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About the Monograph

This monograph presents a comprehensive strategic reappraisal of the Corps of Signals, arguing that the changing character of warfare has fundamentally transformed the Corps from a traditional combat support arm into a decisive combat force within the information domain. It examines how modern warfare is increasingly shaped by cyber operations, artificial intelligence, electronic warfare, cognitive warfare, space systems, and network-centric operations, where information superiority has become as critical as conventional firepower. The study analyses the Corps' expanding role in multi-domain operations, information manoeuvre, drone warfare, electromagnetic spectrum dominance, and real-time command-and-control integration. Drawing lessons from contemporary conflicts, global military transformations, and Indian operational experiences such as Galwan and Operation Sindoor, the monograph highlights how resilient communication networks, cyber resilience, and decision superiority now directly influence combat outcomes. The work further evaluates doctrinal, organisational, leadership, ethical, and training implications associated with re-designating the Corps as a combat arm. Ultimately, it argues that future wars will be decided not only by kinetic power, but by the ability to dominate information flows, compress decision cycles, and integrate technology with operational agility across all domains of conflict.

**From Combat Support to
Combat Arm: A Strategic
Reappraisal of the Corps of
Signals**

From Combat Support to Combat Arm: A Strategic Reappraisal Of The Corps of Signals

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Introduction

The Case for Strategic Reappraisal of the Corps of Signals

“The call-in battle evolved from the war trumpet to radio communication, to the buzz of satellite links, to the hum of a drone, and now to the flash of a data packet across networks”.

- General Upendra Dwivedi, Chief of the Army Staff
at
the Cavalry Seminar 2025

The Corps of Signals has long been cast in the role of communicator and enabler—an indispensable, but traditionally ‘Support’ element that lays the wires, establishes the links, and keeps the voice running across the battlespace. That characterisation is now obsolete. Modern conflict is decisively data-driven: sensors, Intelligence, Surveillance, and Reconnaissance (ISR) platforms, cyber nodes, Electronic Warfare (EW) systems, and Artificial Intelligence (AI)-enabled decision aids generate, fuse, and exploit torrents of information. In a network-centric fight, the ability to sense, process, and disseminate accurate information faster than an adversary is itself a weapon. The Corps of Signals is no longer merely the conduit for orders; it is the architect and operator of the very informational edge that creates combat effects. Recognising this shift requires to reframe the Corps from ‘Combat Support’ to a full ‘Combat’ arm—one whose capabilities directly determine tempo, survivability, and lethality on the contemporary battlefield.

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the Corps of Signals*

This conceptual change has consequences beyond nomenclature. Treating Signals as a combat arm means prioritising organic authority over cyber-electronic effects, embedding Signals officers and formations at the tactical decision points, and designing force structures where communications, information operations, and networked fires are planned and executed as co-equal instruments of combat power. That means investing in specialised training, doctrine, and career pathways that fuse Information Technology, cyber, EW, and tactical Command-and-Control (C2) skills; it means equipping formations with resilient, mobile, and multi-domain stacks capable of operating in contested electromagnetic and cyber environments; and elevating Signals' role in planning so that information advantage becomes a deliberate element of campaign design. Only by recognising the Corps of Signals as a combat arm can the Indian Army (IA) fully harness information as a decisive medium of warfare and ensure that commanders can see, decide, and act first. To meet the challenges arising out of the transformation to combat arm, implications across doctrine, structure, organisation, training, and leadership need to be addressed by adopting a multi-pronged approach.

While the Observe, Orient, Decide, and Act (OODA) loop remains doctrinally valid, the compression of time and space has imposed far greater demands on commanders, staff, and troops to stay geometrically more connected to the flow of data, knowledge, and insights driving each stage of OODA. Execution cycles are now governed by data of higher volume, speed, and analytical

Introduction

depth. This data–analysis–connectivity dynamic lies squarely within the operational mandate of the Corps of Signals, underscoring an unprecedented fusion between Command and Signals in contemporary warfare.

