

IAF SYMPOSIUM ON SECURITY, STABILITY AND SUSTAINABILITY OF SPACE ACTIVITIES  
(E9)

Interactive Presentations - IAF SYMPOSIUM ON SECURITY, STABILITY AND SUSTAINABILITY  
OF SPACE ACTIVITIES (IP)

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SAFEGUARDING NATIONAL RESILIENCE: THE CRUCIAL ROLE OF SECURING SPACE  
ARCHITECTURE IN CRITICAL INFRASTRUCTURE PROTECTION

**Abstract**

In the dynamic landscape of modern societies, critical infrastructure stands as the backbone, intricately woven into sectors such as energy, transportation, healthcare, and finance. As these systems progressively embrace digital technologies, their vulnerability to cyber threats becomes increasingly evident. The evolving sophistication of cyber threats necessitates urgent measures to fortify the resilience of critical infrastructure systems, with a specific focus on enhancing cybersecurity protocols. Resilience, defined as the capacity to withstand and recover from disruptive events, including cyberattacks, is paramount for sustaining the provision of essential services.

This talk highlights the pivotal role of critical infrastructure in upholding the functionality of modern societies, extending its influence into sectors crucial for national sovereignty. Failures within these sectors have far-reaching consequences, affecting the economy, public safety, strategic warfare capabilities, and overall societal functionality. Consequently, the protection and resilience of critical infrastructure become imperative, necessitating a robust cybersecurity framework. Space architecture emerges as a linchpin in this endeavour, offering multifaceted support by providing communication, navigation, cybersecurity, environmental data, and disaster management capabilities to critical infrastructure sectors. The dependencies of critical infrastructure on space architecture are deeply entwined with the functioning and sustainability of these pivotal sectors. In today's interconnected world, space architecture is integral to the nation's national strategic objectives, reflecting a commitment to safeguarding space assets, contributing to global space governance, and leveraging space capabilities for national sovereignty and economic prosperity. This global commitment extends to bolstering cybersecurity measures within space architecture to counteract cyber threats and fortify the overall resilience of critical infrastructure.

This presentation emphasizes that ensuring the cybersecurity and resilience of space architectures is not just a strategic choice but an imperative for preserving the functionality, safety, and economic stability of critical infrastructure sectors in the face of escalating cyber threats. The talk will delve into the comprehensive role of space architecture, encompassing satellites, ground-based infrastructure, and intermediate components, in contemporary communication, navigation, and monitoring systems, with a heightened focus on cybersecurity strategies. Given their substantial significance, these ecosystems become prime targets for advanced persistent cyber threats, especially those posed by nation-state Advanced Persistent Threat (APT) attackers.