



विदेश मंत्रालय  
MINISTRY OF  
**EXTERNAL AFFAIRS**



रक्षा मंत्रालय  
MINISTRY OF  
**DEFENCE**



**Seminar on**  
**India's Approach to**  
**AI in Military Domain & Emerging**  
**Technologies in areas of Lethal**  
**Autonomous Weapon Systems (LAWS)**

**28-30 January 2025**

**Venue**

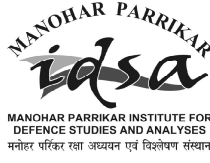
**Manohar Parrikar Institute for Defence Studies and Analyses**  
No. 1 Development Enclave, Shankar Vihar, Delhi Cantt.





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MINISTRY OF  
**EXTERNAL AFFAIRS**

सत्यमेव जयते



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



रक्षा मंत्रालय  
MINISTRY OF  
**DEFENCE**

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**Seminar on**

**INDIA'S APPROACH TO**

**AI IN MILITARY DOMAIN & EMERGING**

**TECHNOLOGIES IN AREAS OF LETHAL**

**AUTONOMOUS WEAPON SYSTEMS (LAWS)**

28-30 January 2025

**Manohar Parrikar Institute for Defence Studies and Analyses**  
**New Delhi**



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## CONCEPT NOTE FOR MoD - MEA SEMINAR

### INDIA'S APPROACH TO AI IN THE MILITARY DOMAIN AND EMERGING TECHNOLOGIES IN AREAS OF LETHAL AUTONOMOUS WEAPONS SYSTEMS (LAWS)

**28-30 JAN 2025, MP-IDS A AUDITORIUM, NEW DELHI**

The rapid advancement of emerging technologies is reshaping the global defence landscape, introducing capabilities that were once the domain of science fiction into the operational reality of modern militaries. Artificial intelligence (AI), robotics, and autonomous systems have become pivotal to contemporary warfare, offering unparalleled precision, efficiency, and adaptability. Among these innovations, Lethal Autonomous Weapon Systems (LAWS) have emerged as a disruptive force, redefining combat scenarios and raising profound ethical, legal, and strategic questions. For India, these developments present both opportunities to enhance national security and challenges in navigating the regulatory, technical, and geopolitical implications.

AI's integration into the military domain (AIMD) includes applications that augment decision-making, enhance situational awareness, and automate complex operational tasks. AI-powered intelligence analysis, predictive maintenance of military equipment, and AI-driven command and control systems are revolutionizing the way modern armed forces operate. These capabilities have the potential to provide significant strategic advantages, enabling faster responses to emerging threats and more effective resource management. However, AIMD also raises critical issues such as interoperability, Cybersecurity, and the potential for unintended escalation in conflicts, underscoring the need for comprehensive strategies that balance technological ambition with operational prudence.

India's defence industry stands at the threshold of a significant transformation, with a growing emphasis on technological indigenization and self-reliance. However, the adoption of systems like LAWS requires not only advancements in core technologies but also the development of governance frameworks that ensure their responsible deployment. Global discussions on LAWS remain polarized, with no consensus on definitions, operational parameters, or regulatory mechanisms. As a rising power with increasing stakes in the global defence ecosystem, India must debate the issue internally and participate in various dialogues happening globally to understand the global view on this subject. This will help India to protect its interests, build technological leadership, and align its policies with both international norms and domestic security imperatives.

The integration of LAWS into India's defence strategy demands a nuanced understanding of the interplay between their technological capabilities, operational advantages, and the associated risks. Core technologies such as AI-driven decision-making, advanced sensors, and machine learning algorithms offer significant potential

for enhancing combat effectiveness. However, these benefits must be weighed against the challenges of legal accountability, compliance with international humanitarian law, and the ethical considerations of delegating life-and-death decisions to machines. Furthermore, the evolving global regulatory landscape poses unique challenges for India, including safeguarding its strategic autonomy while participating in norm-setting efforts to govern LAWS responsibly.

The three-day seminar on India's Approach to AI in the Military Domain and Lethal Autonomous Weapons Systems (LAWS), is structured to address these pressing issues through a phased approach. The first two days will follow a Track 1.5 format, engaging stakeholders such as defence experts, academia, and industry leaders in open discussions on critical themes. These include the state of play of India's defence industry, global regulatory approaches, technical and legal safeguards for LAWS, and India's capabilities in AIMD and emerging technologies. Day 3 will synthesize the discussions from the previous days in a closed-door session, exclusively for government personnel. This session will focus on consolidating insights into the determinants of India's position on LAWS and AIMD, governance policies to secure sovereign AI capabilities in the military, and India's strategy for global governance and regulatory engagement.

In essence, the seminar will explore:

- India's current capabilities, growth potential, and challenges in LAWS adoption.
- Technical and legal safeguards for responsible deployment of autonomous systems.
- International regulatory efforts and their implications for India.
- Core technologies and key functional capabilities of LAWS.
- Multidimensional challenges, including ethical and legal considerations.
- Governance frameworks to secure India's sovereign AI capabilities in defence.

By fostering dialogue across diverse stakeholders and ensuring actionable synthesis, the seminar aims to advance India's defence strategy, support its technological ambitions, and enhance its role in shaping the global discourse on emerging technologies. This initiative will chart a comprehensive road map for integrating LAWS into India's defence framework while ensuring the nation is prepared to address the challenges and seize the opportunities of this transformative era in military innovation.



## PROGRAMME

<b>Day One: Tuesday, 28 January 2025</b>			
<b>AI in Military Domain</b>			
S. No.	Agenda	Participants	Time (Hrs)
1	Assembly and Registration	All Participants and Invitees	0900 - 0920
2.	Arrival of Dignitaries	For Inaugural Session	0920 - 0925
3.	Video - AI in Military Domain and LAWS	Curtain Raiser	0925 - 0930
4.	Welcome Address	Amb. Sujan R. Chinoy DG, MP-IDSA	0930 - 0940
5.	Inaugural Address	Shri Rajesh Kumar Singh, Defence Secretary	0940 - 0950
6.	Keynote Address	Dr. Samir V Kamat Chairman, DRDO	0950 - 1000
7.	Plenary Address	Shri Tanmay Lal Secretary West, MEA	1000 - 1010
<b>Group Photo and Coffee Break 1010 - 1100</b>			
<b>Panel I: State of Play of India's Defence Industry - Prospects &amp; Challenges</b>			
<b>Moderator: Ms. Kriti Taneja, IDEX, DIO</b>			
1	Current Trends and Projected Development of AI in Defence Ecosystem	Shri Rajinder Singh Bhatia, President of Society for Indian Defence Manufacturers (SIDM)	1100 - 1300
2	Overview of India's advancements in AI, HPC, quantum and robotics with a focus on application in defence	Shri Rajkumar Sharma, CEO All India Council Robotics & Automation	

