for the community to leverage, utilise, modify and improve.

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