MANOHAR PARRIKAR
idsa
MANOHAR PARRIKAR INSTITUTE FOR DEFENCE STUDIES AND ANALYSES
मनोहर पर्रिकर रक्षा अध्ययन एवं विश्लेषण संस्थान

MP-IDSA
Issue Brief

India–US Defence Cooperation in Advanced Undersea Systems

R. Vignesh

January 06, 2026

Summary

India's partnership with the United States to develop cutting-edge anti-submarine warfare (ASW) and Maritime Autonomous Systems (MAS) technologies will be crucial to strengthening the Indian Navy's overall underwater domain awareness (UDA) capabilities. Both nations, however, would need to develop enabling policy frameworks and pursue legislative amendments to help their respective defence industries collaborate on developing cutting-edge technologies for the undersea domain.

India–US defence cooperation continued to make steady and significant progress throughout 2025, despite diplomatic strains between the two nations related to the Trump Administration's position on Operation Sindoor and its imposition of 50 per cent tariffs on India. There was a series of high-level defence engagements throughout 2025, resulting in the signing of key agreements to guide collaboration on the joint development of advanced military technologies. This indicated that India–US defence cooperation remained relatively insulated and intact despite broader diplomatic challenges. Across these high-level engagements, deepening cooperation on the development of a range of Advanced Undersea Systems (AUS) has emerged as a common thread.

Advanced Undersea Systems: A Common Thread

The term Autonomous Undersea Systems alludes to a wide array of technologies that enable naval operations in the underwater domain. These technologies include underwater mapping systems and platforms for monitoring activities beneath the ocean surface. The collaboration in the development of such technologies featured prominently in all major bilateral defence engagements between India and the US in 2025. The first engagement of 2025 was the January visit to New Delhi by former US National Security Advisor (NSA) Jake Sullivan to meet Ajit Doval, India's NSA. During this meeting, a joint initiative was announced to co-produce advanced sonobouys, which are extensively used in Anti-Submarine Warfare (ASW) Operations.[1]

This was followed by Prime Minister Narendra Modi's visit to Washington in February 2025, coming less than a month after Donald Trump assumed office for his second term as US President.[2] During this visit, both nations unveiled a new bilateral initiative, the Autonomous Systems Industry Alliance (ASIA). This initiative aims to foster collaboration between the defence industries of both countries to co-develop and co-produce advanced autonomous systems, including AI-driven maritime drones.[3]

On 31 October 2025, the Raksha Mantri and the US Secretary of War, Pete Hegseth, met on the sidelines of the 12th ADMM-Plus meeting in Kuala Lumpur. During this meeting, the Agreement on a ten-year framework for the US–India Major Defence Partnership was signed.[4] Undersea Domain Awareness (UDA) was identified as a

[1] **"Fact Sheet: The United States and India Committed to Strengthening Strategic Technology Partnership"**, The White House, 6 January 2025.

[2] **"India-U.S. Joint Statement During the Visit of Prime Minister of India to US"**, Press Information Bureau, Prime Minister's Office, Government of India, 14 February 2025.

[3] Ibid.

[4] **"Raksha Mantri & US Secretary of War Meet on the Margins of the 12th ADMM-Plus in Kuala Lumpur"**, Press Information Bureau, Ministry of Defence, Government of India, 31 October 2025.

priority area for cooperation under this framework.[5] In November 2025, Admiral Dinesh K. Tripathi, Chief of the Naval Staff (CNS), embarked on a five-day visit to the US to review bilateral mechanisms for maritime cooperation, operational-level interactions, information sharing and Maritime Domain Awareness (MDA).[6] Among the key issues discussed between Admiral Tripathi and senior US naval commanders was the exploration of options for joint efforts to safeguard Critical Undersea Infrastructure (CUI).[7]

Finally, in the first week of December, India signed Letters of Offer and Acceptance (LOAs) with the US for five years of maintenance support for the Indian Navy's MH-60R helicopter fleet, valued at Rs 7,995 crores.[8] The MH-60R helicopters are a key platform for the Indian Navy's ASW Operations. Hence, it is evident that collaboration in the development of Advanced Undersea Systems has emerged as a common thread across the key defence engagements between India and the US in 2025. In this domain, both nations have placed special emphasis on ASW technology and autonomous maritime systems.

