Centre for Aerospace Power and Strategic Studies

Report on CAPSS – FICCI Seminar & Exhibition
on
Aero-Tech India 2025: Strengthening Indigenous Capabilities for the Indian Air Force
on
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Aero-Tech India 2025: Strengthening Indigenous Capabilities for the Indian Air Force

AeroTech 2025 highlighted India's urgent need for accelerated technological innovation, deeper and more vibrant industry–military–academia-Services collaboration and achieving complete self-reliance ("Atmanirbharata") in the aerospace and defence sectors. Senior leaders outlined strategic priorities for indigenous defence research and development (R&D), indigenous production and maintenance across sensors, weapons, platforms, and supporting technologies to secure India's role as a global aerospace power by 2047 and shape future conflicts.

Opening Address by Mr Ashish Kansal, Co - Chairman, FICCI Defence & Homeland Security Committee & Director & CEO, SMPP Limited

The Federation of Indian Chambers of Commerce and Industry (FICCI) underscored the transformative impact of emerging technologies—artificial intelligence, autonomous systems, cyber capabilities, quantum computing, and space-based platforms—on modern warfare. Emphasis was placed on: -

- Indigenous Manufacturing. Ensuring at least 60 per cent of defence procurement comes from domestic industry, with special focus on micro, small and medium enterprises (MSMEs) and startups.
- Government-Industry-Academia Dialogue. There is an urgent need to strengthen partnerships for sharing operational requirements, guiding technology transfers, and scaling up production.

- Conference Goals. These are fostering candid exchanges on electronic systems, secure communications, unmanned aerial systems (UAS), precision-guided munitions, and counter-munitions technologies.

Theme Address by Air Vice Marshal Anil Golani (Retd), Director General, Centre for Aerospace Power and Strategic Studies (CAPSS)

Strategic Vision for Atmanirbharata

Air Vice-Marshal Golani highlighted India's defence indigenisation journey, noting that over 430 technologies have been transferred to private firms by DRDO and more than 5,500 imported items have been redirected to domestic suppliers. He stressed the following:-

- Shift from Consumer to Producer. India is transitioning from relying on foreign platforms to innovating and exporting homegrown systems, such as the Akash SAM and the BrahMos missile.

- Budgetary Support. Defence expenditure (1.9 per cent of GDP) and growing exports (₹23,000 crore) validate the government's commitment.

- Public–Private Balance. Private-sector exports now outpace those of Defence Public Sector Undertakings, encouraging competitive innovation.

Industrial Modernisation and Collaboration

- Prototype development. The AMCA fifth-generation fighter's first flight is slated for 2028 under a competitive public–private partnership model.

- Skill and employment. The Tejas programme is expected to generate approximately 12,000 jobs annually, with defence MSMEs anticipated to double in size by 2030.

- Global Supply Chains. India is looking at addressing the major bottlenecks in global supply chains through encouraging "Make in India, Make for the World", which

would position India as a manufacturing hub and net security provider in the globalized world.

Special Address by Air Marshal Awadhesh Kumar Bharti SYSM AVSM VM, Deputy Chief of the Air Staff, Indian Air Force

Accelerating R&D and Innovation

Air Marshal Bharti called for a revolution in India's research and development infrastructure (R&D):

- Reorienting R&D. Strengthen innovation labs from academic institutes to industry and tap the abundant talent despite funding constraints.
- Battlefield Intelligence. Prioritise persistent, survivable ISR—integrating ground, airborne, and space sensors over quantum-resilient networks.
- Real-time Data Processing. Embed AI and big-data analytics into command-and-control systems to outpace enemy OODA loops.

Kinetic and Non-Kinetic Capabilities

- Weapon Seeker Technology. Urgent investment in guidance and seeker systems for air-to-air, air-to-surface, and surface-to-air munitions.
- Hypersonic Platforms and Quantum Communications. Develop scramjet engines and core aero-engine technologies alongside quantum-secure communications.
- Directed Energy Weapons and Manned-Unmanned Teaming. Advanced DEW and autonomous platforms need to have man-in -the loop solutions to ensure ethical targeting.

Indigenous Content and Self-Reliance

Both Air Mshl Bharti and AVM Anil Golani emphasised that meeting minimum indigenisation thresholds (50–60 percent) was inadequate. Complete Atmanirbharata demanded the following:-

- 100 percent indigenous components. Including raw materials, critical chips, pumps, and sensors.
- Defined Time-Frames. Set and adhere to deadlines for full in-country know-how, know-why, and manufacturing.
- Sustenance and Maintenance. Full indigenisation of repair, periodic servicing, and lifecycle support to ensure rapid production scale-up during conflicts.