Chapter 1

Conceptual Foundations of Information Warfare

Information as Power: The Strategic Role of Signals

The 21st Century campaigns unfold concurrently in the physical, cyber, and cognitive domains. Land, maritime, air, space, and cyberspace operations are intertwined, and the Electromagnetic Spectrum (EMS) is contested by peer and near-peer competitors. Modern adversaries seek to exploit the information dimension by contesting C2, jamming, or spoofing data links and global positioning system or positioning, navigation, and timing signals, and undermining the legitimacy of friendly narratives. Modern armies note that the cyber domain and the information dimension are the most contested areas in today's security environment and exploiting IT—including AI and Machine Learning (ML)—will be decisive. Information is now recognised not merely as a supporting function but as a source of combat power. This paradigm shift reframes Corps of Signals from a support arm into a manoeuvre capability capable of producing offensive and defensive effects.

A crucial metric for success in this environment is decision advantage—the ability to sense, decide, and act faster than an adversary. Recent doctrine emphasises that information is central to every action that army undertakes; every action generates information that can be harnessed to influence adversaries and protect one's own forces. Achieving and sustaining this advantage requires controlling

the flow of information across all domains while denying or degrading the adversary's ability to do the same.

In the modern battlespace, the Corps of Signals has evolved from a supporting role to a decisive combat force. Warfare today hinges on information dominance, and the Corps delivers this by securing networks, disrupting enemy systems, and enabling real-time command decisions. Through the fusion of communications, cyber operations, and EW, it creates both offensive and defensive effects that directly shape battlefield outcomes. The Corps does not merely enable combat—it conducts it in the information domain, ensuring the IA's operational edge. In this transformed context, the Corps of Signals rightfully stands as a 'Combat Arm', central to winning future wars.

Blurring of Lines Between Combat and Combat Support Arms: The Indian Context

“Multi-Domain Operations (MDO) is the coordinated, integrated and synchronised use of military and non-military capabilities across land, sea, air, cyber, space and the cognitive domains”.

- Headquarters Integrated Defence Staff, Joint
Doctrine: Multi-Domain Operations, 2025

In the IA's evolving operational doctrine, the traditional distinction between combat arms and combat support arms is becoming increasingly blurred. The erstwhile linear model—where combat arms such as Infantry, Armour, and Mechanised Infantry engaged the enemy while arms like Engineers, Signals, and others merely enabled operations—is giving way to a far more integrated, multi-domain construct.

The Land Warfare Doctrine 2018 and the emerging Information Warfare (IW) and MDO frameworks recognise that future conflicts will not be fought solely through firepower or manoeuvre, but through the fusion of information, technology, and tempo. In this paradigm, arms traditionally viewed as support now generate direct combat effects.

The Corps of Signals is no longer just an enabler of communication; it is the nerve centre of the digital battlespace, safeguarding networks, ensuring cyber resilience, and enabling real-time decision-making. Its role in spectrum dominance, data fusion, and secure networks places it squarely in the domain of combat information operations.

As the IA transitions toward network-centric and information-dominant warfare, distinctions between ‘Fighting’ and ‘Supporting’ arms are increasingly becoming artificial. The battlefield of tomorrow demands a fusion of kinetic and non-kinetic capabilities, where every arm contributes directly to the combat potential of the force. The future lies not in rigid classification but in adaptive integration—a structure where all arms operate as cohesive elements of a single warfighting system.

Chapter 2

Recasting the Combat Identity of the Corps of Signals

Redefining the Combat Arm: The Signals in the Information Battlespace

Contemporary combat power increasingly derives from the integration of physical, informational, cognitive, cyber, and electromagnetic capabilities that collectively enable commanders to impose operational and strategic effects upon an adversary. The character of warfare in the 21st Century is undergoing a profound transformation. Traditional notions of a combat arm—one that closes with and destroys the enemy through fire and manoeuvre—are no longer adequate to describe the complex, multi-domain nature of modern conflicts. Today's battles are fought not only on land, sea, and air, but also in space, cyberspace, and across the EMS. The decisive edge increasingly belongs to those who can sense, decide, and act faster than the adversary. Expansion of combat now transcends physical destruction, incorporating actions to seize, exploit, or deny information and electromagnetic access. Combat includes any deliberate act that degrades the adversary's decision cycle or operational cohesion.

In a scenario where kinetic and non-kinetic warfare are fully intertwined—involving cyber, space, information, and electromagnetic operations alongside conventional combat—the Corps of Signals becomes the nerve centre of the integrated battlespace. Disruptive technologies such as AI, EW, Directed Energy Weapons (DEWs), cognitive radio

networks, quantum communication, and space-based systems rely fundamentally on efficient use of the EMS. These technologies are disruptive because they blur the lines between communication, intelligence, and firepower—an ethos embedded in India's latest joint doctrines, which view information and spectrum control as decisive combat power multipliers.