3	Supply chain vulnerabilities & ideas to mitigate challenges to innovation and excellence in Indian Defence Industry	Shri Naresh Kumar PDIC, BEL	1100 - 1300
4	Availability of AI and advanced technologies for defence industry application and development	Ms. Vrinda Kapoor CEO 3rdi Tech	
<b>Lunch Break (1300 - 1400)</b>			
<b>Panel II: Risk Mitigation &amp; Technical/Legal Safeguards Moderator: Air Marshal Anil Chopra (Retd.)</b>			
1	Frame Work for Evaluating Trustworthy AI in Defence: Principles, Criterion and Objectives	Smt. Saravjeet Kaur Scientific Advisory Group, DRDO	1400 - 1530
2	Risk Hierarchy Framework for AIMD/LAWS	Lt. Gen. (Dr.) R Panwar (Retd.)	
3	Evaluating Trustworthy AI in Defence Framework- principles, criteria and objectives	Shri Aditya Ramanathan Takshashila	
4	Identification of Point of Human Control in system life cycle <i>Liability, Responsibility and Accountability</i>	Cmde. Jaideep Maolankar Executive VP New Space Research & Technologies	
<b>Coffee Break (1530 - 1545)</b>			
<b>Panel III: Global Regulatory Approaches- Risks &amp; Challenges for India Moderator: Amb. Anupam Ray, PR to CD, Geneva</b>			
1	Trends in the UN- how Indian Think tanks can influence normative architecture ( <i>like ICRC, Campaign against killer robots etc</i> )	Ms. Charukeshi Bhatt Carnegie India	

2	Identification of opportunities for leadership in the Global South - alternative to US - China binary	Shri Pranay Kotasthane Takshashila	1545 - 1715
3	Legal & Ethical Implications on use of AI in Military Domain	Col. (Dr.) DPK Pillay (Retd.), Research Fellow, MP-IDSA	
4	Importance of Cyber and Data Security in use of AI in Military Domain for future conflicts	Dr. Pavan Duggal Senior Advocate, Supreme Court of India	
5	Different pathways to AI Sovereignty Areas of alignment and divergence / open Source & Links with DPI Architecture	Prof. B Ravindran IIT Chennai, Department of Data Science & AI	
6	Wrap up for the day : Summing Up	Smt. Muanpuii Saiawi JSD&ISA, MEA	

**Day Two: Wednesday, 29 January 2025**  
**Emerging Technologies in Areas of Lethal Autonomous Weapon Systems**

**Panel I: Overview of LAWS - Global ecosystem around development and regulation**

**Moderator: Amb. Rakesh Sood**

1	Briefing on state of play at the GGE on LAWS and the UN	Amb. Anupam Ray PR to CD	0930 - 1100
2	Comparative analysis of how key global players like the U.S, China, and Russia are advancing in LAWS development	Brig. MM Ramachandra (Retd.), NSCS	
3	Opportunities for International Cooperation in AI	Smt. Muanpuii Saiawi JSD&ISA, MEA	

4	Trade and Technology issues - Opportunities and Challenges	Dr. Preeti Banzal, Advisor and Scientist 'G', Office of Principal Scientific Advisor	
<b>Coffee Break (1100 - 1115)</b>			
<b>Panel II: Core Technologies and Functional Capabilities of LAWS Moderator: Dr. Ajey Lele, DDG, MP-IDSA</b>			
1	Definitions and characteristics from India's perspective	Brig. Vivek Verma (Retd.), USI	1115 - 1300
2	Question of automation vs autonomy in LAWS	Shri Vishal Veer Singh Sc (F) DRDO, DLIC	
3	Development of emerging and critical technologies in global and Indian environment	Shri Abhishek Singh Additional Secy, Meity	
4	Perspective on Functional Capabilities required by modern Armies in modern militaries	Maj. Gen. CS Mann AVSM, VSM	
<b>Lunch Break (1300 - 1400)</b>			
<b>Panel III: Challenges - Legal, Technical and Humanitarian Moderator: Lt. Gen. Ajai Singh (Retd.), Exec. Council Member USI</b>			
1	AI in LAWS decision making process - issues and prospects	Commodore Naresh Chabbra, HQ IDS	1400 - 1530
2	OODA Decision making loop and LAWS	AVM Ashish Singh ACAS Remote, Air HQ	
3	Application of IHL to LAWS - gaps and challenges	Shri Mayank Mishra Maritime Foundation	

4	Importance of Data, Data Analytics and Cyber security in development and use of Autonomous Weapon systems	Maj. Vineet Kumar CEO, Cyber Peace Foundation	
5	Existing control regimes for dual use technologies	Wg. Cdr. Satyam Kushwaha (Retd.), ISpA	
<b>Coffee Break (1530 - 1545)</b>			
<b>Panel IV: India's Capability in Emerging Tech and LAWS Moderator: Dr. Gulshan Rai</b>			
1	State of LAWS development in India (MP-IDSA Study)	Commodore Abhay Kumar Singh (Retd.) Research Fellow, MP-IDSA	1545 - 1700
2	Examination of India's Progress in Indigenous defence innovation: UAVs, drones, and dual-use technology innovations	Gp. Capt. (Dr.) Rajiv Kumar Narang (Retd.) Senior Fellow, MP-IDSA	
3	Key projects and collaborations within DRDO, DPSUs, and private sector, highlighting the evolving role of these technologies in defence applications and their intersection with LAWS capabilities	Shri Amit Sharma Scientist (G) Director DISB, DRDO	
4	Barriers to adoption of advanced technologies and LAWS in Indian defence; ways to offsets gaps ; Issues and way forward	Maj. General RPS Badhauria (Retd.) DDG, CLAWS	
5	Summing Up	Ms. Mahima Sikand / Gp. Capt. VS Srihari	
			1700 - 1710

## **Restricted Session**

### **Day Three: Thursday, 30 January 2025 Round Table Discussion / Synthesis - GoI Reps Only**

Session 1	India's approach to AIMD and LAWS - Determinants of our position	0930 - 1045
Session 2	India's approach to global governance and regulation	1045 - 1130
Session 3	Securing Sovereign AI capabilities in the Military	1145 - 1230
Session 4	State of play of Indian Defence Ecosystem	1230 - 1315
Session 5	Wrap up and Next Steps	1315 - 1330

## *Inaugural Session*

<b>Assembly and Registration</b>	<b>All Participants and Invitees</b>	<b>0900 - 0920</b>
<b>Arrival of Dignitaries</b>	<b>For Inaugural Session</b>	<b>0920 - 0925</b>
<b>Video - AI in Military Domain and LAWS</b>	<b>Curtain Raiser</b>	<b>0925 - 0930</b>
<b>Welcome Address</b>	<b>Amb. Sujan R. Chinoy DG, MP-IDSA</b>	<b>0930 - 0940</b>
<b>Inaugural Address</b>	<b>Shri Rajesh Kumar Singh Defence Secretary</b>	<b>0940 - 0950</b>
<b>Keynote Address</b>	<b>Shri Samir V Kamat Chairman, DRDO</b>	<b>0950 - 1000</b>





# Welcome Address

**AMB. SUJAN R. CHINOY**

Director General,  
MP-IDSA, New Delhi, India



Amb. Sujan R. Chinoy is the Director General of the Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA), New Delhi.

