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Cyber-security threats to space missions and countermeasures to address them (2.D5.4)

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HOW TO ESTIMATE INSURANCE COVERAGE FOR CYBERSECURITY PROTECTION FOR SATELLITES

Abstract

Cybersecurity is critical to maintain the global economic and military infrastructure. The common denominator here is that the world's infrastructure rests on the use and capabilities of satellite technology. As a result, this paper proposes the creation of a detailed risk analysis standard to be applied among the global space insurance market with an emphasis on cybersecurity.

The first section of the paper serves to establish background information in regard to current trends in the space insurance market with regards to satellite costs, as well as common cybersecurity threats. The emphasis on cybersecurity threats of satellites can not be underestimated. As cyberattacks by hackers are becoming more prevalent, there needs to be a proactive rather than reactive approach addressing cyberattacks to satellite systems because of how integral satellite use is to everyday life.

The next section continues with a comparative analysis between space insurance and the general cybersecurity insurance regimes. While there is overlap between space insurance and cybersecurity insurance it is imperative to present the distinction in regards to cybersecurity protection for satellites in orbit. This section finds that cybersecurity insurance generally offers a range of tools for organizations such as prevention advice and mitigation support to build resilience in cyber related incidents. However, the novel nature of constantly evolving cybersecurity risks still remain challenging for insurers to quantify and cover. Conversely, the space insurance market is roughly divided into three types of coverage: prelaunch, launch, and in-orbit insurance. In addition, the inherently risky nature of the space industry means that no one insurer is willing to cover a satellite. Despite this unique industry, this section finds that the space insurance market appears to follow the 'hard' and 'soft' cyclicity of conventional markets.

The third and final section takes a proactive approach and offers a case study on how to estimate cybersecurity insurance coverage in the case of satellites. As the launch of satellites are expected to increase in frequency and size, the purpose of this case study is to create a uniform risk assessment stand to be applied among the satellite industry. Due to the sensitivity of information that is associated with space insurance, this section takes liberties with what may be included in the typical space risk portfolio such as: the possibility of total losses accumulating when several satellites are launched together; and wide range of insured values coupled with high exposure to total losses.