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DESIGNING FOR JOINT OPERATIONS: WHY INTEROPERABLITY MUST COME FIRST WITHIN THE INDIAN CONTEXT

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Executive Strategic Assessment: The Geopolitical and Operational Imperative

The strategic landscape of the Indian subcontinent has undergone a tectonic shift in the twenty-first century, necessitating a fundamental reimagining of how the Indian state projects military power. For decades, the Indian Armed Forces the Army, Navy, and Air Force have operated as distinct, siloed entities, united by a common national flag but divided by divergent doctrines, logistical chains, and command structures. This segregated approach, while sufficient for the limited conflicts of the past, is increasingly untenable in the face of a rapidly modernizing People's Liberation Army (PLA) and a persistently hostile Pakistan. The prospect of a "two-front war," or more accurately, a collusive threat where adversaries coordinate military actions across the Himalayas and the western borders, demands a response that is not merely additive but multiplicative. The sum of the three services must be greater than their individual parts.

The core argument of this paper is that while the structural reform of creating Integrated Theatre Commands (ITCs) is the visible face of this transformation, the underlying, invisible fabric of interoperability the technical, procedural, and cultural capacity of the services to operate as a single organism must take precedence. Without a robust Command, Control, Communications, Computers, Intelligence, Surveillance, and

Reconnaissance (C4ISR) backbone that is interoperable by design, theaterisation risks creating hollow administrative shells rather than potent warfighting commands. The transition from "jointness" which implies cooperation between separate entities to "integration", which implies a seamless fusion of capabilities, is the critical path for India's defence modernization.[1]

This paper provides a comprehensive analysis of the current state of joint operations in India, evaluating the structural reforms initiated by the Chief of Defence Staff (CDS), the legislative enablement through the Inter-Services Organisations Act, and the critical technological bridges being built through projects like the Indian Radio Software Architecture (IRSA) and the Defence Communication Network (DCN). It culminates in targeted recommendations for Indian ministries and agencies to accelerate this transition, ensuring that interoperability moves from a buzzword to a battlefield reality.

The Institutional Architecture of Reform: From Disaggregation to Integration

The journey toward joint operations in India has been paved with the lessons of past conflicts. The Kargil Review Committee (1999) and the subsequent Group of Ministers Report (2001) were the first to starkly highlight the deficiencies in inter-service coordination, noting that the Army and the Air Force fought the Kargil war with significant disconnects in intelligence sharing and operational synchronization.[2] It took nearly two decades for these recommendations to crystallize into the creation of the Chief of Defence Staff (CDS) and the Department of Military Affairs (DMA) in 2019, marking the most significant higher defence management reform since independence.

- **The Strategic Role of the Chief of Defence Staff and DMA**

  The establishment of the CDS was not merely the creation of a new rank but the institution of a dual-hatted authority designed to bridge the civil-military and inter-service divides. As the Permanent Chairman of the Chiefs of Staff Committee (COSC), the CDS is the principal military advisor to the Raksha Mantri (Defence Minister) on tri-service matters. Simultaneously, as the Secretary of the newly created Department of Military Affairs (DMA), the CDS wields administrative

authority within the Ministry of Defence (MoD), empowering the military to directly manage its affairs regarding procurement, training, and staffing. [3]

The DMA's mandate is explicit: to promote jointness in procurement, training, and staffing, and to facilitate the restructuring of military commands for optimal resource utilization.[4] By 2025, the impact of the DMA has been visible in the acceleration of reforms that were previously stalled by bureaucratic inertia. The CDS has been pivotal in driving the consensus for theaterisation, moving the conversation from "if" to "how" and "when".[5] Furthermore, the CDS is tasked with assigning inter-service prioritization to capital acquisition proposals. This function is critical for interoperability, as it allows the CDS to veto single-service procurements that do not meet joint standards or that duplicate existing capabilities a frequent occurrence in the pre-CDS era where the Army and Air Force would independently procure similar air defence radars or helicopters without common data links.[6]

- **Legislative Enablement: The Inter-Services Organisations Act, 2023**

  A structural reform of the magnitude of theaterisation requires a robust legal framework. Prior to 2023, the Indian military operated under three separate Service Acts the Army Act (1950), the Navy Act (1957), and the Air Force Act (1950). These acts created a legal silo where a commander from one service had no disciplinary or administrative power over personnel from another. For instance, in the Andaman and Nicobar Command (ANC), India's first tri-service command, the Commander-in-Chief (CINCAN) faced significant administrative friction because he could not directly discipline officers from a different service under his command, relying instead on their parent service headquarters.[7]

  The enactment of the Inter-Services Organisations (Command, Control and Discipline) Act, 2023, and its operationalization through rules notified in May 2025, has dismantled this barrier. The Act empowers the Heads of Inter-Services Organisations (ISOs) with full administrative and disciplinary control over all personnel serving under them, regardless of their parent service. [8]

- **Operational Impact:** This legislation is the bedrock of future Integrated Theatre Commands (ITCs). It ensures that a Theatre Commander has the legal authority to move, discipline, and administer his forces as a cohesive unit. Without this Act, a Theatre Commander would be a "toothless tiger," reliant on goodwill rather than authority. [9]
- **Resource Optimization:** The Act also facilitates the pooling of resources. Personnel, vehicles, and equipment can be cross-deployed within an ISO without complex administrative red tape, leading to significant savings and operational flexibility.[10]