A career diplomat from 1981-2018, he was Ambassador to Japan and Mexico and the Consul General of India in Shanghai and Sydney. A specialist on China, East Asia and politico-security-military issues, he headed the Indian side in the Expert Group of Diplomatic and Military Officials negotiating the confidence-building measures (CBMs) dialogue with China on the boundary dispute from 1996-2000. At the National Security Council Secretariat (NSCS) from 2008-2012, he handled external and internal security policy issues.

During his public service of over four decades, he has dealt with political, security, defence as well as trade and economic issues. His Foreign Service career included postings at the UN in New York and Saudi Arabia. He was the Chair of the Think20 engagement group for India's G20 Presidency. He is a member of the Central Government's reconstituted Society of the Prime Ministers Museum and Library (PMML), and Member, Governing Council, Indian Council of World Affairs.

He speaks fluent Mandarin and is conversant in Japanese, German, French and Spanish. He is the author of "World Upside Down: India Recalibrates Its Geopolitics" (Harper Collins) and "Global Tumult: India as a Pole Star", (RUPA Publications). He has also edited half a dozen books on defence, security and IR topics.



# Inaugural Address

**SHRI RAJESH KUMAR SINGH**

Defence Secretary,  
Government of India  
India



Shri Rajesh Kumar Singh, an Indian Administrative Service officer of the 1989 Batch from Kerala cadre, was appointed Defence Secretary on 31 October 2024, capping a distinguished career of administrative leadership across multiple government domains.

As Commissioner (Lands) in the Delhi Development Authority, Singh played a critical role in the lead-up to the Commonwealth Games. He ensured the sale of hotel plots in Mayur Vihar, Dwarka, and Shahdara, achieving auction bids that were among the highest in India and, in one case, the highest in Asia. During this period, he monetized major district centres, including significant shopping malls in Vasant Kunj, Saket, and Shahadra.

As Director of Works and Urban Transport, he developed the legal framework for Delhi Metro Phase-I from Shahdara to Tis Hazari, which subsequently became the national template for Metro Rail systems. In the agricultural sector, as Joint Secretary (Seeds), he implemented a price control system for BT cotton seeds to prevent monopoly profits by multinational companies.

His tenure as Finance Secretary of Kerala was particularly notable during the COVID-19 pandemic. When state revenues dropped to nearly zero for three consecutive months, Singh maintained financial stability, ensuring complete utilization of state plan allocations and preventing economic collapse during an unprecedented crisis.

As Secretary of the Department of Animal Husbandry and Dairying, he saturated the nationwide Foot and Mouth disease vaccination program and streamlined vaccine roll-out and administration. His most recent role as Secretary of the Department for Promotion of Industry and Internal Trade saw significant achievements: passage of the Jan Vishwas Bill, approval of 12 new industrial smart cities, expansion of India's start-up ecosystem, abolition of Angel tax on start-up funding, record patent approvals exceeding 100,000, and completion of India's largest MICE space at Yashobhoomi, Dwarka.



# Keynote Address

**DR. SAMIR VANKATPATI KAMAT**

Chairman, DRDO  
India



Dr Samir V Kamat assumed charge as Secretary, Department of Defence R&D and Chairman, DRDO on 26 August 2022. Dr Kamat completed B.Tech. (Hons) in Metallurgical Engineering from IIT-Kharagpur in 1985 and PhD in Materials Science and Engineering from The Ohio State University, USA in 1988, and joined DRDO in 1989.

Dr Kamat has provided leadership and direction to several critical materials programmes in DRDO such as the development of high-strength steels for naval ship hulls, development of high-temperature titanium alloys and nickel-base superalloy-based components for aero engines, development of tungsten heavy alloys for kinetic energy penetrators, development of fused silica radomes for missile seekers, development of armour solutions for personnel as well as combat vehicles and stealth materials for airborne and naval applications. These have found use in various systems being developed by DRDO laboratories.

In addition, he has superheaded the development of naval systems such as advanced lightweight torpedo, anti-torpedo decoy systems, autonomous underwater vehicles, advanced hull-mounted and towed array sonars for ships, and fuel cells based air-independent propulsion systems for submarines.

Dr Kamat is a Fellow of the Indian National Academy of Engineering (INAE) and Institution of Engineers India (IEI). He is a recipient of Distinguished Alumni Award from IIT-Kharagpur, Metallurgist of the Year Award by the Ministry of Steel, and Scientist of the Year award from DRDO. He has published more than 180 papers in international peer-reviewed journals.



# Plenary Address

**SHRI TANMAYA LAL**

Secretary West, MEA  
New Delhi, India



Shri Tanmaya Lal assumed charge as Secretary (West) on 5 August 2024.

He is a career diplomat, having joined the Indian Foreign Service in 1991. He has served in various capacities at Ministry of External Affairs and in Indian Missions abroad. His previous work experience includes India's engagement with western Europe, extended neighbourhood, UN and multilateral aspects, and several regional groupings.

Most recently, Shri Lal was India's Ambassador to Sweden and Latvia (Dec 2020-July 2024). Prior to that he was High Commissioner to Mauritius and Ambassador/DPR to UN in New York. In addition to Stockholm, Port Louis and New York, he has served in Indian Missions in Bonn, Tehran, Vienna (also accredited to Slovenia), Bangkok and Nairobi (also accredited to Somalia & Eritrea). He was Deputy High Commissioner & DPR in Nairobi and Deputy Chief of Mission & DPR in Bangkok.

At Headquarters, he has earlier headed the UN Economic & Social (UNES) and the East & Southern Africa (E&SA) Divisions. As the head of UNES Division, his portfolio included Climate Change negotiations, Agenda 2030, Human Rights Council among others. As the head of E&SA Division, his portfolio had also included engagement with AU and 2015 Third India Africa Summit. In Mauritius he was also engaged in implementation of a range of India-assisted large infrastructure projects.

Shri Tanmaya Lal received the S.K. Singh Award in 2013 for Excellence in the Indian Foreign Service.

He holds a Bachelor's degree with Honours in Chemical Engineering and a Master's degree with Honours in Biological Sciences from the Birla Institute of Technology and Science (BITS), Pilani. He did his schooling in New Delhi. After graduating in 1987, he worked with two Indian PSUs - Oil & Natural Gas Commission (ONGC) (1988-91) and Cement Corporation of India (CCI) (1987-88) before joining the IFS.

He speaks English, Hindi and German and has some working knowledge of French.