Anti-Submarine Warfare and Maritime Autonomous Systems

Advanced Anti-Submarine Warfare Technologies

The initiative to jointly develop and manufacture advanced sonobuoys, unveiled in January 2025, is notable as the first-of-its-kind partnership between India and the US.[9] The sonobuoys are expendable sonar devices that use acoustic signals to detect subsea activities at sea and support seabed mapping. As a result, navies widely use them during ASW operations and to enhance UDA capabilities. They are usually deployed at sea by aircraft or surface ships to detect submarine activity within a designated area. As part of the partnership, India's Bharat Dynamics Limited (BDL) will partner with US firm Ultra Maritime to manufacture sonobouys in Vishakhapatnam under the 'Make in India' policy. BDL and Ultra Maritime have already begun identifying supply chain partners, production equipment

[5] **"Framework for the U.S. – India Major Defense Partnership"**, U.S. Department of War, 31 October 2025.

[6] **"Chief of the Naval Staff Visit to the United States"**, Indian Navy, 10 November 2025.

[7] **"Indian Naval Chief Visits USS Daniel Inouye, Joint Base Pearl Harbor Hickam in US"**, IANS, 16 November 2025.

[8] **"India, US Seal Rs 7,995-Crore Sustainment Deal for Navy's MH-60R 'Seahawk'Fleet"**, *The Economic Times*, 4 December 2025.

[9] **"Fact Sheet: The United States and India Committed to Strengthening Strategic Technology Partnership"**, no. 1.

requirements, optimal production line layouts, testing processes, and quality control to manufacture the first of these sonobouys by 2027.[10]

Similar to the sonobuoy partnership, the India–US Joint Leaders' Statement 2025 also announced a collaboration between India's Bharat Electronics Limited (BEL) and the US firm L3 Harris to co-develop advanced active-towed-array sonar systems.[11] Like sonobuoys, these are widely used by navies to detect and monitor submarine activity during ASW operations. Towed-array sonar systems consist of powerful hydrophones mounted on the stern (rear hull) of a warship or submarine and connected to the vessel via a long, flexible cable. During ASW operations, these systems are deployed both to detect enemy submarine activity at short range and to pursue them over long distances.[12]

Beyond sonar systems, India and the US further deepened their cooperation on airborne ASW platforms in 2025. India's procurement of six additional P-8I Poseidon Maritime Patrol aircraft was first announced in the 2025 India–US Joint Leaders' Statement.[13] As of September 2025, the two nations have initiated negotiations to finalise the acquisition, which is estimated to cost approximately US$ 4 billion.[14]

As noted earlier, in November 2025, both nations agreed on Rs 7,995 crore to sustain the Indian Navy's fleet of 24 MH-60R helicopters for the next five years. Both the US-made P-8Is and MH-60Rs form the backbone of the Indian Navy's ASW capability for the coming decades. This is because such airborne ASW platforms are better suited to detecting submarines at sea. Their speed, endurance and flexibility enable them to conduct wide-area searches and rapidly engage enemy submarines.[15]

Next-Gen Maritime Autonomous Systems

Unmanned platforms such as Unmanned Surface Vehicles (USVs) and Unmanned Underwater Vehicles (UUVs) have been developed and employed by navies since the mid-twentieth century. However, the advent of AI technologies has enabled such unmanned platforms to operate with greater autonomy and minimal or no human intervention. This has led to the evolution of traditional USVs and UUVs into Autonomous Surface Vehicles (ASVs), Autonomous Underwater Vehicles (AUVs) and Autonomous Maritime Surveillance Systems (AMSS). The term Maritime

[10] **"Ultra-Maritime Signs Contract for Co-Production of U.S. Sonobuoys in India"**, *Ultra Maritime*, 11 February 2025.