As cyber, space, information, and electromagnetic operations increasingly synchronise with conventional combat, the Corps must transition from a support role to a decisive warfighting enabler. India's evolving joint doctrines emphasise that dominance in the information and spectrum domains is as critical as physical destruction, making communication superiority a key combat multiplier. Within this framework, the emergence of the air littoral battlespace—the contested zone between air and surface—redefines the Corps' mission. The Corps of Signals provides the digital nervous system connecting these actions—effectively becoming the linchpin of MDOs, ensuring that information, intelligence, and firepower operate as one cohesive force.

In the digitally interconnected and data-driven battlespace of today, networks and communication systems have themselves become weaponised and integral to every combat element: they are no longer a back-office convenience but an operational enabler and, at times, a decisive capability. That alone compels to rethink labels and force design—the term combat arm must reflect the realities of the multi-domain, data-centric battlefield. Every combat

Recasting the Combat Identity of the Corps of Signals

element—whether a soldier, sensor, or shooter—depends on these networks for mission effectiveness. The Corps, as the provider, defender, and integrator of these capabilities, is, therefore, as intrinsic to operations as any kinetic arm.

In this evolving context, the Corps of Signals occupies a central and indispensable role. Information has emerged as both a weapon and a battlespace. The capacity to secure, exploit, and dominate the information domain directly influences combat outcomes. The Corps, by ensuring uninterrupted Command, Control, and Communication (C3) under contested conditions, is no longer a mere enabler—it is a combatant.

The Signals operate at the cutting edge of EW, cyber operations, spectrum management, and network defence—functions that strike directly at the adversary’s decision-making capability. By integrating sensors, shooters, and commanders through resilient networks, the Corps forms the vital nervous system of the modern battlefield. Its actions determine operational tempo, situational awareness, and the survivability of combat forces.

Thus, the Corps of Signals must be viewed not as a support element, but as a combat arm in the information domain, capable of shaping the battlefield, denying the enemy information superiority, and sustaining the force’s ability to fight and win in the digital age. Time has come to acknowledge the Corps of Signals’ rightful place as a combat arm—one that fights and wins in the electromagnetic and information domains. As per the IA’s doctrine on Network-Centric Warfare (NCW), information superiority is the new

firepower. The ‘Signaller’ of tomorrow is effectively the digital warrior—ensuring that every sensor, shooter, and commander acts in unison. In essence, if warfare continues, its shift toward the electromagnetic and cyber domains, the Corps of Signals—through EW—will not just support combat, it will be combat.

Leading From the Edge in The Information Age: The Signals Perspective

“Signal must no longer be thought of as a support function. It is an operational force, a manoeuvre element in the data domain, and the primary enabler of C2 in contact. The battlefield of tomorrow belongs to those who can see, decide, and act first. That only happens when communicators lead from the edge”.

- From *Beyond the Network-The Army Signal Corps and the Future of Warfare* by Lieutenant Colonel James J Torrence, and Lieutenant Colonel Jon R Creel, United States Army

Future military effectiveness is likely to depend upon adaptive, decentralised, and network-centric command structures capable of rapid synchronisation and distributed decision-making rather than rigid hierarchical control systems. In military theory, the term ‘Edge’ refers to the operational frontline—the point of direct contact between combat forces and the adversary, where the uncertainties of battle are the greatest and decisions carry immediate consequences. Traditionally, militaries operated on rigid hierarchical structures, where information and orders flowed from higher headquarters down to subordinate units. This

often delayed the decision-making at the edge, as frontline commanders lacked both timely intelligence and the autonomy to act with initiative.

With the advent of NCW, the meaning of the edge has evolved. It is no longer defined solely by geography but by the decision space in which situational awareness and responsiveness determine success. Concepts such as ‘Power to the Edge’ emphasise decentralising authority and ensuring that those closest to the action have access to real-time information and the freedom to exploit fleeting opportunities. This shift underpins the idea of ‘Leading from the Edge’—a philosophy where leadership is distributed, adaptive, and enabled by technology.

Distributed and adaptive leadership extends from command down the chain to execution. Fleeting operational and tactical opportunities demand technology architectures with agile, distributed layers of data, analysis, and AI. While the chain of command remains intact, sensory inputs must flow seamlessly between headquarters and units, keeping pace with the battlefield ‘Edge’.