Shri Lal is married to Sumita Lal and they have one son.





**DAY ONE**  
*Tuesday, 28 January 2025*

*Panel I*

*State of Play of India's Defence Industry - Prospects & Challenges*

**Moderator**  
**Ms. Kriti Taneja**

Current Trends and Projected Development of AI in Defence Ecosystem	Shri Rajinder Singh Bhatia	1100-1300
Overview of India's advancements in AI, HPC, quantum and robotics with a focus on application in defence	Shri Rajkumar Sharma	
Supply chain vulnerabilities & ideas to mitigate challenges to innovation and excellence in Indian Defence Industry	Shri Naresh Kumar	
Availability of AI and advanced technologies for defence industry application and development	Ms. Vrinda Kapoor	

India has made significant strides in bolstering its indigenous defense manufacturing capabilities both for domestic use, as well as by becoming a major defense exporter. In a fast evolving geopolitical and security landscape, the integration of emerging and disruptive technologies into its military tactics, operations and strategy will be critical for India to meet its aspirations to ensure its security and emerge as a global leader in defense innovation. This panel will explore the evolving landscape of India's defense sector, with a particular focus on artificial intelligence (AI) and advanced technologies.

The discussion will begin with an analysis of current trends and projected developments of AI in the defense ecosystem, identifying transformative innovations in surveillance, autonomous systems, cybersecurity, and decision-making frameworks. The panel will also provide an overview of India's technological advancements in AI, HPC, and robotics, assessing their direct implications for national security and strategic capabilities. The panel will also look at supply chain vulnerabilities, the accessibility and availability of AI and advanced technologies for defense applications, addressing regulatory, financial, and infrastructure bottlenecks that hinder progress, an increasingly pertinent issue in the defense sector. Experts will explore challenges related to technology dependence, indigenous innovation, and strategic partnerships, while also proposing actionable solutions to enhance India's self-reliance in defense production.

#### **Guiding Questions:**

- **How is AI currently being integrated into India's defense ecosystem, and what are the key trends and projected developments in AI-driven military applications over the next decade?**
- **What are India's most significant advancements in AI, high-performance computing (HPC), quantum technology, and robotics for defense applications, and how do they compare with global developments?**
- **What are the critical vulnerabilities in India's defense supply chain, particularly concerning AI and advanced technology adoption, and what strategies can be implemented to strengthen self-reliance and resilience?**
- **How can India ensure the ethical, secure, and responsible use of AI and emerging technologies in military applications while aligning with international regulations and global governance efforts?**
- **What policy frameworks and multilateral strategies should India adopt to balance innovation, national security, and diplomatic considerations in the development and deployment of AI in defense?**

## Moderator



**Ms. Kriti Taneja** holds a B.E. in Electronics and Communication from Apeejay College of Engineering and M.Tech from Vellore Institute of Technology. She is currently serving as Program Director at iDEX, Ministry of Defence.

## Speakers



**Shri Rajinder Singh Bhatia** is an Indian Army veteran and has been associated with the defense industry for over 50 years. He currently serves as the President of the Society of Indian Defence Manufacturers (SIDM) and holds membership in the CII National Council, while also heading the Defence Export Promotion Council. At the Kalyani Group, he chairs both Kalyani Strategic System Limited, the defense subsidiary of Bharat Forge Limited, and Kalyani Rafael Advanced Systems Limited, a joint venture with Rafael.



**Shri Rajkumar Sharma** is the President of the All-India Council for Robotics & Automation (AICRA), a position he has held since 2014. He holds a management degree from Agra University and brings over two decades of experience across telecom, FMCG, media, and e-commerce sectors.



**Shri Naresh Kumar** has a B.E. in Electronics and is currently serving as Executive Director of Product Development & Innovation Centre (PDIC) at Bharat Electronics Limited (BEL).



**Ms. Vrinda Kapoor** is currently the co-founder and CEO of 3rdiTech. She received an Award of Excellence from the Indian Army in 2019 for her contributions to improving the army's operational and technological capabilities.

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**Your notes**

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## *Panel II*

# *Risk Mitigation & Technical/Legal Safeguards*

**Moderator**

**Air Marshal Anil Chopra (Retd.)**

Frame Work for Evaluating Trustworthy AI in Defence: Principles, Criterion and Objectives	Smt. Saravjeet Kaur	1400-1530
Risk Hierarchy Framework for AIMD/LAWS	Lt. Gen. (Dr.) R S Panwar (Retd.)	
Evaluating Trustworthy AI in Defence Framework- principles, criteria and objectives	Shri Aditya Ramanathan	
Identification of Point of Human Control in system life cycle <i>Liability, Responsibility and Accountability</i>	Cmde. Jaideep Maolankar (Retd.)	

The panel will address the crucial aspects of ensuring the responsible and secure deployment of AI in military and defense applications. As AI-driven military systems, ranging from autonomous weapons to decision-support algorithms, become increasingly integrated into modern warfare, it is imperative to establish robust technical and legal safeguards to mitigate risks and uphold accountability.

This discussion will look at the Framework for Evaluating Trustworthy AI in Defense published by the Defense Research and Development Organization (DRDO) in October 2024, laying out a comprehensive set of core principles, criteria, and objectives that ensure AI systems align with national security needs and evolving global standards and norms to ensure adherence to ethical and legal standards. The panel will also examine the Risk Hierarchy model for evaluating different levels of risk associated with AI-enabled defense applications and their potential impact on strategic stability as a possible framework for governance and regulation.

Another key focus will be on identification of specific risk mitigation and confidence enhancing measures to enhance transparency, explainability, reliability, and security of military AI systems. The discussion will address critical aspects of human control within the system life-cycle, emphasizing legal liability, responsibility, and accountability. Panelists will debate the extent to which human oversight should be embedded in AI-driven defense systems, particularly in scenarios involving autonomous decision-making and lethal force applications. By addressing both technical and legal dimensions, the panel will provide actionable insights into balancing military effectiveness with ethical and legal imperatives in the use of AI for defense.

#### **Guiding Questions:**

- **How do the core principles, criteria, and objectives outlined in the DRDO ETAI Framework align with global standards and how can they be operationalized effectively?**
- **How can a Risk Hierarchy Framework for AI in Military Decision-Making (AIMD) and Lethal Autonomous Weapon Systems (LAWS) help in assessing and mitigating potential threats?**
- **What key challenges exist in ensuring transparency, reliability, and security in AI-driven defense applications, and how can they be addressed through technical safeguards?**
- **"At what points in the AI system lifecycle should human control, liability, and accountability be enforced, and how should responsibility be distributed among developers, operators, and policymakers?"**
- **"How should India position itself in global discussions on AI governance in defense, and what legal and regulatory frameworks can support responsible AI development while safeguarding national security interests?"**



## Moderator



**Air Marshal Anil Chopra (Retd.)** is currently serving as Strategic Advisor to SIDM and Mentor at VEDA Aeronautics. He previously held positions as Director General of the Centre for Air Power Studies (CAPS) and served as a member of both the Armed Forces Tribunal and JNU Executive Council. He is a retired fighter pilot.

