

Indian Navy Forges Future with Advanced Unmanned Systems and Teaming Concepts



The Indian Navy is actively pursuing a significant modernization drive, placing a strong emphasis on indigenous development of cutting-edge technologies, including the Combat Air Teaming System (IN-CATS) and Naval Unmanned Combat Aerial Vehicles (N-UCAVs). This strategic shift, announced on Sunday, July 27, 2025, reflects India's commitment to enhancing its maritime warfare capabilities through manned-unmanned teaming (MUM-T) and autonomous platforms, aiming for greater operational range, firepower, and reduced risk to personnel.

The IN-CATS program, a collaborative effort involving Hindustan Aeronautics Limited (HAL), the Defence Research and Development Organisation (DRDO), National Aerospace Laboratories (NAL), and NewSpace Research & Technologies, is a comprehensive initiative. It centers on the concept of a manned fighter aircraft, such as the Light Combat Aircraft (LCA) Tejas, serving as a "mothership" to control and coordinate multiple unmanned aerial vehicles (UAVs) and combat drones. This network-centric approach allows a single pilot to manage several N-UCAVs simultaneously, significantly expanding mission effectiveness.

Key objectives of IN-CATS include enhancing surveillance, conducting autonomous deep-penetration precision strikes from stand-off distances, and maximizing firepower while minimizing human exposure to threats. The system integrates advanced artificial intelligence (AI)-based combat algorithms, developed under the Air Combat Intelligence Development (ACID) project, enabling autonomous target acquisition and engagement.

Central to this initiative is the IN-CATS Warrior, designed as a low-observable unmanned combat aerial vehicle (UCAV) capable of operating alongside manned fighter jets. This "loyal

wingman" can perform high-risk missions like Suppression of Enemy Air Defenses (SEAD), reconnaissance, and precision strikes. For extended-range missions, the IN-CATS Warrior is even designed for one-way sorties, sacrificing itself by crashing into high-value targets if necessary, a testament to its role in reducing human casualties. It features an internal weapons bay for stealth, capable of carrying two DRDO-developed Smart Anti-Airfield Weapons (SAAW).

Beyond the IN-CATS Warrior, the program also encompasses the IN-CATS Hunter, an air-launched, low-observable cruise missile with a striking range of 200-300 km, and the innovative IN-CATS ALFA system, which deploys Air Launched Flexible Asset Swarm (ALFA-S) loitering munitions. The IN-CATS Infinity, a solar-powered pseudo-satellite operating at high altitudes, aims to bridge surveillance gaps, serving as a coordination hub for tracking targets and orchestrating missions.

While the Indian Air Force (IAF) is also developing UCAVs like the Ghatak, the Indian Navy is exploring a land-based variant of the Naval Unmanned Combat Aerial Vehicle (N-UCAV), potentially equipped with anti-ship missiles and torpedoes for maritime surveillance and strike operations from coastal airbases. This multifaceted approach underscores the Indian Navy's proactive stance in embracing unmanned technology to secure its interests in the Indian Ocean Region and beyond.