The practical realisation of this model depends on resilient networks, secure communications, and uninterrupted information flows. Here, the Corps of Signals assumes a central role. By providing the backbone of battlefield communications, safeguarding against cyber and electronic threats, and enabling the fusion of multi-domain intelligence, the Corps transforms edge leadership from theory into operational reality. In doing so, it ceases to be merely a combat support arm and emerges as a decisive

combat enabler, indispensable to the Indian military's ability to lead, fight, and win in the information age.

Tomorrow's communicators must operate forward, innovating at the tactical edge, ensuring connectivity under fire, and enabling real-time decision-making. Their role will demand not just technical expertise but warfighting acumen, agility, and resilience in the face of adversary attempts to degrade or deny the network.

The Signals must be recognised as the twin arm of the command function, with the commander's intent seamlessly and dynamically transmitted to the signaller across the time-space continuum in every phase of battle. This symbiotic linkage is no longer desirable—it is operationally imperative for mission success in the modern battlespace.

Traditional Functions of the Corps of Signals: Setting the Stage for Change

Recognition of the Corps of Signals as a combat arm would require the integration of cyber, communications, electronic warfare, and information operations into operational planning as co-equal instruments of combat power within tactical and operational decision-making structure. The Corps of Signals has historically been classified as a combat support arm in the IA, but with the transformation in warfare concepts like NCW, MDO, and 'Power to the Edge', there is a strong case to rethink this designation.

Signals have been always viewed as a ‘Service Provider’ responsible for:

- **Verification.** Verifying radio, linex, and later satellite communications.
- **Connectivity.** Ensuring connectivity between commanders and subordinate formations.
- **Communication Infrastructure.** Providing static, tactical, and strategic communications infrastructure.

This meant that it was seen as an enabler of operations, but not directly decisive in combat. With the rise of cyber warfare, space assets, and AI, the Signals’ role has expanded dramatically:

- **Defence Cyber Agency.** Signals officers posted to lead cyber operations.
- **Defence Space Agency.** Signals provides satellite communication expertise.
- **Information Fusion Centres (IFC).** Established centres like IFC-Indian Ocean Region in the Navy, but Signals contributes to Army’s grid.
- **Operational Networks.** Signals run tactical communication system, battlefield management system pilots, and secure mobile networks for formations.
- **Increasing Role in Joint Operations Planning.** This was best seen during Operation Sindoor conducted against Pakistan in 2025.

Traditionally, the Signals managed networks and connectivity, while Information Systems handled the higher layers of the ISO stack. This division has been upended by big data and AI, where all seven layers now function as an integrated whole. Commanders today demand a simplified Signals doctrine with information assurance as the decisive combat factor. Legacy complexities are a drag in the data–cyber–AI era; hence, Signals must evolve into a true combat arm—a forward-leaning partner in operations, not merely a support agency.

The contemporary battlefield is rapidly evolving from traditional, platform-centric warfare to a multi-domain, data-driven environment. Key features include:

- **Network-Centric Operations.** Real-time connectivity across land, air, sea, cyber, and space enables faster decision-making and integrated effects.
- **Information and Cyber Dominance.** Control over information flows, cyber networks, and EW capabilities is as decisive as kinetic force.
- **Precision and Speed.** Advanced sensors, AI-enabled targeting, and long-range precision weapons compress decision and action cycles.
- **Multi-Domain Integration.** Success depends on seamless coordination across conventional forces, drones, cyber, space assets, and special operations.

- **Edge-Based Decision-Making.** Frontline commanders empowered with data and analytics can act independently, reducing delays from hierarchical command.
- **Hybrid Threats.** Non-state actors, asymmetric tactics, and information operations increasingly challenge traditional military dominance.

In short, the modern battlefield rewards agility, situational awareness, and mastery of the invisible domains of data and networks, making forces like the Corps of Signals pivotal not just in support, but as force multipliers and combat enablers.

Signals' Enhanced Role Today

The Corps of Signals is no longer a passive support function:
It now:

- **Enables NCW.**
 - Through networks like Air Force Network, Army Static Switched Communication Network, and Tactical C3 and Intelligence systems.
 - Links Army, Navy, and Air Force into a joint battlefield grid.
- **EW and Cyber Domain.**
 - Signals officers are trained in cyber defence, offensive EW, and spectrum dominance.
 -

- This is combat in its own right—disrupting enemy communications and protecting own.
- **Decision Superiority at the Edge.**
 - By ensuring real-time situational awareness to troops and commanders.
 - This is directly combat-impacting—if a battalion commander can see the battlefield better than the enemy, he has a decisive advantage.
- **Integration in MDO.**
 - Signals is now a bridge between kinetic and non-kinetic domains—land, air, sea, cyber, and space.
 - Without Signals, jointness and theatre commands cannot function.

