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Author: Ms. Harriet Brettle  
Space Generation Advisory Council (SGAC), United Kingdom, harrietbrettle@outlook.com

COLLABORATIONS BETWEEN ACADEMIA AND THE COMMERCIAL SMALL SATELLITE  
INDUSTRY

**Abstract**

Space science research has traditionally been done with a small number of big budget missions, but the expanding commercial space industry is providing new ways to do space research. In addition, the commercial space industry is growing rapidly; more venture capital (1.8 billion USD) was invested in space in 2015 than in the prior 15 years, combined. Whilst small satellites have been around for decades, the “NewSpace” revolution – The rise of smallsats and the reduction in launch costs has enabled faster, cheaper, and more efficient scientific research missions.

This reduction in launch and increased ease of access to space has provided attractive opportunities for the academic community. On December 3rd, 2018, SpaceX launched the Spaceflight SSO-A : SmallSat Express mission which represented the largest single rideshare mission from a U.S.-based launch vehicle to date. Of the 64 satellites that were launched, the mission included 23 university spacecrafts, one high school cubesat, and ESA’s European Student Earth Orbiter (ESE0) mission which involved 10 European university teams. Academia is a source of innovative ideas and talent for the commercial space industry. Numerous space businesses began as university research projects and spun out into commercial companies. This paper will include an extensive list of academic research projects that were spun out into commercial space companies relevant to the small satellite market and evaluate their success.

Conversely, through collaborating with academic institutions, existing commercial companies can gain access to a workforce of students, experts, and facilities. The large number of companies in the smallsat manufacturing, propulsion, and launch sectors that began as research projects indicates that university support is greatly beneficial to development success. Academic institutions that host state of the art research, testing, and development facilities are able to provide access to these services and can support the initial testing (development?) for companies early in their product development. In addition, access to university research and development funding through commercial-academic partnerships can further strengthen the small satellite market.

This paper will explore in detail the value of collaboration between academia and commercial new space, and evaluation the benefits for both sides.