- **The Shekatkar Committee Implementation: A Status Report**

  The groundwork for these reforms was laid by the Committee of Experts aimed at enhancing combat capability and rebalancing defence expenditure, chaired by Lt. Gen. D.B. Shekatkar (Retd). Submitted in 2016, the committee's recommendations have been systematically implemented to trim the "fat" and sharpen the "teeth" of the armed forces.[11]

  - **Restructuring:** Key implementations include the optimization of Signals establishments, the closure of Military Farms and Army Postal Establishments in peace locations, and the restructuring of repair echelons (base workshops).
  - **Significance for Jointness:** The committee specifically recommended the conversion of the Military Intelligence School at Pune into a tri-service intelligence training establishment and the setting up of a Joint Services War College. [12] These steps are crucial for breeding a cadre of officers who speak a common intelligence and operational language. The closure of redundant single-service logistics units paves the way for the integrated logistics nodes that are now being operationalized.[13]

Operationalizing the Theatre Commands: Structure and Strategy

The operational end-state of these reforms is the transition from 17 single-service commands to a streamlined structure of Integrated Theatre Commands (ITCs). This shift is driven by the need to unify the warfighting effort against specific geographical threats.[14]

- **The Proposed Command Architecture**

  Current planning indicates the establishment of three primary adversary-centric theatre commands by 2025-2026 as per the ANI report[15]:

  - **Northern Theatre Command (NTC):** Headquartered in Lucknow, the NTC is designed to counter the threat from China along the 3,488 km Line of Actual Control (LAC). It involves the integration of the Army's Northern, Central, and Eastern Commands with the IAF's Western, Central, and Eastern Air Commands.[16] The strategic logic is to place all assets required to fight a high-altitude mountain war infantry, mountain strike corps, heavy-lift helicopters, and air superiority fighters under a single commander who can orchestrate a synchronized land-air campaign.
  - **Western Theatre Command (WTC):** Headquartered in Jaipur, the WTC focuses on the Pakistan border. It integrates the Army's Western, Southern, and South-Western Commands with the relevant IAF assets. The operational focus here is on rapid mobilization and deep strike capabilities.[17]
  - **Maritime Theatre Command (MTC):** Headquartered in Thiruvananthapuram, the MTC unifies the Eastern and Western Naval Commands along with the Andaman and Nicobar Command (ANC) and relevant Air Force maritime assets. [18] This command is pivotal for India's strategy to dominate the Indian Ocean Region (IOR), ensuring the protection of sea lanes and countering the growing PLAN presence.

- **The Air Power Debate: Centralization vs. Distribution**

  The most significant friction point in the theaterisation process has been the divergence in doctrine between the Indian Air Force (IAF) and the other services.

The IAF has historically argued that air power is indivisible and relies on the flexibility to swing assets rapidly between fronts. Given India's limited number of fighter squadrons (hovering around 30 against a sanctioned strength of 42), the IAF fears that "penny-packets" of air assets distributed permanently to theatre commanders would dilute its strategic punch and reduce the ability to concentrate force at a decisive point. [19]

However, the counter-argument, which has gained traction with the CDS and the Army, is that modern warfare, particularly in the littoral and mountainous terrain, requires instantaneous response times that can only be achieved if the air assets are organically available to the theatre commander. The "tactical sky" is now crowded with drones, loitering munitions, and helicopters, all of which require tight deconfliction with artillery and ground maneuvers. A theatre commander cannot afford to request air support through a long chain of command to Air HQ in New Delhi; the assets must be responsive to the tactical reality of the theatre.[20] The evolving consensus points towards a model where the Theatre Commander has operational control, while the Air Chief retains the responsibility for raising, training, and sustaining the force.[21]

The Nervous System: C4ISR and Digital Interoperability

If ITCs are the body of the new Indian military, the C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) architecture is the nervous system. Without a unified digital backbone, the co-location of Army and Air Force officers in a headquarters remains cosmetic. The history of Indian defence procurement is littered with proprietary systems that could not communicate the "Tower of Babel" effect where radio sets from different vendors were incompatible.[22]

- **The Defence Communication Network (DCN)**

  The **Defence Communication Network (DCN)**, operationalized as a strategic tri-service network, represents the first major success in bridging the digital divide. Developed by HCLTech with a project value of ₹600 crore, the DCN provides a secure, converged voice, data, and video backbone that connects the Integrated

Defence Staff (IDS), the Strategic Forces Command (SFC), and the disparate command headquarters of the three services. [23]

- **Strategic Function:** It enables the sharing of a Common Operational Picture (COP) at the highest levels, ensuring that the CDS, Service Chiefs, and Theatre Commanders are looking at the same map and the same intelligence data in real-time. It moves the services away from using insecure civilian networks or disparate dedicated links. [24]

- **Network for Spectrum (NFS)**

Supporting the DCN is the massive Network for Spectrum (NFS) project. Following the vacating of 3G spectrum by the armed forces for civilian use, the government approved a dedicated optical fibre backbone for the military.