## Speakers



**Smt. Saravjeet Kaur** is currently serving as Scientist G and heads the Information Security Assurance Division at Scientific Analysis Group (SAG), DRDO. She holds a M.Sc. in Computer Science from Indore University and an M.S. in Software Systems from BITS Pilani.



**Lt. Gen. (Dr.) R S Panwar (Retd.)** is currently a Distinguished Fellow at the United Services Institution of India (USI). He served in the Indian Army Corps of Signals until 2016, completing 40 years of service. He holds a PhD in Computer Science from IIT Bombay, along with degrees from the National Defence College and Osmania University.



**Shri Aditya Ramanathan** Aditya Ramanathan currently heads the Advanced Military Technologies Programme and outer space affairs as a Research Fellow at the Takshashila Institution. He holds a Masters in Journalism from the University of Maryland, and previously worked as Manager at TMS India Pvt Ltd and Associate Producer at HT MINT.



**Commodore Jaideep Maolankar (Retd.)** is currently Executive Vice-President for Technology Development (Aerospace & Defence) at NewSpace Research & Technologies Ltd. Commissioned into the Indian Navy in 1985, he served in multiple positions in INAS 300 including as Sea Harrier pilot, senior pilot, and squadron leader. He had also commanded naval vessels including INS Udaygiri and INS Ganga. He also served as a test pilot for Sea Harrier and LCA (Air Force).

Your notes

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## Panel III

# Global Regulatory Approaches-Risks & Challenges for India

**Moderator**  
**Amb. Anupam Ray**

Trends in the UN- how Indian Think tanks can influence normative architecture ( <i>like ICRC, Campaign against killer robots etc</i> )	Ms. Charukeshi Bhatt	1545-1715
Identification of opportunities for leadership in the Global South - alternative to US - China binary	Shri Pranay Kotasthane	
Legal & Ethical Implications on use of AI in Military Domain	Col. (Dr.)DPK Pillay (Retd.)	
Importance of Cyber and Data Security in use of AI in Military Domain for future conflicts	Dr. Pavan Duggal	
Different pathways to AI Sovereignty Areas of alignment and divergence/open Source & Links with DPI Architecture	Prof. B Ravindran	

The panel will examine the evolving landscape of international governance on military AI and its implications for India's strategic interests. As global powers engage in shaping AI norms through the United Nations and other multilateral forums, India faces the dual challenge of safeguarding national security while influencing international regulatory frameworks to ensure a fair and inclusive approach.

The discussion will look at trends within the UN and other international bodies, including the role of organizations like the International Committee of the Red Cross (ICRC) and advocacy groups such as the Campaign Against Killer Robots. Panelists will explore how Indian think tanks and policymakers can actively contribute to shaping the global normative architecture for military AI governance in alignment with India's interests and positions. A key focus will be the identification of opportunities for India to assume leadership in the Global South, offering a strategic alternative to the dominant US-China binary in AI regulation. The session will also address the legal and ethical implications of AI deployment in the military domain, emphasizing compliance with international humanitarian law, human rights considerations, and strategic autonomy.

Furthermore, the panel will explore different pathways to AI sovereignty, discussing India's approach to self-reliance in AI-driven defense technology. This includes evaluating areas of alignment and divergence in global AI governance, the role of open-source AI, and its integration with India's Digital Public Infrastructure (DPI) architecture. The insights from this panel will help in identifying India's positions in multilateral negotiations so as to ensure that global AI regulations reflect its national security imperatives while fostering responsible AI development.

#### **Guiding Questions:**

- **"How can Indian think tanks and policymakers effectively influence AI governance discussions within the UN and other global regulatory bodies to shape a balanced normative framework? What values, principles and norms could be put forth as India's contribution to the narrative shaping and norm-building efforts in this regard?"**
- **"What are the key opportunities for India to assert leadership in the Global South on AI governance, and how can it position itself as an alternative to the US-China regulatory divide?"**
- **"What legal and ethical challenges arise from the integration of AI in the military domain, and how can India ensure compliance with international law and customary norms while maintaining strategic autonomy?"**
- **"What strategies should India adopt to achieve AI sovereignty in the defense sector, and how can open-source AI and DPI architecture play a role in this pursuit?"**
- **"Where do India's regulatory priorities align or diverge from global AI governance trends, and what diplomatic approaches should it take to balance national interests with multilateral cooperation?"**

## Moderator



**Amb. Anupam Ray**, currently India's Ambassador and Permanent Representative to the Conference on Disarmament, has a diverse diplomatic career. An MBBS graduate from Calcutta University with an MA in Public Administration from Panjab University, he has held key positions, including Joint Secretary (Policy Planning), Consul General of India in Houston, and Counsellor at India's Permanent Mission to the UN. He has also served as a Visiting Professor at the University of Kentucky and contributed to major initiatives like the BRICS Summit and the Nalanda University Project.

## Speakers



**Ms. Charukeshi Bhatt** is currently a Research Assistant with the Technology and Society program at Carnegie India. She holds an MA in Political Science from JNU and BA (Hons) from Miranda House, Delhi University. She previously worked as a Content Writer for Humans of Rural India and Mentor at Claylab Education Foundation.



**Shri Pranay Kotasthane** is the Deputy CEO at the Takshashila Institution, where he chairs the High-Tech Geopolitics Programme. He has prior experience as a chip design engineer at Texas Instruments and Qualcomm. Pranay graduated with a B.Tech degree in Electronics and Communication from the National Institute of Technology Karnataka, Surathkal.



**Col. (Dr.) Divakaran Padma Kumar Pillay (Retd.)** is a former Indian Army officer and a Shaurya Chakra awardee. He previously served as a Planning Officer (Defence) in the Planning and International Cooperation Division of the Ministry of Defence. He has also served as Military Advisor with the International Committee of the Red Cross (ICRC) for After Action Review for the wars in Iraq, Syria and Yemen. He holds a Ph.D. from Panjab University and is currently a Research Fellow at the Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA).



**Dr. Pavan Duggal** is a Senior Advocate at the Supreme Court of India and Chairman of the International Commission on Cyber Security Law. He leads the Artificial Intelligence Law Hub and Blockchain Law Epicentre and has chaired key initiatives like the CII Summit on Cyber Security. He also serves as Co-Chairman of the Cyber Security Committee of ASSOCHAM and has consulted for UNCTAD and UNESCAP on cyber law and cybercrime.



**Prof. Balaraman Ravindran** is the founding head of the Wadhvani School of Data Science and AI, the Robert Bosch Centre for Data Science & AI, and the Centre for Responsible AI at IIT Madras. He serves on the AI Advisory Council for India's AI for 2030 initiative and represents India on the UK's Expert Advisory Panel on Advanced AI Safety. He is a member of the Global Commission on Responsible Use of AI in Military (REAIM) and has contributed to national AI frameworks, including chairing the National Taskforce on AI and Cybersecurity.