Innovation Ecosystem and Problem Statements

IAF Initiatives

- Innovation Projects. More than 160 schemes under IDEX and Make in India, with R&D funds accessible to academia.
- Compendia Release. Aero India 2025 featured 180+ industry problem statements; Tri-Services Symposium shared 40+ academia challenges.
- Academic Partnerships. Nine MOUs signed recently to guide young innovators in defence technologies.

Call to Action

Industry and academia were urged to propose contemporary, high-impact problem statements—beyond drones and UAS—to guide future Meher Baba innovation cycles.

Aero-Engine Development

Delegates questioned the feasibility of indigenous aero-engines, recalling the Kaveri programme's limitations. The response acknowledged the challenges but affirmed the following:-

- Timeline. A working indigenous engine within 10–12 years is realistic, given existing knowledge repositories and ongoing collaborations.
- Industry Involvement. Continued private-sector engagement and resource pooling is essential.

Clean Energy and Fuel-Cell Applications

A former IAF officer highlighted thermal signatures and carbon emissions in recent conflicts. Air Marshal Bharti confirmed:

- Commitment to Clean Energy. Trials of ethanol-blended aviation fuel on transport aircraft and helicopters has been done. There is a need to take it further.
- Roadmap Development. Ground-power units offer a logical starting point for fuel-cell integration, with interest in cogent industry proposals.

Session I: Intelligent Electronics and Advanced Communication Systems

Session Moderator: Air Vice Marshal Vivek Singh Blouria, ACAS Com & IT, Indian Air Force

The first session was moderated by Air Vice Marshal Vivek Singh Blouria, who has vast experience in the field of guided weaponry, electronic warfare, UAVs and airfield modernisation. The session opened up with an address from the moderator, who positioned electronics and communications as two technological bedrocks that have become increasingly sophisticated, leading to current-generation intelligent electronics and advanced communications. The fusion of these technologies has transformed our daily lives, as well as modern battlefields. Increasingly, they are augmented by artificial intelligence (AI) and enable militaries to make critical decisions remarkably fast. Air Vice Marshal Blouria explained that in modern warfare, the side that can close the OODA (Observe, Orient, Decide, Act) loop faster has effectively won the battle before it even begins. He pointed out that much of the Indian military's

electronics and communications technologies are being imported, which is an issue that requires addressing. He called for a hybrid model, whereby India continues importing these technologies for its armed forces in the short term, simultaneously developing its own production capabilities for the long term. The moderator concluded his address, stating that Indian defence forces, military academic bodies, public and private sector entities and R&D organisations must come together and invest in cutting-edge technologies such as AI, quantum computing, laser communications and hypersonic unmanned systems, as these will play key roles in future conflicts.

Group Captain Ajay Kumar, Director Ops (SatCom) presenting 'From Data to Decision Making: Importance of Secured Communications in Air Operations'

Gp Capt Ajay Kumar has 25 years of experience in air defence radars and communication systems. His presentation focused on the importance of data and secure communication in air operations. He began by stating that the safety, capability and capacity of air operations are managed through data such as weather, terrain, route maps and more, and that secure communication channels are necessary to ensure commanders can leverage data for precise decision-making. The speaker stated that aviation is evolving from data-enabled to data-centric. He explained that data is an integral part of network-centric warfare, wherein all assets are interconnected through SatCom and other communication links. It is collected in large quantities by means such as vision support systems and, increasingly, is fed to AI, which further empowers air operations. Data is critical right from the beginning of an operation up to its conclusion and also facilitates processes such as battle casualty assessment and training. The speaker then discussed the dangers of insecure communication channels, which can lead to denial, delays or alterations in the information available to decision-makers, causing faulty decision-making and negative outcomes. Communication channels should have end-to-end encryption and must be graded to the information that they transmit. Frequency hopping and spread spectrum techniques can prevent jamming and minimise the exposure of a frequency plan. Strong multi-factor authentication adds to the security of a communications network, and effective emission control policies prevent revealing one's location. Operating systems must be regularly audited for

malware or vulnerabilities and system interoperability should be encouraged in case of joint operations to strengthen the confidence between two organisations. He concluded his presentation by reiterating that in the next 3-10 years, air operations will continue shifting from a data-driven to a data-centric approach, human-driven solutions will become AI-based and a report-driven format will become a model-assisted format. He predicted that risk-aware AI will play a greater role in decision assurance and robustness, along with maintaining the legal and ethical accountability of autonomous systems. Simultaneously, secure communications will remain critically important as it forms the bridge between real-time data and effective action. Without secure communications, there can be no informed decision-making and no air superiority.