- **Scale:** The project involves laying over 60,000 km of optical fibre cable (OFC) to connect 414 defence stations across the country.[25]
- **Impact:** This high-bandwidth infrastructure is the "highway" upon which the heavy data traffic of modern warfare HD drone feeds, satellite imagery, and secure video conferencing travels. It provides the resilience and redundancy required for a network-centric force.[26]

- **Technical Standardization: Indian Radio Software Architecture (IRSA)**

Perhaps the most technically significant development for tactical interoperability is the release of the Indian Radio Software Architecture (IRSA) Standard 1.0 by the DRDO in October 2025.[27] In the past, radio hardware and software were tightly coupled, leading to vendor lock-in and incompatibility.

- **The Innovation:** IRSA introduces a standardized software layer for Software Defined Radios (SDRs). It defines standardized interfaces, APIs, and execution environments, allowing for "waveform portability".[28]
- **Operational Benefit:** A secure communication waveform developed for the Air Force can now be "ported" to an Army radio without changing the hardware. This ensures that a soldier on the ground can communicate

securely with a naval marine or an air force pilot, provided they are using IRSA-compliant SDRs. This breaks the silos of proprietary encryption and modulation standards.[29]

- **Integrating the Air Defence Picture: Project Akashteer**

  One of the most critical domains for interoperability is Air Defence (AD). In a theatre conflict, the airspace is shared by IAF fighters, Army helicopters, Navy cruise missiles, and enemy drones. The risk of fratricide is high without a unified air picture.

  - **Project Akashteer:** The Indian Army has begun deploying *Akashteer*, an automated air defence control and reporting system. Crucially, Akashteer is designed to integrate with the IAF's Integrated Air Command and Control System (IACCS) and the Navy's Trigun system.[30]
  - **Sensor Fusion:** Akashteer aggregates data from Army radars and sensors and feeds it into the IACCS. This fusion creates a "Single Integrated Air Picture" (SIAP) for the entire theatre.[31]
  - **Sensor-to-Shooter Loop:** The system enables automated threat prioritization and assignment. A theatre commander can assign an Army surface-to-air missile to engage a target tracked by an Air Force radar, optimizing the use of interceptors and ensuring that no hostile aircraft slips through the gaps between service-specific radar coverages. [32]

- **Tactical Connectivity: Project Sambhav**

  At the tactical edge, the Indian Army has deployed Project Sambhav, an indigenous secure mobile ecosystem.

  - **Capabilities:** Operating on a 5G core with multi-layered encryption, Sambhav provides a secure, network-agnostic platform for communication. It features *M-Sigma*, a WhatsApp-like instant messaging app for file, image, and video sharing.[33]
  - **Jointness Potential:** While currently an Army initiative, plans are underway to expand Sambhav to the Navy and Air Force, creating a ubiquitous

"Tactical Internet" for the armed forces. This capability was famously utilized during border talks with China to ensure secure, real-time reporting to higher HQs.[34]

- **The Cancellation and Revival of BMS/TCS**

  The path to digitization has not been linear. The Battlefield Management System (BMS), intended to digitize the infantry battalion, was foreclosed in 2018 due to prohibitive costs estimated at ₹50,000 crore.[35] This left a gaping void in the tactical C2 capabilities. However, the requirement has been revived through the Tactical Communication System (TCS).

  - **Current Status:** In 2024-25, the Army issued Project Sanction Orders (PSOs) to Indian vendors (like BEL) for the design and development of TCS prototypes under the "Make-I" category.[36]
  - **Objective:** TCS aims to replace the legacy AREN system with a modern, high-bandwidth, mobile communication grid that supports voice, data, and video in a jammed electronic warfare environment. It is the "tactical internet" that will eventually ride on the IRSA standards.[37]

Functional Integration: Cyber, Space, and Special Operations

Modern warfare extends beyond the physical domains of land, sea, and air into the cognitive, cyber, and space domains. The establishment of functional tri-service agencies represents the first phase of theaterisation integration by function rather than geography.

- **Defence Cyber Agency (DCyA)**

  The DCyA, operational since 2021, serves as the nodal agency for military cyber operations, coordinating the Cyber Emergency Response Teams (CERTs) of the three services.[38]

  - **Doctrine:** The release of the *Joint Doctrine for Cyberspace Operations* in August 2025 marked a maturing of India's cyber posture. It outlines a unified approach to defending national cyberspace and integrating offensive cyber capabilities into kinetic operations.[39]

- **Operational Readiness:** The DCyA conducts major exercises like *Cyber Suraksha*, which in 2025 involved over 100 participants from defence and civilian agencies (CERT-In, NCIIPC) to simulate real-world threats like ransomware on critical infrastructure and data breaches.[40]
- **Capability:** The agency is tasked with developing niche capabilities in hacking, surveillance, and crypto-analysis, moving India from a purely defensive posture to one of "active defence" and deterrence. [41]

- **Defence Space Agency (DSA)**

  The DSA amalgamates the space assets of the three services, managing India's military satellite capabilities.

  - **Assets:** It controls dedicated military satellites like GSAT-7 (Rukmini - Navy), GSAT-7A (Angry Bird - IAF), and the upcoming GSAT-7B for the Army.[42] These assets provide the "eyes in the sky" for surveillance and the communication links for UAVs.
  - **Exercises:** The DSA conducts *IndSpaceEx* and *Antariksha Abhyas* to simulate space warfare scenarios. These exercises wargame threats to space-based assets (ASAT weapons and jamming) and test the resilience of India's space architecture.[43]
  - **Civil-Military Fusion:** The DSA collaborates closely with ISRO and the private sector. Through iDEX challenges, it is funding startups to develop "Launch on Demand" capabilities and small satellites (SmSats) that can be rapidly deployed to replace disabled assets during a conflict.[44]

- **Joint Special Forces and Exercises**

  Interoperability is also being forged in the crucible of special operations.