[11] **"India-U.S. Joint Statement During the Visit of Prime Minister of India to US"**, no. 2.

[12] **"The Evolution of Towed Array Sonar and its Growing Role in Anti-Submarine Warfare"**, *Navy Lookout*, 13 October 2025.

[13] **"India-U.S. Joint Statement During the Visit of Prime Minister of India to US"**, no. 2.

[14] Shivani Sharma, **"India, US Set to Seal $4 Billion Deal for Six More P-8I Patrol Aircraft"**, *India Today*, 16 September 2025.

[15] R. Vignesh, **"The India-US Partnership on Sonobuoys"**, Commentary, Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA), 30 January 2025.

Autonomous Systems (MAS) is widely used to collectively refer to these platforms, whose operational significance has grown substantially in recent years.

In an era where 'good order at sea' is challenged by a myriad of traditional, non-traditional and hybrid maritime threats, even the world's leading navies find it difficult to address these challenges optimally due to limited resources. Against this backdrop, MAS have emerged as transformative platforms, enabling navies to undertake the most demanding and resource-intensive maritime operations, such as protecting Critical Underwater Infrastructure (CUI) in the high seas from grey-zone warfare. This has been evident from NATO's extensive use of advanced MAS in its ongoing Operational Baltic Sentry and in the recently launched UK Atlantic Bastion Programme[16] for securing CUI. The growing capability of MAS to both supplant and enhance the operational capabilities of traditional naval platforms in countering a wide range of threats, both traditional and non-traditional, has triggered a global race among leading navies to develop and acquire them at scale.

In recognition of these emerging dynamics, India and the US have established the ASIA initiative, with a particular focus on developing next-generation MAS for their respective navies. To this end, both nations have adopted a government-led yet industry-oriented approach to fast-track the development of advanced MAS and enable their production at scale. This approach was highlighted in the 2025 Joint Statement, which announced a partnership between the US-based Anduril Industries and the Indian Mahindra Group to develop MAS jointly.[17]

Subsequently, additional such collaborative partnerships between leading industries and start-ups in both nations were announced in 2025. Notable among these collaborations is the partnership between Liquid Robotics, a Boeing subsidiary, and the Indian Startup Sagar Defence Engineering Private Limited to co-develop Wave Glider systems. These advanced ASVs incorporate novel technologies, including wave and solar energy, to power their propulsion. This enables wave gliders to operate continuously at sea for months, providing real-time data and communications for a range of applications without refuelling or maintenance.[18]

Other such systems in the ASIA pipeline include the Triton Autonomous Underwater and Surface Vehicle (AUSV) and SeaPicket acoustic monitoring systems, developed by US companies Ocean Aero and Thayer Mahan, respectively.[19] The Triton is the

[16] **"UK Unveils New Undersea Warfare Technology to Counter Threat From Russia"**, Ministry of Defence, UK, 8 December 2025.

[17] **"India-U.S. Joint Statement During the Visit of Prime Minister of India to US"**, no. 2.

[18] **"U.S. and Indian Governments Support Industry Defense Partnership for Undersea Domain Awareness"**, *Liquid Robotics*, 23 September 2025.

[19] Dinakar Peri, **"India, U.S. Identify Underwater Domain Awareness Technologies for Co-Production in India"**, *The Hindu*, 15 February 2025.

world's first AUSV, capable of operating both on the surface and underwater.[20] The SeaPicket is an autonomous, energy-harvesting acoustic monitoring system designed for maritime surveillance and capable of operating continuously for years.[21]