Ms Rita Srivastava, Sr DGM, Bharat Electronics Limited (BHEL), on 'Advanced Communication in Defence'.

Ms Srivastava began her presentation by stating that BHEL is closely aligned with the nation's development and security requirements and provides a range of products and services, including critical data linkages, communication systems, SatCom systems, cyber security solutions, encryptors and more. Focusing on the role of advanced communication systems in defence, she explained that every step of air target neutralisation involves communication systems that transmit data near-instantaneously, and hence, these systems are critical in today's tactical environment.

The speaker stated that BHEL is aligning its R&D to ensure that India does not remain a technology follower but rather becomes a technology leader. Within the communication domain, the company is focusing on radio, cellular, LAN communication, SatCom and more. BHEL is also moving into the space segment and is collaborating in various capacities with ISRO, DRDO and academic bodies. Regarding radio technology, BHEL is developing Multi-Input, Multi-Output (MIMO) radios which are robust for ranges of 10-20 km for high data rates. In SatCom, BHEL is focusing on on-ground systems and user terminals for ISRO's Geosynchronous Satellites (GSATs). The company is also developing baseband systems, modems and more in-

house and is moving towards the development of both marine and land-based SatCom On The Move (SOTM).

Ms Srivastava ended her presentation by stating that emergent technological requirements call for sustained R&D efforts with perseverance and patience to keep the momentum going. She stated that no single organisation can build the future alone, which is reflected in BHEL's commitment to collaborative R&D with various startups, MSMEs and academic institutions under the Indian government's vision of Atmanirbhar Bharat.

Dr AK Singh, Chief R&D, Astra Microwave Products Limited, on 'Advancement in the Development of Intelligent Radar and EW Systems for Defence'

Dr Singh began by introducing Astra Microwave Products Limited as a pioneering Indian company specializing in radar, microwave and EW solutions for the defence, space and telecommunications sectors. It is a leader in indigenous development of radars, SatCom systems, EW equipment and active phased array technologies and delivers advanced TR modules, antenna systems and critical subsystems to DRDO, ISRO and DPSUs (Defence Public Sector Undertakings).

The speaker's presentation focused on the development of intelligent radar and EW systems. He stated that radar systems have evolved from mechanical scanning to electronic scanning and that the technology is now moving towards a fully digital state. Current-generation radars can perform highly accurate, near-instantaneous scanning and can track several targets simultaneously. Dr Singh explained that modern military operations require holistic awareness across all domains and that contemporary radar systems facilitate this. Their processing capabilities are increasingly augmented by AI, which can extract actionable intelligence from vast quantities of data near-instantaneously, reducing the cognitive load on radar operators. He then discussed adaptive radar systems, which are another breakthrough in modern radar technology, enabled by AI. These can dynamically recalibrate their operating parameters in real time, quickly reacting to changes such as signal interference, shifting weather conditions or evasive manoeuvres. They can also detect stealthy or camouflaged enemies that older systems

might have missed. Dr Singh framed the synergy between AI and radars as a force multiplier that enhances the effectiveness of radar operators under high-stress, information-rich conditions, rather than a replacement for the human element.

The speaker explored advancements in radar hardware, using the case of the Uttam Radar. He explained that Astra required Monolithic Microwave Integrated Circuit (MMIC) chipsets for the project, which were requested from an American supplier but were denied. Therefore, Astra set out to develop the chipsets indigenously and was successful without needing to take R&D funding from any entity. The chips became the backbone of the Uttam Radars as well as all the AESA radar systems being produced in India currently. He also discussed miniaturization technology, which allows powerful sensors to be installed on small platforms such as drones, tactical ground vehicles and even shoulder-mounted systems. This flexibility dramatically expands where and how radars can be deployed, enabling new operational concepts such as persistent surveillance by UAV swarms or rapid battlefield reconnaissance.