  - **Exercises:** India's engagement with foreign partners often focuses on Special Forces interoperability. *Exercise Vajra Prahar* (with US Special Forces) and *Exercise Desert Cyclone* (with UAE Land Forces) specifically target urban combat, sub-conventional operations, and counter-terrorism.[45]
  - **Significance:** These exercises validate the ability of Indian special forces

to operate with diverse equipment and tactics, a skill set that is transferable to joint operations within India. The *Joint Doctrine for Special Forces Operations* released in 2025 further standardizes the employment of SF units across the services.[46]

Logistics and Supply Chain: The Backbone of Sustainability

"Amateurs talk strategy; professionals talk logistics." In a theatre command, logistics must be unified to prevent duplication and waste.

- **Joint Logistics Nodes (JLNs)**

  The establishment of Joint Logistics Nodes (JLNs) is a tangible step towards integrated logistics.

  - **Locations:** Three JLNs are currently operational at Mumbai, Guwahati, and Port Blair.[47]
  - **Function:** These nodes provide integrated logistics cover for small arms ammunition, rations, fuel, general stores, civil hired transport, and engineering support. Instead of the Army and Air Force maintaining separate supply depots in the same city, they draw from a single JLN.
  - **Benefit:** This reduces the "tail" (logistics footprint) and ensures optimal resource utilization. A Navy ship docking in Mumbai can be resupplied by the Army-managed JLN, breaking the service silo. [48]

- **The Inventory Management Gap**

  Despite the physical co-location at JLNs, a significant digital gap remains. The services continue to use disparate inventory management systems that do not "talk" to each other effectively.[49]

  - **Challenge:** There is no "Total Asset Visibility" (TAV) across the theatre. A Theatre Commander may not know that a critical spare part needed for an Army helicopter is sitting in a nearby Air Force depot because the inventory databases are not linked.
  - **Requirement:** The immediate implementation of a unified Enterprise

Resource Planning (ERP) system, likely based on commercial standards (like SAP) but hardened for defence, is critical to realize the full potential of JLNs.[50]

Procurement and the Industrial Base: Enabling Interoperability

Interoperability is as much a procurement challenge as it is an operational one. If the services buy disparate platforms, they fight as disparate forces.

- **Defence Acquisition Procedure (DAP) 2020**

  The DAP 2020 has introduced mechanisms to enforce standardization.

  - **Prioritization:** The CDS plays a central role in prioritizing capital acquisitions. By vetting the Annual Acquisition Plans (AAP), the CDS ensures that funds are directed towards capabilities that serve the joint force.[51]
  - **Indigenization:** The push for "Buy (Indian-IDDM)" reduces reliance on foreign proprietary standards. When India designs its own radios (via IRSA) or air defence systems (Akashteer), it owns the source code and the intellectual property, allowing for seamless integration that is often impossible with "black box" foreign imports.[52]

- **Innovation for Defence Excellence (iDEX)**

  The iDEX initiative is effectively crowdfunding innovation for interoperability.

  - **Targeted Challenges:** iDEX has launched specific challenges for "High Bandwidth Underwater Communications" (crucial for Navy-submarine links) and "Secure Datalinks for RPVs".[53]
  - **International Collaboration:** Under the INDUS-X initiative with the USA, iDEX is running joint challenges on maritime ISR. This not only enhances Indian capabilities but also ensures interoperability with strategic partners like the US Navy.[54]

- **The Non-Lapsable Fund Debate**

  A recurring obstacle to modernization is the lapsing of unspent defence budget funds at the end of the financial year.

  - **The Issue:** Complex modernization projects like the TCS or long-term infrastructure (NFS) have multi-year payment milestones. Lasped funds create uncertainty and delays.[55]
  - **Status:** While the 15th Finance Commission recommended a "Non-Lapsable Defence Modernisation Fund," its operationalization remains pending due to constitutional constraints regarding parliamentary authorization of funds. [56] Resolving this is essential for the sustained funding of interoperability projects.

The Human Element: Training and Doctrine

Technology and structures are useless without a "joint mindset." The cultural shift is arguably the hardest part of the reform.

- **Professional Military Education (PME)**

  The Defence Services Staff College (DSSC) in Wellington has overhauled its curriculum for the 80th Staff Course (2024-25).

  - **Curriculum Shift:** The focus has shifted from service-specific staff duties to "jointness and integration in warfare." The goal is to produce mid-level officers (Majors/Lt Cols) who are comfortable planning multi-domain operations before they assume command roles.[57]
  - **Joint Doctrines:** The release of the *Joint Doctrine for Cyberspace Operations*, *Joint Doctrine for Amphibious Operations*, and *Joint Doctrine for Multi-Domain Operations* in 2025 provides the intellectual framework. These documents create a common lexicon, ensuring that when an Army officer says "suppression," an Air Force officer understands exactly what is required.[58]

- **Joint Exercises**

  The tempo of joint exercises has increased to validate these doctrines.