Taking Forward a Mutually Beneficial Partnership

For the Indian Navy, India's partnerships with the US on ASW and MAS technologies are of significant strategic and operational importance. In recent years, the Indian Navy has prioritised strengthening its operational capacity to enhance ASW and UDA capabilities. This focus is driven particularly by two key maritime security exigencies that have emerged in the Indian Ocean Region (IOR). First, over the last few years, there has been a consistent increase in People's Liberation Army Navy (PLAN) submarine deployments in the IOR.[22] Also, China has been increasingly deploying its drones and UUVs in the IOR, along with hydrographic survey vessels, to enhance its UDA in the region. This will significantly improve the operational effectiveness of the PLAN submarines operating in the IOR.[23]

Second, there is a growing threat to CUI across various maritime regions worldwide. CUI networks have become increasingly preferred targets for state and non-state actors engaged in grey-zone warfare. This is because such networks can be intentionally damaged with relative ease and with anonymity, thereby disrupting information and energy connectivity. The series of cuts to undersea cables passing through the Red Sea since the beginning of Yemen's Houthis sustained campaign targeting commercial vessels in December 2023 highlights how this threat is manifesting in the IOR. As India seeks to expand its CUI networks to meet its growing communication demands, it is essential to simultaneously build capabilities to secure them against intentional attacks by malicious actors.[24]

In this context, India's partnership with the US to develop cutting-edge ASW and MAS technologies will be crucial to strengthening the Indian Navy's overall UDA capabilities. This is particularly significant given that UDA in the high seas is a high-technology, resource-intensive process, where MAS can serve as a game-changing platform by supplanting and enhancing the capabilities of traditional naval assets. Despite rapid advances in UDA capabilities by several leading militaries, including

---

[20] **"The World's Only Autonomous Underwater and Surface Vehicle: The Triton"**, Ocean Aero, 10 December 2025.

[21] **"System: SeaPicket – Advanced Maritime Domain Awareness"**, ThayerMahan, 10 December 2025.

[22] **"China's Growing Presence in Indian Ocean a Challenge for India: Navy Chief Lanba"**, *The Times of India*, 14 March 2019.

[23] HI Sutton, **"China Deployed 12 Underwater Drones in Indian Ocean"**, *Forbes*, 22 March 2020.

[24] Shruti Tripathi, **"India Must Build 10X More Cable Landing Station to Compete in Global Data Race: TRAI Chief"**, *Outlook Business*, 25 March 2025.

China and the US, the US continues to retain a technological edge, particularly in ASW and MAS.

The US superiority in ASW capabilities cannot be attributed solely to its possession of the most advanced technologies; it also stems from decades of operational experience tracking Soviet submarines across the Atlantic during the Cold War. In the domain of MAS, the US is leading the global race through two ongoing experimental programmes, namely Ghost Fleet Overlord and Task Force 59. The Ghost Fleet Overlord programme is a flagship initiative of the US Department of War's Strategic Capabilities Office (SCO) to develop a fleet of Large Unmanned Surface Vessels (LUSVs) to be integrated into the US Navy Fleet.[25] These LUSVs are designed to operate autonomously at sea for extended periods, carrying out a range of missions, including resupply, surveillance, electronic warfare, mine detection, disaster relief and even kinetic operations.[26]

Task Force 59 is the US Navy's first Unmanned and Artificial Intelligence (AI) Task Force, established in September 2021, based in Bahrain. The core aim of this Task Force is to act as an operational incubator for a range of advanced AI-integrated MAS, including USVs and UUVs. Thus far, under this programme, more than 23 advanced ASVs and AUVs have been successfully tested in direct field trials. These systems have been actively deployed in the area of operations of the US Naval Forces Central Command, which covers approximately 2.5 million square miles of critical maritime regions, including the Arabian Sea, Red Sea, Gulf of Oman, Gulf of Aden, and parts of the Western Indian Ocean.[27] These systems are actively enhancing the US Navy's maritime surveillance and data-collection operations in critical areas.