Dr. Singh then discussed network-centric and multifunctional capabilities of modern radars. Modern warfare is based on networks and current-generation radar systems reflect this paradigm. Today's radars are not isolated sensors, but rather integral nodes in a network-centric warfare ecosystem. Data collected by the systems is shared instantly across several platforms and command posts via secure links, developing a comprehensive operational picture. Additionally, multifunctional radar systems consolidate the roles of surveillance, targeting, fire control and missile guidance into a single unit, which reduces the logistical footprint of ground-to-air operations and streamlines responses. By layering space-based, airborne, and ground radars, persistent overlapping coverage is achieved.

Continuing his presentation, the speaker addressed the future trajectory and projected strategic impact of military radars. He stated that the future of military radar systems is autonomous and AI-driven. Dr Singh invited the audience to imagine radar systems capable of not just detecting threats but also of suggesting or initiating countermeasures immediately. Such autonomy will be vital in high-speed, high-stakes environments where human reaction time is insufficient. He believes that interoperability will also be a key focus area for radar refinement. As collaborative operations become standardised, harmonising radar data formats and protocols

will ensure smooth sharing across groups. Finally, integrated radar systems will enable the successful execution of a wide range of missions, from unmanned border monitoring through radar-equipped drones to extending missile defence shielding to entire regions. The speaker ended his presentation by stating that Astra and DRDO are hard at work innovating radar technology and EWS, and by issuing a call for both greater self-reliance and self-leadership in India's R&D.

Plenary Keynote Address by Air Vice Marshal Tejpal Singh, AVSM, VM, ACAS (Plans), on 'Futuristic Capabilities for Indian Air Force'

Air Marshal Singh's keynote address foregrounded the importance of self-reliance in India's defence R&D. He began by stating that the Indian Air Force has always looked at self-reliance and that the organisation's future requirements flow from the current shortfall in combat squadrons and other combat assets, along with India's rapidly shifting security landscape. Looking at the future of India's fighter fleet, the speaker highlighted a recently signed contract for 97 new LCA Mk1As, bringing the total order for the aircraft at the time of the address to 180 units. This is in addition to the 40 that were already in service. He explained that the LCA Mk2 and the AMCA, which are under development, will require a jump in generational capability to keep up with the sixth-generation fighters being produced around the world. He expressed confidence in the ability of the Indian Air Force and DRDO to achieve this collaboratively with partnerships from the private sector, and encouraged private sector organisations to reach out to the Air Force.

The Air Marshal stated that advanced radars, COMINT, SIGINT and other systems are all going to be produced in India, through collaboration between DRDO, private sector organisations and Defence Public Sector Undertakings (DPSUs). He mentioned that air-to-air and air-to-ground weapon systems are already being produced indigenously and expressed happiness at the increasing presence of private sector organisations in their development. Reiterating the potential for private sector partnerships, the speaker stated that there are several EW and communication development programmes currently being undertaken by DRDO and DPSUs, and that it is an opportune moment for Development-cum-Production Partners (DCPPs)

to get involved. He highlighted the prospect for an indigenously produced aero engine for fighter aircraft, reminding the audience that a greater number of nations have gone to space than those that have successfully accomplished this task. The Air Marshal stated that DRDO has taken the lead here, but there is large bandwidth for private sector partnerships. He concluded his address by acknowledging the hard work of Micro, Small and Medium Enterprises (MSMEs) and reiterated the importance of collaborative R&D in India's defence sector to build self-reliance.

Session II: Unmanned Aerial Systems & Counter Drone Technologies

Session Moderator: Air Vice Marshal Ashish Singh VM VSM ACAS Ops (Remote), Indian Air Force

The second session was moderated by Air Marshal Ashish Singh, who has over 4,000 flying hours on aircraft including the MIG21 and Mirage 2000. He's a qualified internal pilot on the Searcher Remotely Piloted Aircraft (RPA) and a Category 'A' Flying Instructor. Currently he serves as Assistant Chief of Air Staff (ACAS) Operations (Remote) at Air Headquarters. He holds a BSc from Delhi University, an MSc in defence studies from Madras University, and an MIL and PhD in military strategy from the School of Advanced Air and Space Studies in Montgomery, the United States.

The speaker discussed Unmanned Aerial Systems (UAS) from the position of technological momentum, explaining that in the initial stages of a technology's development, its growth is affected by society, but as it gathers momentum, it starts to affect society. He believes that UAS technology in India has not reached a desirable level of development because it hitherto lacked a community it could shape. As the Indian Air Force has created a remote vertical, he believes that UAS technology is now going to grow and proliferate within India rapidly and will shape defence R&D in the near future.