  - **Prachand Prahar (2025):** Conducted in the high-altitude terrain of Arunachal Pradesh, this tri-service exercise validated integrated planning and the application of aviation assets in the Eastern Theatre. [59]
  - **Bharat Shakti:** A mega-exercise demonstrating the integrated firepower of the three services, showcasing the lethality of indigenous platforms working in concert. [60]

Recommendations for Indian Ministries and Agencies

To bridge the remaining gaps and accelerate the transition to fully integrated operations, the following actionable recommendations are proposed:

- **Ministry of Defence (MoD) & Department of Military Affairs (DMA)**
  - **Codify the Theatre Command Roadmap:** The DMA must release a formal "White Paper on Theaterisation" to clarify the command structures, asset allocation, and timelines. This will reduce internal anxiety and service-specific speculation. [61]
  - **Expedite the National Logistics ERP (Enterprise Resource Management):** The MoD should mandate the development of a unified, cloud-based Logistics Management System (LMS) that integrates the inventory databases of the Army, Navy, and Air Force. This should be treated as a strategic project on par with the DCN.[62]
  - **Resolve the "Five-Star" Rank Ambiguity:** The government must address the debate regarding the CDS's rank and authority. To effectively command Theatre Commanders (who are C-in-C level), the CDS's operational authority must be unambiguous and distinct from the administrative authority of the Service Chiefs.[63]

- **Defence Research and Development Organisation (DRDO) & Industry**
  - **Enforce IRSA Compliance:** The DRDO and DGQA must strictly enforce

IRSA standards for *all* future tactical radio procurements. No "proprietary" waveform radios should be inducted unless they can host IRSA-compliant software.[64]

- **Focus on "Middleware" Solutions:** Acknowledging the legacy fleet, R&D must prioritize "gateway" technologies that can translate data between Russian, Western, and Indigenous data links. This is the only viable bridge for the mixed fleet that India will operate for the next two decades. [65]
- **Scale iDEX for Jointness:** Launch a "Grand Challenge" under iDEX specifically for "Cross-Domain Data Fusion" algorithms that can merge sonar, radar, and optical data into a single display for the Maritime Theatre Command.

- **Headquarters Integrated Defence Staff (HQ IDS)**
  - **Standardize GIS Data:** The HQ IDS, through the Defence Space Agency, must mandate a "One Map" policy. All services must use a unified Geographical Information System (GIS) standard for blue/red force tracking to prevent coordinate errors during joint fires.[66]
  - **Institutionalize Joint Career Paths:** Service HQs must mandate that promotion to flag rank (One-Star and above) is contingent upon completing a tenure in a tri-service organization (ISO, DMA, or Joint Logistics Node). This will forcefully breed a culture of jointness. [67]

- **Ministry of Finance**
  - **Operationalize the Non-Lapsable Fund:** The ministry must work with the MoD to finalize the mechanism for the *Non-Lapsable Defence Modernisation Fund*. This is essential for the long-term financial health of capital-intensive integration projects.[68]

Conclusion

The path to joint operations for India is no longer a matter of debate but a matter of execution. The geopolitical reality of a two-front threat and the changing character of

warfare allow for no other option. The creation of the CDS, the ISO Act 2023, and the upcoming Theatre Commands are the necessary skeletal structure of this new force. However, as this report has argued, the muscle and sinew of this force is interoperability.

The successes of *Project Akashteer*, the *Defence Communication Network*, and the *Indian Radio Software Architecture* demonstrate that India is capable of building world-class interoperability solutions. The challenge now lies in scaling these isolated successes into a theatre-wide reality. By prioritizing the digital backbone, enforcing standardization in procurement, and fostering a culture of jointness through legislation and training, India can ensure that its armed forces are not just "joint by name," but "integrated by design," ready to meet the challenges of the 21st-century battlefield.

Data Appendix

Table 1: Key Enablers of Joint Operations (Status 2025-26)

Initiative	**Domain**	**Status**	**Operational Function**
ISO Act 2023	Legal	**Operational**	Grants disciplinary & administrative power to Joint Commanders. [69]
DCN	Comms	**Operational**	Strategic tri-service voice/video/data backbone connecting HQs. [70]

IRSA	Standard	**Released**	Software standard for SDRs to ensure waveform portability. [71]
Akashteer	Air Defence	**Deploying**	Army AD system integrating with IAF's IACCS for single air picture.
JLNs	Logistics	**Operational**	3 Nodes (Mumbai, Guwahati, Port Blair) for integrated supply. [72]
DCyA	Cyber	**Operational**	Nodal agency for offensive/defensive cyber ops & CERT coordination. [73]
Project Sambhav	Tactical	**Deploying**	Secure 5G mobile ecosystem for instant tactical communication. [74]

Table 2: Proposed Integrated Theatre Commands

Command	**HQ Location**	**Primary Focus**	**Composition Strategy**

Northern (NTC)	Lucknow	China (LAC)	Integrates Army Northern/Eastern/ Central Commands + IAF Western/Central/E astern Air Commands. [75]
Western (WTC)	Jaipur	Pakistan	Integrates Army Western/Southern /South-Western Commands + IAF Assets. [76]
Maritime (MTC)	Thiruvananthapur am	Indian Ocean	Integrates Eastern/Western Naval Commands + Andaman Nicobar Command + IAF Maritime Assets. [77]

Table 3: Key Joint Exercises (2024-2025)

