

59th IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)  
Interactive Presentations (IP)

Author: Mr. Hamza Hameed  
Leiden University, The Netherlands

REDUCING LAUNCH COSTS – THE LEGAL BASIS OF AERIAL AND SUBORBITAL SATELLITE  
LAUNCHES.

**Abstract**

A majority of the satellites of the future destined for lower earth orbits will be much smaller and less expensive than is currently the case. The main obstacle for small satellites is the cost of launch rather than the cost of setting up. In order to facilitate the launch of small satellites, several companies have started to develop innovative and much cheaper launch solutions. Due to the amount of money and resources required to get a satellite into outer space, most small satellites that are launched have to hitchhike their way along with larger missions which often leads to subpar orbital placements and very long delays in terms of launching dates.

The concept of an aerial launch or a suborbital launch for small satellites would remarkably reduce the cost of getting them into outer space. Companies such as Virgin Galactic with its LauncherOne vehicle provide launch capability for around 10 million dollars, which is much lower than the usual range of 50-500 million dollars. However, such launches raise complex legal issues, in the sense that it is not easy to define which state(s) could be considered as a launching state. Vehicles such as LauncherOne will be launched from a Boeing 747 aircraft that can take-off from any runway and do not require a conventional launch site. The Liability Convention provides that the term 'launching state' includes states from whose facilities an object is launched and states which procure the launch. These concepts are challenged when a launch takes place with multiple satellites on board from a movable spaceport or a spaceport in suborbital space.

Other companies such as ARCA and Zero2Infinity are working on the 'rockoon' concept combining a balloon and a rocket. Here the launch of the rocket takes place at a much higher altitude, sometimes as high as suborbital space. These projects involve multiple satellite launches from spaceports not located in the territory of any state, as it is not the balloon which is the actual launch vehicle of the satellite, but the rocket that is launched from the balloon. This raises legal questions as to the attribution of state responsibility and identification of liable states in cases of damage.

This paper will analyse the legal issues involved with the concept of aerial and suborbital launches and will conclude that these new and more efficient launching methods are in line with existing law on launching satellites into space.