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Article

Satellite Risks: Navigating A Transforming Risk Environment

Denis Bensoussan • September 27, 2023

No GPS. No phone signals. No internet connection. Much like a scene from horror movie. However, this would be reality in a world without satellites. Today our reliance on satellites is such that without them every business sector would be brought to a standstill and the world's economy would likely come to a halt. It begs the question: How prepared are satellite operators, institutions and governments to mitigate the risks of malicious actions against satellites?

FROM SPACE TO EARTH – GUARDING THE GROUND

Russia's cyber-attack on ground systems related to global satellite operator ViaSat last year proved that attacks against satellite systems are not only possible but impactful. Satellite ground systems and in particular modems and ground terminals, are generally seen by experts as the 'weak link' where vulnerabilities lay. ViaSat's modems were taken offline by Malware known as AcidRain1, which caused weeks of disruption throughout Europe, notably in Ukraine where the country's internet access and communications systems were severely disrupted.

Local reports also suggested that there were disruptions to energy systems. This cyber-attack was a stark 'wake-up call' to the extent of the chaos a cyber-attack on a satellite-enabled network can cause. However, the chances of a scenario where the entire world is taken offline are incredibly remote – not least because taking over a satellite presents immense technical challenges and limited financial reward.

As we explored in our Risk & Resilience research series2, cybercrime is a rewarding enterprise. According to an estimate from CyberSecurity Ventures, the global cost of cybercrime is set to reach US$10.5 trillion by 20253, so it is a highly profitable.

The prospect of taking over a satellite in orbit is still considered beyond the technical reach of most cybercriminals and if attempted it would likely be for recognition alone to prove technical skills; as hackers can easily target more rewarding 'low hanging fruits'. The more likely

cyber-attacks on satellite systems, as seen in the case of ViaSat, would be politically motivated as part of a nation state's military actions.

SATELLITE FAILURE RISK

To date the most common risk to which a satellite is exposed is physical damage caused by an irreversible onboard technical anomaly. Once a satellite is launched into space, there is no way to repair or retrieve it.

More than 50 years after the first launch of a commercial satellite in 1965, the reliability challenge is becoming ever more acute today, as the barrier to space access has become much lower and there are now thousands of satellites in orbit belonging to a larger variety of actors from private corporations and entities, public institutions and governments.

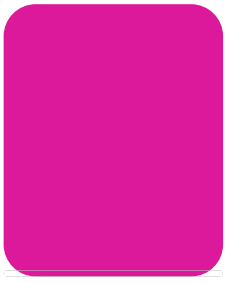
The United Nations Office for Outer Space Affairs received over 2,000 satellite registrations in 2022 alone4, representing a significant proportion of the 13,000 that have already launched since the beginning of the space age. Competition in orbit is also increasing and satellite systems are not immune to the risk of intellectual property (IP) theft.

As our Risk & Resilience research revealed, almost a quarter (24%) of global business leaders identified intellectual property (IP) theft as their primary concern, more than doubling from just 11% in 20215. With satellite technology more accessible than ever and with 80 percent of all satellites having been launched just in the past three years, and estimates predicting 100,000 new satellites will launch in the next decade, the risk environment is certain to become very dynamic.

OUT OF SIGHT, BUT NOT OUT OF MIND

From GPS to bringing rural locations online, to streaming on demand TV and films, networks communications and logistics to military communications and beyond, our reliance on satellites continues to grow at pace. As space infrastructure also continues to grow, governments and organisations are starting to review their risks and resilience to potential satellite system disruptions.

As new risks emerge, satellite operators and users are experiencing challenges that were previously unknown and unprepared for. Specialist protection is essential for companies looking to protect their assets and to prepare for potential risks in space. As a longstanding enabler and promoter of space activities, insurance is a much needed solution for stakeholders to help manage and mitigate a new frontier of risk



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3. https://cybersecurityventures.com/cybercrime-damage-costs-10-trillion-by-2025/
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