Exercise	**Participants**	**Focus**	**Significance**
Prachand Prahar	Tri-Service	High-Altitude Warfare	Validated integrated planning in Arunachal Pradesh. [78]

Cyber Suraksha	Tri-Service + Civil	Cyber Defence	Simulation of ransomware attacks on critical infrastructure. [79]
IndSpaceEx	DSA (Tri-Service)	Space Warfare	Simulated ASAT and satellite protection scenarios.
Desert Cyclone	India-UAE	Urban/Desert Ops	Enhancing interoperability in sub-conventional warfare. [80]
Vajra Prahar	India-US	Special Forces	Joint mission planning and special ops tactics.[81]

DISCLAIMER

The paper is the author's individual scholastic articulation and does not necessarily reflect the views of CENJOWS, the Defence forces, or the Government of India. The author certifies that the article is original in content, unpublished, and it has not been submitted for publication/ web upload elsewhere and that the facts and figures quoted are duly referenced, as needed and are believed to be correct.

ENDNOTES

[1] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[2] Defence Reforms: A National Imperative - Brookings Institution, accessed January 2, 2026, https://www.brookings.edu/wp-content/uploads/2018/04/book-defence-reform-3.pdf
[3] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[4] Integrated Theatre Commands In India: Reforming Defence For The Future - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/integrated-theatre-commands-in-india/
[5] India's Shift to Theater Commands: Response Options for Pakistan - Stimson Center, accessed January 2, 2026, https://www.stimson.org/2024/indias-shift-to-theater-commands-response-options-for-pakistan/
[6] Cabinet approves creation of the post of Chief of Defence Staff in the rank of four star General - PIB, accessed January 2, 2026, https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1597425
[7] Integrated Theatre Command (India) - Wikipedia, accessed January 2, 2026, https://en.wikipedia.org/wiki/Integrated_Theatre_Command_(India)
[8] Integrated Theatre Commands In India: Reforming Defence For The Future - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/integrated-theatre-commands-in-india/
[9] Integrated Theatre Commands In India: Reforming Defence For The Future - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/integrated-theatre-commands-in-india/
[10] Inter-Services Organisations Act 2023 - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/inter-services-organisations-act-2023/
[11] Shekatkar Committee & Its Recommendations: Imp Points For UPSC! - Testbook, accessed January 2, 2026, https://testbook.com/ias-preparation/learn-about-shekatkar-committee
[12] Recommendations made by Shekatkar Committee, accessed January 2, 2026, https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=177071
[13] Recommendations made by Shekatkar Committee, accessed January 2, 2026, https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=177071
[14] After Consensus Building, Theatre Commands To Be A Reality In 2025? - Bharatshakti, accessed January 2, 2026, https://bharatshakti.in/after-consensus-building-theatre-commands-to-be-a-reality-in-2025/
[15] ANI, "Three Theatre Command Bases Identified, Military Affairs Dept Working to Integrate Forces for Future Wars," ANI News, July 3, 2024, accessed 16 April 2026, https://www.aninews.in/news/national/general-news/three-theatre-command-bases-identified-military-affairs-dept-working-to-integrate-forces-for-future-wars20240703214203/.
[16] Integrated Theatre Commands India 2026: A $20 Billion Military Upgrade, accessed January 2, 2026, https://indiapacificpost.com/integrated-theatre-commands-india-2026-roadmap/
[17] New rules to fast-track joint services commands | India News - Hindustan Times, accessed January 2, 2026, https://www.hindustantimes.com/india-news/new-rules-to-fast-track-joint-services-commands-101748457531624.html
[18] New rules to fast-track joint services commands | India News - Hindustan Times, accessed January 2, 2026, https://www.hindustantimes.com/india-news/new-rules-to-fast-track-joint-services-commands-101748457531624.html
[19] Integrated Theatre Commands In India: Reforming Defence For The Future - PWOnlyIAS,

