

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Advance Higher Throughput Communications for GEO and LEO satellites (3)

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EUROPEAN CONSTELLATION IRIS2: ANALYSIS OF THE FUTURE STRATEGIC SPACE
INFRASTRUCTURE FOR EUROPE IN THE GLOBAL COMPETITION DYNAMICS FOR THE
ELECTROMAGNETIC SPECTRUM

Abstract

The IRIS2 satellite constellation represents a critical asset for Europe, particularly in the realm of telecommunications, where electromagnetic spectrum competition is intensifying globally. This analysis delves into the multifaceted role of IRIS2, highlighting its importance not just in technological terms, but also in ensuring Europe's strategic autonomy and security. From a technical standpoint, IRIS2 incorporates advanced features that enhance communication capabilities, resilience as well as ensuring high-speed internet broadband to cope with connectivity dead zones. This includes sophisticated payload designs that facilitate higher bandwidth and improved signal quality, essential for coping with the burgeoning demand for data transmission. The constellation's architecture is designed to minimize latency, a key factor in real-time communications and command-control (C3) systems. Furthermore, it will offer scalability capacities for future needs, thanks to a multi-orbital (Low, Medium and Geosynchronous Orbits) approach. On the security front, IRIS2 provides Europe with a sovereign communication platform, reducing dependency on external satellite systems that may be subject to foreign control or surveillance. This independence is crucial, given the increasing use of satellite communications for both civilian and military applications. The system's encrypted communication channels and secure data handling protocols enhance Europe's ability to safeguard sensitive information against cyber threats. A notable challenge highlighted in this analysis is the issue of physical and electromagnetic space congestion. As more entities deploy satellite constellations, the risk of interference and collisions increases. IRIS2's design and operational strategies consider these risks, emphasizing the need for robust international regulations. Harmonizing norms and practices under the auspices of the International Telecommunication Union (ITU) is vital for the sustainable use of space and the electromagnetic spectrum. Lastly, the paper discusses the emerging friction between new Non-Geosynchronous Satellite Operators (NGSO) and traditional geostationary satellite operators. This tension, particularly evident in discussions around Power Flux-density, underscores the evolving nature of space utilization and the need for adaptable regulatory frameworks. As NGSOs propose innovative uses of the spectrum, established players are challenged to adapt, leading to a dynamic interplay that shapes the future of satellite communications. In conclusion, the IRIS2 satellite constellation is a strategic tool for Europe in the global arena of electromagnetic spectrum utilization. It represents a balanced approach to addressing technical, security, financial, and regulatory challenges in an increasingly congested and competitive space environment.