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**DAY TWO**  
*Wednesday, 29 January 2025*

*Panel I*

*Overview of LAWS - Global ecosystem around development and regulation*

**Moderator**  
**Amb. Rakesh Sood**

Briefing on state of play at the GGE on LAWS and the UN	Amb. Anupam Ray	0930-1100
Comparative analysis of how key global players like the U.S, China, and Russia are advancing in LAWS development	Brig. M M Ramachandra (Retd.)	
Opportunities for International Cooperation in AI	Smt. Muanpuii Saiawi	
Trade and Technology issues - Opportunities and Challenges	Dr. Preeti Banzal	

The panel will provide an in-depth analysis of the current landscape of development of Lethal Autonomous Weapon Systems (LAWS) and the evolving international regulatory framework. As military AI capabilities continue to expand, the global debate on the ethical, legal, and strategic implications of autonomous weapon systems has intensified, making it essential for India to formulate a well-calibrated position in multilateral discussions.

The session will begin with an examination of the state of play at the Group of Governmental Experts (GGE) on LAWS and ongoing deliberations at the UN, focusing on how different nations are shaping the discourse on regulation, compliance, and ethical considerations. The discussion will then shift to a comparative analysis of LAWS development by key global players—the U.S., China, and Russia—evaluating their strategic priorities, technological advancements, and regulatory postures.

Beyond competition, the panel will explore opportunities for international cooperation in AI, identifying areas where global consensus can be built, including risk mitigation frameworks, transparency measures, and shared principles for responsible AI deployment in defence. Finally, the discussion will address trade and technology issues, assessing challenges related to export controls, intellectual property, and the global defence supply chain, while also highlighting potential opportunities for India in the AI-driven defence market.

This panel will contribute to shaping India's position in global discussions on LAWS, balancing its national security priorities with the need for responsible and ethical governance in military AI applications.

#### **Guiding Questions:**

- **What is the current status of discussions at the GGE on LAWS and the UN, and how are different international stakeholders influencing the regulatory framework for autonomous weapon systems?**
- **How do the U.S., China, and Russia compare in their approaches to the development, deployment, and regulation of LAWS, and what lessons can India draw from their strategies? Are there any risks inherent for India flowing from the new arms race in AI?**
- **What opportunities exist for India to engage in international cooperation on AI in defense, and how can multilateral collaborations contribute to responsible AI governance?**
- **What are the key trade and technology challenges in the development and regulation of LAWS, including issues related to intellectual property, export controls, and global supply chains?**
- **How should India position itself in global discussions on LAWS governance to ensure that international regulations align with its strategic and security interests?**

## Moderator



**Amb. Rakesh Sood**, with postgraduate degrees in Physics, Economics, and Defence Studies, served in the Indian Foreign Service from 1976, holding key diplomatic posts including ambassadorial roles in Afghanistan, Nepal, and France, and serving as India's first Ambassador-Permanent Representative to the UN Conference on Disarmament in Geneva. His roles also included Special Envoy of the Prime Minister for Disarmament and Non-Proliferation Issues. He has served as Distinguished Fellow at the Observer Research Foundation.

## Speakers



**Amb. Anupam Ray**, currently India's Ambassador and Permanent Representative to the Conference on Disarmament, has a diverse diplomatic career. An MBBS graduate from Calcutta University with an MA in Public Administration from Panjab University, he has held key positions, including Joint Secretary (Policy Planning), Consul General of India in Houston, and Counsellor at India's Permanent Mission to the UN. He has also served as a Visiting Professor at the University of Kentucky and contributed to major initiatives like the BRICS Summit and the Nalanda University Project.



**Brig. M M Ramchandra (Retd.)** served in the Indian Army, Infantry since 1985. He has gained extensive operational experience in Jammu & Kashmir and North-East India during his 35-year military career. He is currently Director, National Security Council Secretariat (NSCS), Govt. of India.



**Smt. Muanpuii Saiawi**, a 2005-batch Indian Foreign Service officer, is currently the Joint Secretary (Disarmament & International Security Affairs) in the Ministry of External Affairs, India. She has held various diplomatic positions in Seoul, Tokyo, and Tel Aviv and served as Director (Disarmament & International Security Affairs) from 2020 to 2021. Earlier, she worked as Under Secretary and Deputy Secretary in the same division.



**Dr. Preeti Banzal** is Adviser/Scientist G in the Office of Principal Scientific Adviser to the Government of India. She holds a B.E. in Electronics & Telecommunications, MBA in Human Resource Management, and Ph.D. in Disaster Communications and Early Warning Systems. She was Vice-Chair of ITU-IMO-UNEP Focus Group on AI for Natural Disaster Management. She is also a member of multiple national bodies including NSAC, AGNIi, and various MeitY working groups.

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## *Panel II*

# *Core Technologies and Functional Capabilities of LAWS*

**Moderator  
Dr. Ajey Lele**

Definitions and characteristics from India's perspective	Brig. Vivek Verma (Retd.)	1115-1300
Question of automation vs autonomy in LAWS	Shri Vishal Veer Singh	
Development of emerging and critical technologies in global and Indian environment	Shri Abhishek Singh	
Perspective on Functional Capabilities required by modern Armies in modern militaries	Maj. Gen. CS Mann	

The panel will explore the technological foundations and strategic considerations surrounding Lethal Autonomous Weapon Systems (LAWS), with a focus on India's perspective. As global militaries increasingly integrate AI-driven systems into combat and defense operations, it is essential to establish a clear understanding of the definitions and functional capabilities that define LAWS in both an Indian and international context.

The discussion will look at the definitions and characteristics of LAWS from India's perspective, addressing the need for a nuanced framework that distinguishes between varying levels of autonomy in weapon systems. The speakers will explore the critical strands of debate on automation vs. autonomy, analyzing where the threshold lies between human-in-the-loop, human-on-the-loop, and fully autonomous decision-making in military applications.

The panel will also look at the development of emerging and critical technologies in the global and Indian defense environment, evaluating advancements in AI, machine learning, robotics, quantum computing, and sensor fusion that are shaping the next generation of military capabilities. Finally, the discussion will provide insights into the functional capabilities required by modern militaries, outlining the technological attributes that will define future warfare, including precision targeting, adaptive decision-making, cyber-security resilience, and human-machine teaming.

By fostering a comprehensive understanding of LAWS and their technological underpinnings, this panel will contribute to understanding imperatives for India's approach to AI-driven defense innovation, ensuring that its military remains competitive while adhering to ethical and regulatory considerations.

