

SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)  
Commercial Space Flight Safety and Emerging Issues (1)

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FUTURE EARTH ORBIT FLYING MANAGEMENT SYSTEM FOR COMMERCIAL SPACE  
MISSIONS

**Abstract**

As is well-known, the earth orbit has been getting more and more crowded. Many space crash events have been reported in the related media. Most importantly, commercial space flying vehicles including sub-orbital vehicles and re-usable space shuttles will be developed quickly for various applications. For example, the ESA's IXV, USA's X-37B and Virgin Galactic's spaceship, SpaceX's reusable launch vehicles and other similar development programs show the promise of future earth orbit vehicles flying missions such as space voyage and cargo transportation. Thus an orbit flying management system should be considered as the main problems for future commercial space traffic. The aim is to make the flying safe, orderly, fast and predictable. Commercial flying missions will have to meet the traffic control problems including the space crash and space-line conflict. To some extent, the orbit flying state consistency monitor should be solved under the coordination of many commercial space-line enterprises. This paper presents a solution to this actual problem.