22nd IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Interactive Presentations - 22nd IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (IP)

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EMPOWERING ARMY 4.0: SPACE TECHNOLOGIES FOR ENHANCED MULTI-DOMAIN OPERATIONS

Abstract

Recent conflicts have clearly demonstrated the need to adapt the Military Instrument to new technological and strategic realities, underscoring the necessity to foster an effective operational capability within multi-domain environments. In an epoch marked by an escalating strategic interest in outer space, this becomes crucial for a wide variety of terrestrial, maritime, and aerial activities, including telecommunications, meteorology, navigation, and much more. The competition in space is intensifying, involving not only historical superpowers, such as the United States and the Soviet Union, but also new state actors, such as China, India, and Japan, and numerous private competitors. This scenario has stimulated significant progress in the space sector, breaking down technological barriers and associated costs, making space more accessible. However, the growing dependence on satellite services exposes the entire space architecture to new and emerging forms of vulnerability, with satellite systems becoming primary targets (High-Value Targets - HVT) for potential adversaries. The increase in threats, especially through asymmetric actions, highlights the importance of space security and raises the concrete risk of conflict escalation in this new domain in the near future. Against this backdrop, establishing a foothold in the space domain becomes critical for military requisites, with advanced satellite systems proffering decisive advantages. The future military configuration, data-centric and heavily dependent on space-enabled capabilities, requires an innovative and integrated approach to multi-domain conflicts. This entails technological superiority and the ability to act in a highly connected context, where decision-making speed is critical. The transition towards an "Army 4.0" Defense paradigm requires a profound comprehension of both current and impending challenges, with the integration of emerging technologies acting as catalysts for multi-domain operations. This awareness will mark a cultural shift, positioning space technological innovation at the core of the Italian Army's future evolution. In this context, the goal of the session is to stimulate debate, the sharing of ideas, and the exploration of conceptual reflections arising from the opportunities offered by space capabilities and the crucial importance that the space sector holds, acting as an "enabling capacity" for countless applications in a multi-domain operation. Following this perspective, the intention is to highlight the strategic relevance and cross-sectorial dimension that such capabilities will assume in supporting the Army's complex operational capacities, in line with its five development axes: contact maneuver, non-contact maneuver, integrated defense, maneuver in the 3rd dimension, distributed logistics."