#### **Guiding Questions:**

- **"How should India define and characterize LAWS within its national security framework, and what distinctions should be made between different levels of autonomy?"**
- **"What are the key technological differences between automation and autonomy in LAWS, and how should India approach this distinction in policy and capability development?"**
- **"How is the global landscape evolving in the development of emerging and critical technologies for LAWS, and where does India stand in comparison to leading nations?"**
- **"What core functional capabilities should modern militaries prioritize in the development of LAWS, and how can India ensure its defense forces are equipped for future warfare?"**
- **"What are the ethical, operational, and strategic considerations India must balance while integrating AI-driven autonomous weapon systems into its defense architecture?"**

## Moderator



**Dr. Ajey Lele** is currently working as the Deputy Director General at the Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA). He is a former officer of the Indian Air Force. He holds Masters Degrees in Physics, Defence, and Strategic Studies, and earned his doctorate from Jawaharlal Nehru University (JNU), New Delhi. Previously, he was a Senior Fellow at MP-IDSA and led its Centre on Strategic Technologies.

## Speakers



**Brigadier Vivek Verma (Retd.)** is currently a Senior Research Fellow at the United Services Institute of India and is associated with the Centre of Atma Nirbhar Bharat. Commissioned in the Regiment of Artillery in 1989, he commanded artillery units along Northern Borders and J&K, and served as Artillery Advisor to the Botswana Defence Forces. He holds Masters degrees in Weapons Technology and Defence & Strategic Studies, completed the National Development Course at NDU Taiwan, holds an M.Phil from Panjab University, and is pursuing his doctorate from Amity University.



**Shri Vishal Veer Singh** is currently serving as Scientist 'F' and Additional Director at the Directorate of Low Intensity Conflicts (DLIC), DRDO Headquarters. He holds a B.Tech in Electronics & Communication Engineering from Kumaon University and an M.Tech in Computer Technology from IIT Delhi. He was part of India's delegation to Singapore for International Collaboration on Robotics & Unmanned Systems, and serves on both the National Technical Advisory Sub-Committee for anti-drone systems and the Task Force for providing anti-drone coverage to Delhi.



**Shri Abhishek Singh**, IAS, is currently Additional Secretary at the Ministry of Electronics and Information Technology. Previously, he served as CEO of Karmayogi Bharat in the Department of Personnel & Training, and as CEO of NeGD, DIC, and MyGov. He holds a Masters in Public Administration from Harvard Kennedy School and is an IIT Kanpur alumnus.



**Major General CS Mann**, currently heads the Army Design Bureau. Commissioned into the Armoured Corps in 1990, he has experience in tank warfare and counter-insurgency operations. His education includes courses from Defence Services Staff College, Bournemouth University (UK), and recently completed a PG Program in Data Science and Business Analytics from McCombs School of Business.

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## *Panel III*

# *Challenges- Legal, Technical and Humanitarian*

**Moderator**  
**Lt. General Ajai Singh (Retd.)**

AI in LAWS decision making process - issues and prospects	Cmde. Naresh Chhabra	1400-1530
OODA Decision making loop and LAWS	AVM Ashish Singh	
Application of IHL to LAWS - gaps and challenges	Shri Mayank Mishra	
Importance of Data, Data Analytics and Cyber security in development and use of Autonomous Weapon systems	Maj. Vineet Kumar	
Existing control regimes for dual use technologies	Wg. Cdr. Satyam Kushwaha (Retd.)	

The panel will explore the multifaceted challenges associated with the development, deployment, and regulation of Lethal Autonomous Weapon Systems (LAWS). As AI increasingly influences military decision-making, this discussion will critically assess the legal, technical, and humanitarian implications of integrating autonomous systems into warfare. The session will begin by addressing AI in LAWS decision-making processes, examining both the opportunities and risks associated with machine-driven combat operations. A key focus will be the OODA (Observe, Orient, Decide, Act) decision-making loop, analyzing how AI-driven systems interact with this framework and the challenges posed by automation in time-sensitive military operations.

From a legal perspective, the panel will discuss the application of International Humanitarian Law (IHL) to LAWS, identifying existing gaps and challenges in ensuring compliance with legal norms governing armed conflict. Additionally, the conversation will explore the importance of data, data analytics, and cybersecurity in the development and operation of autonomous weapon systems, emphasizing the critical role of secure and reliable data for AI-driven military applications.

Finally, the discussion will assess existing control regimes for dual-use technologies, highlighting regulatory challenges in balancing technological innovation with security concerns. As the global debate on LAWS governance intensifies, this panel will contribute to shaping India's policy approach to mitigating risks while leveraging AI for national security.

#### **Guiding Questions:**

- **"What are the key challenges and ethical concerns associated with AI decision-making in LAWS, and how can they be addressed in military applications?"**
- **"How does the integration of LAWS impact the OODA decision-making loop, and what are the operational risks and advantages of increased automation in combat scenarios?"**
- **"What are the gaps and challenges in applying International Humanitarian Law (IHL) to LAWS, and how can India contribute to shaping an effective legal framework?"**
- **"How can India ensure robust data management, analytics, and cyber-security in the development and deployment of AI-driven autonomous weapon systems?"**
- **"What are the challenges associated with existing control regimes for dual-use technologies, and how should India navigate regulatory and policy considerations to safeguard national security?"**



## Moderator



**Lt. General Ajai Singh (Retd.)**, is a former Commander-in-Chief of the Andaman & Nicobar Command (CINCAN) and a current Executive Council Member of the United Service Institution of India (USI). Commissioned into the 81 Armoured Regiment in 1983, he served across all six Army geographical commands, Army HQ, HQ IDS, and UN peacekeeping in Angola. A graduate of the Royal College of Defence Studies (UK), he holds multiple master's degrees in defense and management studies and international security and is pursuing a Ph.D. at Panjab University. He is also an Independent Director with DLF Ltd.

## Speakers



**Commodore Naresh Chhabra**, commissioned into the Indian Navy in 1994, is currently serving at the Headquarters of the Integrated Defence Staff. He holds a Master's in Electronics and Telecommunications, an MBA in Marketing, and a PGDBA in HR, and is pursuing a Ph.D. on AI applications in management. A graduate of the College of Naval Warfare, he has previously served as Head of Faculty (ECE) at the Indian Naval Academy, Ezhimala, and led a regional Information Technology Organization.



**Air Vice Marshal Ashish Singh** was commissioned in the Indian Air Force in 1991, and is currently serving as the Assistant Chief of the Air Staff, Operations (Remote) at Air Headquarters. He has flown over 4000 hours on MiG 21, Mirage 2000, and the Searcher Remotely Piloted Aircraft. He holds a BSc from Delhi University, an MSc in Defence Studies from Madras University, and a PhD in Military Strategy from the School of Advanced Air and Space Studies, Montgomery.



**Shri Mayank Mishra** is currently serving as Legal Consultant at the Centre for Maritime Economy and Connectivity, RIS. He previously worked as Associate Fellow at the National Maritime Foundation, New Delhi.