accessed January 2, 2026, https://pwonlyias.com/current-affairs/integrated-theatre-commands-in-india/
[20] Do Arguments Against Military Theaterisation Stand Ground Against Its Critics? - CLAWS, accessed January 2, 2026, https://claws.co.in/do-arguments-against-military-theaterisation-stand-ground-against-its-critics/
[21] India's Tactical Sky Paradox: Theaterization, Land Warfare, And The Future Of Joint Command – Analysis - Eurasia Review, accessed January 2, 2026, https://www.eurasiareview.com/12122025-indias-tactical-sky-paradox-theaterization-land-warfare-and-the-future-of-joint-command-analysis/
[22] Single-Point Orders, Joint Fight: How June 2025 Reform Reshapes India's Theater Command Reality – Analysis - CLAWS, accessed January 2, 2026, https://claws.co.in/single-point-orders-joint-fight-how-june-2025-reform-reshapes-indias-theater-command-reality-analysis/
[23] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[24] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[25] Integration as a Catalyst for Operational Efficiency - CLAWS, accessed January 2, 2026, https://claws.co.in/integration-as-a-catalyst-for-operational-efficiency/
[26] Army Spectrum Network - SP's MAI, accessed January 2, 2026, https://www.spsmai.com/experts-speak/?id=837&q=Army-Spectrum-Network
[27] Roadmap for Network Centric Operations (NCO) - KPMG agentic corporate services, accessed January 2, 2026, https://assets.kpmg.com/content/dam/kpmg/in/pdf/2022/11/roadmap-for-network-centric-operations.pdf
[28] India enhances military communication with IRSA standard 1.0 - Army Technology, accessed January 2, 2026, https://www.army-technology.com/news/india-irsa-military-communication/
[29] DRDO Unveils Indian Radio Software Architecture 1.0 For Military Communication, accessed January 2, 2026, https://www.electronicsforyou.biz/industry-buzz/drdo-unveils-indian-radio-software-architecture-1-0-for-military-communication/
[30] Indian Radio Software Architecture (IRSA) Standard 1.0 - INSIGHTS IAS, accessed January 2, 2026, https://www.insightsonindia.com/2025/10/08/indian-radio-software-architecture-irsa-standard-1-0/
[31] The Akashteer–IACCS Combo - SP's Land Forces, accessed January 2, 2026, https://www.spslandforces.com/experts-speak/?id=1230&h=The-Akashteer-IACCS-Combo
[32] Akashteer: How India's invisible shield connects radars, sensors and C4ISR in real time, accessed January 2, 2026, https://www.wionews.com/photos/akashteer-how-india-s-invisible-shield-connects-radars-sensors-and-c4isr-in-real-time-1765796514904
[33] Akashteer: How India's invisible shield connects radars, sensors and C4ISR in real time, accessed January 2, 2026, https://www.wionews.com/photos/akashteer-how-india-s-invisible-shield-connects-radars-sensors-and-c4isr-in-real-time-1765796514904
[34] Indian Army Implements Custom SAMBHAV System for Secure Communication in Operation Sindoor - Shop SSBCrack, accessed January 2, 2026, https://shop.ssbcrack.com/blogs/blog/indian-army-implements-custom-sambhav-system-for-secure-communication-in-operation-sindoor
[35] SAMBHAV | Current Affairs - Shankar IAS Parliament, accessed January 2, 2026, https://www.shankariasparliament.com/current-affairs/sambhav
[36] Revealed: Why army shut down important project - Rediff.com, accessed January 2, 2026, https://m.rediff.com/news/special/revealed-why-army-shut-down-important-project/20180730.htm
[37] BEL Unveils First Prototype of Tactical Communication System For Indian Army, accessed January 2, 2026, https://www.indiandefensenews.in/2025/12/bel-unveils-first-prototype-of-

tactical.html
[38] Army Issues Project Sanction Order for New Tactical Communication System, accessed January 2, 2026, https://defence.in/threads/army-issues-project-sanction-order-for-new-tactical-communication-system.5035/
[39] Developments in Tactical Communications System in the Indian Army - SP's MAI, accessed January 2, 2026, https://www.spsmai.com/military/?id=3716&q=Developments-in-Tactical-Communications-System-in-the-Indian-Army
[40] Mapping India's Cybersecurity Administration in 2025, accessed January 2, 2026, https://carnegieendowment.org/research/2025/09/mapping-indias-cybersecurity-administration-in-2025?lang=en
[41] Mapping India's Cybersecurity Administration in 2025, accessed January 2, 2026, https://carnegieendowment.org/research/2025/09/mapping-indias-cybersecurity-administration-in-2025?lang=en
[42] Defence Cyber Agency begins exercise to bolster cyber resilience at national level, accessed January 2, 2026, https://www.aviation-defence-universe.com/defence-cyber-agency-begins-exercise-to-bolster-cyber-resilience-at-national-level/
[43] Space for defence in India, accessed January 2, 2026, https://www.pwc.in/assets/pdfs/aero_defence/space-for-defence-in-india-v4.pdf
[44] The Contribution of Geoinformatics Science to the Indian Army: An Exploring Study, accessed January 2, 2026, https://goldncloudpublications.com/index.php/irjaem/article/download/474/495/1031
[45] Strengthening the C4ISR capabilities of India's Armed Forces: The Role of Small Satellites, accessed January 2, 2026, https://www.orfonline.org/research/strengthening-the-c4isr-capabilities-of-india-s-armed-forces-the-role-of-small-satellites
[46] India-UAE joint military 'Exercise Desert Cyclone–II' ends in Abu Dhabi, accessed January 2, 2026, https://www.uniindia.com/~/india-uae-joint-military-exercise-desert-cyclone-ii-ends-in-abu-dhabi/India/news/3691252.html
[47] indian army contingent departs for india- us joint special forces exercise 'vajra prahar' - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2070099
[48] Inter-Services Organisations Act 2023 - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/inter-services-organisations-act-2023/
[49] Operation SINDOOR: Forging One Force - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2129453
[50] Inventory woes and logistic bottlenecks: operational challenges in the SCM of the Indian defense sector - Open Journal Systems, accessed January 2, 2026, https://www.journals.ardascience.com/index.php/dss/article/download/284/168/848
[51] Chief of Defence Staff - PMF IAS, accessed January 2, 2026, https://www.pmfias.com/chief-of-defence-staff/
[52] India enhances military communication with IRSA standard 1.0 - Army Technology, accessed January 2, 2026, https://www.army-technology.com/news/india-irsa-military-communication/
[53] Driving Jointness, Indigenisation, and Future Capability - SP's Land Forces, accessed January 2, 2026, https://www.spslandforces.com/interviews/?id=29&h=Driving-Jointness-Indigenisation-and-Future-Capability
[54] India's Journey Towards Software Defined Radios (SDRs) and IRSA - Hughes Systique, accessed January 2, 2026, https://www.hsc.com/resources/blog/indias-journey-sdr-and-irsa/
[55] DISC 13 - iDEX, accessed January 2, 2026, https://idex.gov.in/uploads/challenges/1730109185_bddce0e5ec11ad25ddbe.pdf
[56] non-lapsable fund for defence modernisation - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=1983973
[57] non-lapsable fund for defence modernisation - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=1983973

