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ÜBERFLIEGER – A LEGACY THAT CONTINUES TO INSPIRE

Abstract

Überflieger is a nationwide competition for undergraduate and graduate university students in Germany to develop and build their own microgravity experiment. While it technically ended earlier this year, both with the return of German ESA astronaut and ISS Commander Alexander Gerst and the completion of all three selected payloads that flew to the ISS, Überflieger's legacy continues to inspire students throughout Germany and worldwide, building on a foundation of past achievements in space experimentation and ensuring that the future workforce is well-equipped to advance humankind beyond Earth's atmosphere.

The program was announced in late 2016 as a joint effort between the German Aerospace Center (DLR), the German Physical Society, and DreamUp, working in conjunction with NanoRacks, LLC and its Space Act Agreement with NASA. It was funded by Germany's Federal Ministry for Economic Affairs and Energy based on a resolution by the German Bundestag. After a two-day selection workshop at DLR in Bonn, Germany, three student teams were selected as finalists in May 2017. These finalist teams from Goethe University Frankfurt, the University of Stuttgart, and the University of Duisburg-Essen used their 10 cm x 10 cm x 15 cm NanoLab experiments not only to make significant scientific discoveries in microgravity but also to inspire and inform their peers in Germany and around the world. Furthermore, the undergraduate and graduate students creatively overcame the challenges of not only designing a complex experiment in a condensed space, but also of ensuring that their experiments were suitable for spaceflight, adhered to all safety standards, and were built within a demanding timeline and conducted during a prescribed on-orbit duration.

Despite these challenges, all three teams succeeded - conducting their experiments in microgravity and demonstrating the value of a nationwide university-level spaceflight experiment competition. This paper will describe how these lessons learned are informing other similar competitions. Specifically, the United Arab Emirates has launched "Tests in Orbit" in coordination with DreamUp and its partner NanoRacks, expanding and building on the Überflieger model in a new region and ensuring that even more students are equipped with necessary skills in science, technology, engineering, and mathematics to further the frontiers of innovation in the UAE and beyond. In this way, the model of Überflieger demonstrates how international collaboration and engagement of a select number of students across a nation in spaceflight experimentation can have immeasurable impact on a generation of young space enthusiasts.