Wing Commander JS Virdi, Wg Cdr Ops RPA, Indian Air Force, on 'Indian Air Force: Roles & Vision of UAS and C-UAS'

The Wing Commander informed the audience that as of 2025, the Indian Air Force utilises Medium Altitude Long Endurance (MALE) UASs for surveillance, intelligence and reconnaissance. They are also being employed towards battle damage assessment and combat search and rescue operations. The speaker went on to say that the Indian Air Force would like to see more UASs being produced domestically. The Indian Air Force is also interested in accessing diverse payload capabilities and EW capabilities in UASs. Wing Commander Virdi projected that soon, the Indian Air Force would have UASs equipped with AI that can be launched from anywhere in the countryside. UASs in India will also be standardised across the tri-services.

The speaker explained that the Indian Air Force is using Counter-UASs (Counter-UASs) for military-based defence, vital area and vital point protection and mobile asset protection in forward areas. The Air Force is taking steps towards developing a C-UAS grid and is also looking into developing HPL technology for C-UASs. The Wing Commander ended his presentation by mentioning that the Indian Air Force wants the Indian defence R&D industry to develop Electro-Optical (EO) Payloads and autopiloting chips, and that indigenising the production of these critical elements will make their usage sustainable.

Gp Capt Harsh Vardhan Thakur (Retd), Chief Test Pilot, Hindustan Aeronautics Limited (HAL), on Combat Air Teaming System (CATS) UAV

The Group Captain discussed the CATS Warrior in his presentation. He explained that it is a two-tonne manned-unmanned aircraft that is currently being ground tested and will likely go airborne in 2026. The speaker played a video featuring a team of CATS Warriors mid-operation. Lastly, he explained that there is also a heavier, ten-tonne variant of the aircraft that is currently in the design phase.

Ms Tanvi Prakash, DGM - Technology & Innovation Centre, L&T Precision Engineering & Systems, on Indigenous Development of Target UAVs

Ms Prakash's presentation focused on the TEER UAV. She began by telling the audience that TEER UAVs are aerial targets designed for the training of gunners and air defence system operators. The TEER has a top speed of 130 m/s and a maximum altitude of 5000 m but has been tested to 6300 m. Its manoeuvrability is around 2G and it possesses endurance for 1 hour; however, the speaker has flown it for up to 70 minutes. The TEER takes off from a launcher and is recoverable by parachute.

The team behind TEER is 100% Indian, and the UAV itself is 80% indigenous. While the engine is imported, there are plans to manufacture it in India. The design programme was begun in 2020 and was completed in 2023. Lockdown caused hindrances to the TEER's testing, but the team remained undeterred and, as of 2025, possesses certification from DRDO and has completed 70 successful flights. The TEER team is looking at producing around 50 aircraft per month and will be delivering them to the IAF soon.

Mr Vinod Yadav, AVP & Head - Optronics & Computing Platforms, Tata Advanced Systems Limited, on Counter Drone Technology

Mr Yadav began his presentation by mentioning that the Tata company has been in business for over 100 years and has been working with the Indian defence forces for over 40 years. He explained that TASL has four verticals - an aerospace vertical, an airborne platforms vertical, a weapons and sensors vertical and a land mobility vertical. He told the audience that Tata has in-house facilities for R&D, including EMI / EMC facilities. TASL is providing the Indian military with cooled and uncooled electronic products, medium and long range weapon solutions and observation systems that have ranges of 20 km, 40 km and more.

The speaker then discussed TASL's counter-drone solutions. He explained that they are approaching it in a three-pronged manner. The first is active solutions whereby operators will be able to use a radar with direction finders and jammers to carry out soft kills on drones. These are also being integrated into Remote Control Weapon Systems (RCWS). The second method is passive solutions, which are geared towards providing Indian forces posted at the border with the coordinates of incoming drones during wartime. Finally, TASL is working on integrating

counter-drone technology with pre-existing weapon systems such as the L/70 and ZU-23 anti-aircraft guns.