Drone Warfare and Corps of Signals

The rapid proliferation of drones—ranging from military-grade Unmanned Aerial Vehicles (UAVs) to small commercial quadcopters—has created new asymmetric threats across battlefields, borders, and critical infrastructure. In this context, the Corps of Signals plays a central role in detecting, identifying, tracking, and neutralising hostile drones through EW, Signal Intelligence (SIGINT), and networked command systems.

Drone warfare represents the convergence of aerial robotics, data networks, and command communication

systems, making it a vital focus area for the Corps of Signals. As India expands its indigenous drone programs, the Corps of Signals ensures secure Command, Control, Communications, Computers, and Intelligence (C4I) integration within the NCW ecosystem.

Several recent conflicts and operations (India-specific) have demonstrated that the Signals function has already crossed into a combat role, even if formally still called a ‘Supporting Arm’. Here are a few illustrative examples showing how information dominance, EW, and resilient communications became decisive combat factors. Some examples of combat role by Corps of Signals include:

Galwan and Eastern Ladakh Standoff (2020 onwards).

- During the Eastern Ladakh deployment, the Corps of Signals established secure, high-altitude digital communication networks under extreme climatic and geographical stress—a feat that directly enabled command responsiveness during crises.
- Quick setup of satellite terminals and line-of-sight networks ensured uninterrupted control and situational awareness when mobility was constrained.
- Signal detachments were embedded with forward formations, providing real-time tactical connectivity essential to deterrence and escalation control—quintessential combat support under fire.

Takeaway. Signals ensured information superiority in a contested zone, making possible the swift coordination of

troops and air assets—a true combat role, even if formally labelled ‘Support’.

Balakot Air Strike (2019).

The combat role included:

- **Real-time Monitoring.** The operation’s success depended on real-time encrypted communications and datalinks between multiple strike aircraft, airborne early warning platforms, and ground control.
- **Network Security.** The precision coordination and timing of ingress and egress relied entirely on the secure network backbone managed by Signals and Air Force communications units.
- **System Resilience.** The system’s resilience to adversary jamming and interception transformed a complex strike into an operational success.

Takeaway. Signals played a direct role in mission execution, not merely support—enabling control of tempo, synchronisation, and surprise.

Counterterrorism and Internal Security (India, 2016–present).

- **Combat role in grey-zone operations.** In the Uri and Balakot retaliatory operations, Signals ensured secure communications for special forces

deep inside enemy territory, managing low-probability-of-intercept channels.

- In counter-insurgency operations in Kashmir and the Northeast, Signal detachments routinely accompany assault teams, providing real-time ISR feeds, drone integration, and secure voice and data links—combat integration at the tactical edge.

Role and Contribution of the Corps of Signals in Operation Sindoor.

In Operation Sindoor, the Corps of Signals played a pivotal role in ensuring uninterrupted, secure, and resilient communications across the operational theatre. The operation, marked by high-tempo joint force engagements, demanded seamless information flow and network integrity amidst contested electromagnetic conditions.

Signal units swiftly established and maintained multi-domain communication grids, integrating terrestrial, satellite, and radio relay networks to provide commanders with real-time situational awareness and decision superiority. Their rapid deployment of mobile communication nodes and field data centres enabled interoperability between the Army, Air Force, and other national agencies involved in the operation.

The EW detachments of Signals effectively monitored, protected, and, when necessary, dominated segments of the EMS, ensuring information assurance and cyber resilience. By leveraging cutting-edge communication technologies and tactical data links, Signallers enabled

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precision coordination of combat arms, logistics, and intelligence assets.

The Corps of Signals has long ensured C3 across the battlefield—its traditional role as the Army’s vital nervous system. As warfare shifts to the information and cyber domains, these functions must evolve from support to decisive action. The legacy of reliable communication now sets the foundation for transformation—towards a combat-ready, data-dominant Signals Corps of the future. Through their professionalism, adaptability, and technical excellence, the Corps of Signals demonstrated that information dominance is now as decisive as firepower—proving once again that in modern operations like Sindoor, the strength of the force lies as much in the network as in the weapon.

