SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Enabling safe commercial spaceflight: vehicles and spaceports (3)

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AIR MEETS SPACE: SHAPING THE FUTURE OF COMMERCIAL SPACE TRAFFIC

Abstract

There are high expectations for a globally growing market of commercial space travel which is likely to turn in the next 10 to 20 years into a multi-billion Euro business. Those growth expectations are also backed up by OneWeb's order of about 700 small satellites which are likely to be brought into LEO via air launches and the continuously increasing LEO launch rate which shows a rise of about 60% in the last decade. Advances in electric propulsion and spacecraft design (CubeSats) helped to significantly reduce launch costs, so that space exploitation becomes affordable for the first time also to the private sector (e.g., for school labs, micro gravity research or in the area of human spaceflight). Several key players in space business, companies like Blue Origin, Virgin Galactic, XCOR, Orbital or SNC get ready to serve the human spaceflight market by developing their own reusable space vehicles which shall carry humans and cargo payload into suborbital and LEO space. In the future, these developments will likely stimulate demands for launch sites and space ports, where commercial aviation and space vehicles will have to be safely managed and controlled in parallel with easy access for customers. Nowadays, management of and access to commercial air-/aerospace is lacking a coordinated international approach and the growing number of space vehicles passing through the air-space interface in a rather "uncontrolled" way is posing significant threats to human health and airspace safety. This issue is further intensified by the flood of CubeSats and UAVs which increase collision risks in LEO and lower airspace. Without doubt, space and airspace will move closer together in the next decade, which is why Space Traffic Management is likely to become an international, yet global, effort. Because we think that the loss of safety in air and space caused by the anticipated global increase of commercial air and space traffic should not be jeopardised, we initiated an evaluation study in the context of our "Air meets Space" vision. First results from this study, which aims at defining a roadmap towards a Commercial Air & Space Traffic Management System, are presented, including identified stakeholders, possible organisational setups, interfaces, processes, required infrastructure and commercial products.