Col Aravind Mulimani (Retd), Vice President of Projects (Air Defence), Zen Technologies Limited, on Counter Drone Technologies

The Colonel began his presentation by exploring possible targets for high-volume, low-tech drone attacks. These include ports, refineries, critical industrial infrastructure, spaces of public congregation. He mentioned that there is increasing concern over the effectiveness of counter-drone technologies, as it is difficult to predict where and how the threat will emerge. Hence, defence systems need to be multi-layered and spread over a wider area. The speaker explained that sensors that have RF detection, active detection, electro-optical detection, IR detection and passive detection must be layered with soft kill and hard kill capabilities. Additionally, modern drones use dynamic and unconventional frequencies that go outside standard ISM (Industrial, Scientific and Medical) bands; therefore, counter-drone systems must carry wideband RF detection capabilities.

The Colonel stated that the Indian defence R&D's drone development is achieving parity with global standards. Zen Technologies has been operating for over 3 years and has delivered 70 MHz to 6 GHz wideband without any gap. The company is completely indigenous and provides complete end-to-end counter-drone solutions. In case of complaints, technicians are on-site between 24 and 48 hours and always manage to fix the issue. The company receives 90% of their orders from repeat customers and has offices in the U.S. and the U.A.E. Zen Technologies is also the only vendor in India that has successfully implemented a hard kill-solution with a 40 mm gun.

Q&A Session & Remarks by Session Moderator

The points raised in the question and answer session touched upon HAL's UAV capabilities, the TEER UAV and counter unmanned aerial systems. HAL will be able to arm UAVs soon. There are some new rules emerging regarding UAVs in India. In keeping with this, the specificities of R&D are still being worked out. Secondly, the Radar Cross Section (RCS) of

the TEER UAV is in line with Indian defence specifications. Finally, a prerequisite to have a robust counter unmanned aerial system is a battery life of 24 hours. Many such systems are only having a battery life of 8 - 10 hours, which reduces the surveillance cycle.

Air Vice Marshal Ashish Singh's remarks summed up the presentations of the speakers. He also reminded the audience that UAVs are aircraft and must work as per the operational doctrines of how air power works best. The moderator added that UAVs needn't be expensive. Cheaper, niche solutions may provide better outcomes for specific use cases. Additionally, AI will be critical for effective UAVs in the near future. The Air Vice Marshal also stated that it is natural for companies in India's defence R&D sector to view each other as competitors; however, to compete on the global scale, they must cooperate. Finally, he explained that UAS, like all military technologies, have an offence-defence curve. Currently, the offensive capabilities of UASs are advanced while their defensive capabilities are somewhat lacking. This is an area that needs improvement.

Session III: Development of Indigenous Air-to-Ground Missiles & Long-Range Precision Guided Munitions & Loitering Munitions

Session Moderator: Air Vice Marshal Ashish Srivastava VM VSM ACAS Proj, Indian Air Force

The Moderator began by highlighting three keywords central to the session: long-range, precision-guided munitions and the panellists. He further elaborated on how long-range was defined by the enemy's capabilities. He explained that any advancements made here should focus on a range that could protect both the pilot and the aircraft. Precision-guided missiles are essential, but they are expensive, and it is explained that one might not get a second chance to hit the target. He emphasised the need for strategic autonomy and for making India Atmanirbhar in the aerospace sector and the vision of 2047, considering our neighbours and our need to protect ourselves. Emphasising the significance of the munitions, he talks of the scope of minimising collateral damage and the precision that these weapons bring to India's capabilities. Reiterating

the importance of strategic autonomy, the moderator emphasised that it will give us the freedom to use a weapon when and how we see fit.

Presentation by Mr VK Kabra, Scientist G, EO, SAAW, Research Centre Imarat (RCI), DRDO on DRDO Development & Industry Participation

The presenter laid out the agenda for his talk and explained his focus on DRDO's engagement with the industry, as well as their expectations for industry collaboration in terms of developing technology and making it functional. He also provided an update on the technology the DRDO was working on and how the DRDO collaborated with private industries in relevant sectors. For the development of on-board systems or subsystems, engagement with industries is focused on MSMEs with appropriate expertise in the area. DRDO places orders in limited quantities and assembles itself. He explained how all the patents available on DRDO website could be used by Indian Industry, free of cost, and how DRDO was willing to support the Indian industry with regards to relevant 'know how' in the form of Technology Transfer Documents and handholding support and also its willingness to export products developed through DRDO support.