Hence, by partnering with the US in the co-development of advanced MAS, India has the potential to achieve technological leapfrogging in an area poised to transform naval operations in the coming decades. On the other hand, by collaborating with India, the US stands to gain access to the vast pool of technical manpower, a cost-effective industrial ecosystem and a diverse testing environment, all of which are essential for manufacturing these systems at scale.[28]

However, sustaining this momentum and moving it to the next phase will require both nations to implement specific policy measures. This includes establishing a clearly articulated action plan for ASIA to deliver tangible outcomes. While the

[25] **"Ghost Fleet Overlord Unmanned Surface Vessel Program Completes Second Autonomous Transit to the Pacific"**, US Navy, 16 December 2025.

[26] Kyle Gunn, **"Robot Warships are Here. Now the Navy Needs to Figure Out How to Use them"**, *Task&Purpose*, 1 August 2025.

[27] **"Task Force 59 Launches New Unmanned Task Group 59.1"**, US Department of the Navy, 16 January 2024.

[28] Kriti Upadhaya, **"ASIA: Building the Autonomous Arsenal for Indo-Pacific Democracies"**, The Heritage Foundation, 16 July 2025.

announcement of ASIA has successfully created momentum, there remains no institutional architecture to advance the partnership beyond individual projects.[29] Hence, both nations must prioritise developing a sustainable roadmap for ASIA, with defined structures, a timeline and a project pipeline. Furthermore, this effort could be supplemented by signing agreements to share testing infrastructure and best practices, as well as by developing common certification standards.[30]

Furthermore, for this partnership to endure, the US must initiate legislative reforms to its Cold War-era export control regimes, such as the International Traffic in Arms Regulations (ITAR). Such regulations consistently create bureaucratic bottlenecks that undermine the US's efforts to collaborate with even its closest strategic partners in the co-development of critical military technologies. A positive development in this regard in 2025 was the US recognition of India as a Major Defence Partner at the leaders' summit in February. As a result, the Joint Statement announced that the US Government would review the ITAR to facilitate greater technology exchange with India.[31]

In August 2025, the US Department of State amended the ITAR to introduce new restrictions on specific categories of technology, including large and autonomous UUVs.[32] This underscores that, despite repeated attempts by successive US Administrations to create ITAR exceptions, rigid export control norms remain a barrier. Therefore, Washington must undertake substantive legislative reforms to broaden collaboration with India in AUS and other critical technologies. Finally, both nations could consider expanding cooperation to related technologies, such as submerged charging stations, which are essential for extending the operational range and endurance of these ASVs and AUVs.

Overall, as highlighted earlier, the significant headway made by India and the US in 2025 towards strengthening collaboration on advanced undersea systems illustrates the resilience of their bilateral defence cooperation, which has remained relatively insulated from the broader political challenges associated with the Trump Administration. However, consolidating this progress in 2026 will require both nations to develop enabling policy frameworks and pursue legislative amendments that allow their respective defence industries to collaborate on developing cutting-edge technologies for the undersea domain. Effective implementation of these measures will ensure that the underwater domain emerges as a key pillar of India–US bilateral defence cooperation.

---

[29] Ibid.

[30] Ibid.

[31] **"India-U.S. Joint Statement During the Visit of Prime Minister of India to US"**, no. 2.

[32] Jason Wilcox, **"New U.S. Export Controls on Large UUVs to Impact Natural Resource and Subsea Infrastructure Operations"**, *JD Supra*, 28 August 2025.

About the Author

Dr. R. Vignesh is Associate Fellow at the Manohar Parrikar Institute for Defence Studies and Analyses, New Delhi.

Manohar Parrikar Institute for Defence Studies and Analyses is a non-partisan, autonomous body dedicated to objective research and policy relevant studies on all aspects of defence and security. Its mission is to promote national and international security through the generation and dissemination of knowledge on defence and security-related issues.

Manohar Parrikar Institute for Defence Studies and Analyses
1, Development Enclave, Rao Tula Ram Marg
New Delhi 110 010 India
T +91-11-2671 7983 F +91-11-2615 4191
www.idsa.in
Twitter @IDSAIndia
www.facebook.com/ManoharParrikarInstituteforDefenceStudiesAnalyses