[58] CDS formally releases declassified versions of Joint Doctrines for Cyberspace Operations & Amphibious Operations - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2153626
[59] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[60] After Consensus Building, Theatre Commands To Be A Reality In 2025? - Bharatshakti, accessed January 2, 2026, https://bharatshakti.in/after-consensus-building-theatre-commands-to-be-a-reality-in-2025/
[61] Single-Point Orders, Joint Fight: How June 2025 Reform Reshapes India's Theater Command Reality – Analysis - CLAWS, accessed January 2, 2026, https://claws.co.in/single-point-orders-joint-fight-how-june-2025-reform-reshapes-indias-theater-command-reality-analysis/
[62] Joint Logistics Node - Drishti IAS, accessed January 2, 2026, https://www.drishtiias.com/daily-news-analysis/joint-logistics-node
[63] Rapid capability enhancements needed to counter emerging security challenges: IAF Chief, accessed January 2, 2026, https://www.newindianexpress.com/nation/2025/Mar/12/rapid-capability-enhancements-needed-to-counter-emerging-security-challenges-iaf-chief
[64] DRDO releases the Indian Radio Software Architecture standard 1.0 to enable interoperability in Military Communication - Forceindia.net, accessed January 2, 2026, https://forceindia.net/blog/drdo-releases-the-indian-radio-software-architecture-standard-10-to-enable-interoperability-in-military-communication
[65] DISC 13 - iDEX, accessed January 2, 2026, https://idex.gov.in/uploads/challenges/1730109185_bddce0e5ec11ad25ddbe.pdf
[66] India's Joint Doctrine for Multi-Domain Operations: A Whole-of-Nation Framework Introduction, accessed January 2, 2026, https://usiofindia.org/pdf/file_68c3c9dd2b33e.pdf
[67] One Year of the INDUS-X: Defense Innovation Between India and the U.S., accessed January 2, 2026, https://carnegieendowment.org/research/2024/06/one-year-of-the-indus-x-defense-innovation-between-india-and-the-us?lang=en
[68] One Year of the INDUS-X: Defense Innovation Between India and the U.S., accessed January 2, 2026, https://carnegieendowment.org/research/2024/06/one-year-of-the-indus-x-defense-innovation-between-india-and-the-us?lang=en
[69] Integrated Theatre Commands In India: Reforming Defence For The Future - PWOnlyIAS, accessed January 2, 2026, https://pwonlyias.com/current-affairs/integrated-theatre-commands-in-india/
[70] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[71] India enhances military communication with IRSA standard 1.0 - Army Technology, accessed January 2, 2026, https://www.army-technology.com/news/india-irsa-military-communication/
[72] Operation SINDOOR: Forging One Force - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2129453
[73] Mapping India's Cybersecurity Administration in 2025, accessed January 2, 2026, https://carnegieendowment.org/research/2025/09/mapping-indias-cybersecurity-administration-in-2025?lang=en
[74] Indian Army Implements Custom SAMBHAV System for Secure Communication in Operation Sindoor - Shop SSBCrack, accessed January 2, 2026, https://shop.ssbcrack.com/blogs/blog/indian-army-implements-custom-sambhav-system-for-secure-communication-in-operation-sindoor
[75] Integrated Theatre Commands India 2026: A $20 Billion Military Upgrade, accessed January 2, 2026, https://indiapacificpost.com/integrated-theatre-commands-india-2026-roadmap/
[76] New rules to fast-track joint services commands | India News - Hindustan Times, accessed January 2, 2026, https://www.hindustantimes.com/india-news/new-rules-to-fast-track-joint-services-commands-101748457531624.html

[77] New rules to fast-track joint services commands | India News - Hindustan Times, accessed January 2, 2026, https://www.hindustantimes.com/india-news/new-rules-to-fast-track-joint-services-commands-101748457531624.html
[78] The Synergy of India's Armed Forces - PIB, accessed January 2, 2026, https://www.pib.gov.in/PressNoteDetails.aspx?id=154490&NoteId=154490&ModuleId=3
[79] Defence Cyber Agency begins exercise to bolster cyber resilience at national level, accessed January 2, 2026, https://www.aviation-defence-universe.com/defence-cyber-agency-begins-exercise-to-bolster-cyber-resilience-at-national-level/
[80] India-UAE joint military 'Exercise Desert Cyclone–II' ends in Abu Dhabi, accessed January 2, 2026, https://www.uniindia.com/~/india-uae-joint-military-exercise-desert-cyclone-ii-ends-in-abu-dhabi/India/news/3691252.html
[81] Strengthening the C4ISR Capabilities of India's Armed Forces: The Role of Small Satellites, accessed January 2, 2026, https://www.researchgate.net/publication/342360902_Strengthening_the_C4ISR_Capabilities_of_India's_Armed_Forces_The_Role_of_Small_Satellites