**Maj. Vineet Kumar** is the Founder & Global President of CyberPeace Foundation and a member of NASSCOM's Cyber Security Task Force. He holds a Postgraduate degree in Cyber Defence and Information Assurance from the Defence Academy of the UK and Cranfield University, as well as a Bachelor's and Master's in IT Infrastructure from Sikkim Manipal University. An alumnus of Churchill College, Cambridge, he has also served as CTO of Jharkhand Police. Vineet is a guest instructor at various national institutes, including the National Police Academy and IIM Ranchi



**Wing Commander Satyam Kushwaha (Retd.)** is the Founding Director of the Indian Space Association (ISpA) and founder of Scytale Alpha Pvt Ltd. A former IAF fighter pilot, he flew MiG-21s and Jaguars and held roles as Command staff and Geo-Int Analyst during his military service. Post-retirement, he served as Defence Specialist at the National Security Council Secretariat and Chief Geospatial Officer for the Ministry of Road Transport and Highways.

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## *Panel IV*

# *India's Capability in Emerging Tech and LAWS*

**Moderator  
Dr. Gulshan Rai**

<b>State of LAWS development in India (MP-IDSA Study)</b>	<b>Cmde. Abhay Kr. Singh (Retd.)</b>	<b>1545-1700</b>
<b>Examination of India's Progress in Indigenous defence innovation: UAVs, drones, and dual-use technology innovations</b>	<b>Gp. Capt. (Dr.) Rajiv Kumar Narang (Retd.)</b>	
<b>Key projects and collaborations within DRDO, DPSUs, and private sector, highlighting the evolving role of these technologies in defence applications and their intersection with LAWS capabilities</b>	<b>Shri Amit Sharma</b>	
<b>Barriers to adoption of advanced technologies and LAWS in Indian defence; ways to offsets gaps ; Issues and way forward</b>	<b>Maj. General RPS Bhaduria (Retd.)</b>	

The panel will provide a comprehensive evaluation of India's progress in developing Lethal Autonomous Weapon Systems (LAWS) and its broader defense technology landscape. As AI-driven warfare reshapes modern combat strategies, India must assess its capabilities, identify gaps, and formulate strategic pathways to enhance indigenous innovation and adoption of autonomous military technologies.

The discussions will include an assessment of the current state of LAWS development in India, reviewing key technological milestones, policy initiatives, and strategic objectives shaping the nation's approach to autonomous defense systems. The panel will then explore India's progress in indigenous defense innovation, with a particular focus on UAVs, drones, and dual-use technology advancements that are critical to the country's evolving military capabilities. A key segment of the discussion will highlight ongoing projects and collaborations within DRDO, Defense Public Sector Undertakings (DPSUs), and private-sector players, showcasing their contributions to LAWS development. The conversation will explore how these stakeholders are driving advancements in AI, robotics, and autonomous systems, and their integration into India's defense strategy.

The session will also address barriers to the adoption of advanced technologies and LAWS in Indian defense, identifying regulatory, financial, and infrastructural challenges that hinder progress. Panelists will deliberate on strategies to offset technological gaps, strengthen self-reliance, and enhance collaboration between government and private-sector innovators. The discussion will help provide inputs for crafting a forward-looking roadmap for India's defense AI ecosystem, ensuring that national security objectives align with global trends in autonomous warfare.

#### **Guiding Questions:**

- **"What is the current state of LAWS development in India, and what key milestones have been achieved in integrating autonomous technologies into defense?"**
- **"How has India progressed in developing indigenous defense innovations, particularly in UAVs, drones, and dual-use technologies, and how do these intersect with LAWS capabilities?"**
- **"What are the key projects and collaborations within DRDO, DPSUs, and the private sector that are driving India's advancements in LAWS, and how can these efforts be further strengthened?"**
- **"What are the main barriers to adopting advanced technologies and LAWS in India's defense sector, and what strategies can be employed to bridge these gaps?"**
- **"What are the critical policy and regulatory steps India should take to accelerate its development of LAWS while ensuring ethical, operational, and strategic considerations are addressed?"**

## Moderator



**Dr. Gulshan Rai** is a Distinguished Fellow at the Vivekananda International Foundation (VIF). He has previously served as the National Cyber Security Coordinator in the Prime Minister's Office, Government of India. Prior to this, he held various roles in the Ministry of Electronics and Information Technology (MEITY), including heading organizations such as CERT-In, Standardisation Testing and Quality Certification (STQC), and Education and Research in Computer Networking (ERNET). He was also a member of the high-powered committee that formulated the blueprint for the Indian Computer Emergency Response Team (CERT-In) in 2004.

## Speakers



**Commodore Abhay Kumar Singh (Retd.)** is a Research Fellow, and head of the South East Asia and Oceania Centre at MP-IDSA. A veteran of the Indian Navy, he has also served as Director (Military Affairs) in the Ministry of External Affairs. He is an alumnus of the Naval Academy, Defence Services Staff Course, and Naval War College, holding an MSc in Defence and Strategic Studies and an MPhil. He is a member of the Editorial Committee of the Journal of Defence Studies.



**Group Captain (Dr.) Rajiv Kumar Narang (Retd.)**, is a Senior Fellow at the Manohar Parrikar Institute for Defence Studies and Analysis (MP-IDSA). A former Indian Air Force helicopter pilot, he holds an MSc in Defence & Strategic Studies and a PhD in International Relations from Jawaharlal Nehru University. He has previously served as Director of Strategic Initiatives at the Drone Federation of India. He has also contributed to national defense innovation committees, including the Drone Working Sub Group and iDEX High Power Steering Committee.



**Shri Amit Sharma**, Scientist 'G', is the Director of the Directorate of Interaction with Services for Business (DISB) at DRDO.



**Major General RPS Bhadauria (Retd.)** is the Additional Director General at the Centre for Land Warfare Studies (CLAWS) in New Delhi. He previously served as the Director of the Centre for Strategic Studies & Simulation at the United Service Institution of India. He was a faculty at the National Defence College. He holds an MPhil in National Security and Strategic Studies from Madras University and is an alumnus of the National Defence College and Escola Superior de Guerra, Brazil.



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## **Restricted Session**

*DAY THREE*  
*Thursday, 30 January 2025*

# *ROUND TABLE DISCUSSION/ SYNTHESIS - GoI REPS ONLY*

<b>Session 1: (0930-1045)</b>	<b>India's approach to AIMD and LAWS - Determinants of our position</b>
<b>Session 2: (1045-1130)</b>	<b>India's approach to global governance and regulation</b>
<b>Session 3: (1145-1230)</b>	<b>Securing Sovereign AI capabilities in the Military</b>
<b>Session 4: (1230-1315)</b>	<b>State of play of Indian Defence Ecosystem</b>
<b>Session 5: (1315-1330)</b>	<b>Wrap up and Next Steps</b>

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