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Cyber-based security threats to space missions: establishing the legal, institutional and collaborative framework to counteract them (2)

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A PROACTIVE PROPOSAL AND DIALOGUE FOR EMBEDDING CYBERSECURITY WITHIN SPACE DESIGN AND SPACE SUSTAINABILITY POLICY

Abstract

As space exploration and the use of space technology continue to expand, cybersecurity will become an increasingly critical consideration for all space agencies and other non-governmental organizations involved in space-related activities. Despite the severity of the potential threats posed by cyberattacks on space stations, many agencies and organizations have failed to prioritize developing and implementing cybersecurity guidelines. This is a dangerous oversight, as cyberattacks can take many forms, including jamming, spoofing, hacking, and physical interference, any of which could lead to catastrophic destruction. Such attacks can compromise the functionality and control of the spacecraft, damage its hardware, cause loss of communication and navigation capabilities, and result in loss of data and even loss of life. Additionally, the downtime caused by such attacks can have far-reaching impacts on satellite-based services such as GPS, television, weather forecasting, and military communications. Therefore, it is crucial that the international space community develops advanced, forward-thinking policies, guidelines, and regulations that require the implementation of cybersecurity procedures and technologies. NGOs must advocate for measures to protect their investments and embed cybersecurity in their corporate philosophy, practice, and design. This paper will describe and model the dangers and vulnerabilities facing space systems. From this foundation, the authors will identify best practices and resources for space agencies and NGOs to implement based on NIST guidelines and NASA best practices. Finally, the paper and accompanying discussion will propose specific legal frameworks and policies. A comprehensive approach is necessary to mitigate the risks of cyberattacks on space stations. Our goal is to move the dialogue forward and encourage immediate action to help ensure a sustainable future for space exploration.