Presentation by Wg Cdr Nilesh Jahagirdar, Wg Cdr ASR, Indian Air Force on "Desired Outcome with Maximum Precision: Roadmap of Indigenised LRPGMs

The presenter, explaining the history of Long-Range Precision Guided Missiles (LRPGMs), mentioned how they were considered niche technologies by developing nations and exporting nations a few decades ago. There were numerous restrictions regarding the transfer of technologies, production in India, and mid-life upgrades and life-cycle support, especially considering that the PGMs are used only once but need support during testing. They were imported in limited quantities due to cost, and faced challenging obsolescence management issues; mid-life upgrades were very challenging. As a result, only a very few of these missiles could be spared for live exercises; however, with the concerted efforts by the DRDO in the past decade towards indigenization and their partnership with the Indian Air Force for integration and test firing. He also emphasised that the adoption of DAP 2020 opened new paradigms for the

Indian industry to participate in the development of LRPGMs and on the 'Make' and 'Buy & Make' projects for the private sector. Speaking of the challenges, he mentioned how the adversaries' infrastructure was being fortified. Also, how the vulnerable area and points were being shifted to challenging and deeply built targets. And how the adversary's air defence capabilities are constantly being upgraded, which has shifted the paradigm, and how the global focus has also shifted to focusing on collateral civilian casualties.

Presentation by Mr Rahul Tripathi, Additional General Manager, BrahMos Aerospace on Brahmos Air Version Realization & Potential

The presenter, talking of BrahMos Aerospace, explained that it was a joint venture between India's DRDO and Russia's NPOM (NPO Mashinostroyeniya), with joint design, development, manufacturing, and marketing. The BrahMos Air Version is capable of being launched from an aircraft and can be fired frompresently from the Su-30 MKI. He also mentioned the BrahMos weapon system, which is functional on a ship platform where the induction started from the year 2005. Till now, 25 ships have been installed with the BrahMos Weapons system, a land platform where induction began in 2007. Till now, four regiments have been operationalised; they are used on a mobile command post, light combat support vehicle, and even a mobile autonomous launcher. The air platform was inducted in 2019. Since then, the aircraft has been successfully modified and installed with Brahmos-A, and the 'Tigersharks' squadron has been operationalised.

Presentation by Gp Capt MS Pundir (Retd), Deputy General Manager (Mktg & BD), Bharat Dynamics Limited

The presenter began with a brief introduction to Bharat Dynamics Limited, a defence public sector undertaking, which is a multi-product, multi-location, and multi-customer company specialising in weapon system integration. Highlighting the key activities undertaken by the company involved products under the transfer of technology/ design cum production partner (DcPP) from DRDO, and products under the transfer of technology from Foreign Original

Equipment Manufacturers (FOEMs), products from In-house R&D, collaboration with startups and MSMEs, product facilities during setting to work and warranty, obsolescence management and upgrades of these products, life extension and refurbishment of products. He also elaborated on the products by Bharat Dynamics Limited, such as Akash Weapon System, ASTRA Weapon System, Smart anti-airfield weapon (SAAW), Light weight and heavy weight Torpedo, countermeasure Dispensing system (CDMS), NAG ATGM, Amogha-III ATGM, KONKURS-M ATGM, Swam drones & anti-drone system, and Le/Refb of missiles.

Closing Address by Air Vice Marshal Anil Golani (Retd), Director General, CAPSS

In his closing address, the speaker began by appreciating the patience of the audience through a long say of discussions and learning, highlighting the three critical sessions that talked of intelligent electronics and advanced communication systems, unmanned aerial systems & counter drone technologies, and development of indigenous air-to-ground missiles & long-range precision guided & loitering munitions. He also emphasised the need to work on the indigenisation aspects that were put forward by the Deputy Chief of Staff, Indian Air Force, during his inaugural address. He also emphasised the need to stop working in silos, to harness the full potential of the industry, as well as the Indian Air Force, and to invest more in R&D and 'Make in India'. He presented the conference, jointly organised by FICCI and CAPSS, as an ideal platform for people to come together and engage in substantial conversations to help lay out the roadmap for development.

Conclusion

AeroTech 2025 set a clear roadmap for India's aerospace indigenisation, which includes accelerating R&D with revolutionised infrastructure, prioritising core technologies (sensors, seekers, hypersonics, and quantum), mandating full self-reliance within defined timelines, and deepening synergies among government, industry, and academia. Achieving these goals will define India's aerospace power by its centenary year, ensuring the nation not only defends but also defines the skies.