Chapter 3

Operational Transformation and Expanding Roles

Role of Corps of Signals in Cognitive Warfare

The character of warfare has undergone a profound transformation in recent decades. While traditional domains—land, air, sea, space, and cyber—remain critical, a sixth domain has emerged with increasing prominence: the cognitive domain. This domain targets perception, belief systems, decision-making processes, and, ultimately, the will of both adversaries and one’s own populace. In this evolving battlespace, the Corps of Signals assumes a pivotal role, acting as both the nervous system and the cognitive shield of modern military operations.

In contemporary conflict, it is no longer tenable to view the Corps of Signals merely as a communications backbone or support arm. Such a characterisation underestimates both its capabilities and its battlefield impact. In the cognitive domain—where perception, decision-making, and will are contested—the Corps of Signals performs direct combat functions that shape outcomes as decisively as kinetic force. It must, therefore, be acknowledged as a combat enabler with combat effects, not just a facilitator.

The Cognitive Domain and its Relevance

Cognitive warfare operates by shaping narratives, influencing perceptions, and manipulating information flows. Unlike kinetic warfare, its effects are often subtle

yet deeply enduring. It seeks to erode trust in institutions, create ambiguity, induce decision paralysis, and fragment societal cohesion. Modern conflicts—from Eastern Europe to West Asia—demonstrate that victory is no longer defined solely by territorial gains but by dominance over the information environment.

In this context, the Corps of Signals is uniquely positioned. Traditionally responsible for communications, information systems, and EW, it now stands at the intersection of information dominance and cognitive resilience.

Expanding Role of the Corps of Signals

The Corps of Signals has evolved from being a provider of communication networks to a key enabler of information superiority. Its role in cognitive warfare can be broadly understood through the following dimensions:

- **Assured and Secure Communication.** At the foundation of all military operations, lies reliable communication. In cognitive warfare, the integrity and availability of information are paramount. The Corps ensures:
 - Secure, encrypted communication channels to prevent interception and manipulation.
 - Redundancy and resilience in networks to counter disruption attempts.

- Real-time connectivity across echelons, enabling swift and informed decision-making.

By safeguarding communication systems, the Corps prevents adversaries from injecting disinformation or disrupting C2 structures—key objectives in cognitive warfare.

Information Environment Management

Modern battlefields are saturated with information. Managing this environment is critical to shaping perceptions. The Corps of Signals contributes by:

- Establishing and maintaining information networks that support situational awareness.
- Enabling data fusion from multiple sources to present a coherent operational picture.
- Supporting psychological operations through controlled dissemination of information.

This ensures that commanders operate with clarity, while adversaries are confronted with ambiguity and uncertainty.

Electronic Warfare and Spectrum Dominance

The EMS is a crucial battleground in cognitive warfare. The Corps of Signals plays a central role in:

- Jamming and disrupting adversary communications, thereby, isolating them.
- Protecting friendly systems from electronic interference.
- Conducting electronic surveillance to gather actionable intelligence.

By dominating the spectrum, the Corps denies the adversary the ability to coordinate effectively, thereby, impacting their cognitive cohesion.

Cyber Operations and Information Security

Cyber space is a primary vector for cognitive warfare. The Corps of Signals is instrumental in:

- Defending networks against cyber intrusions and data breaches.
- Detecting and countering disinformation campaigns originating from digital platforms.
- Ensuring the integrity of data that informs operational decisions.

In modern conflicts, cyberattacks often precede or accompany kinetic operations, aiming to create confusion and mistrust. The Corps acts as the first line of defence against such threats.

Enabling Decision Superiority

Cognitive warfare ultimately targets decision-making. The Corps of Signals enables decision superiority by:

- Providing real-time intelligence and analytics.
- Supporting command centres with advanced information systems.
- Facilitating rapid dissemination of orders and feedback.

This compresses the decision cycle (OODA loop), allowing friendly forces to outpace adversaries cognitively.

Lessons from Contemporary Conflicts

Recent conflicts highlight the centrality of the cognitive domain:

- In Eastern Europe, information operations have been used extensively to influence global opinion and domestic morale.
- In West Asia, non-state actors have leveraged social media and communication networks to amplify their narratives.
- Hybrid warfare strategies increasingly combine cyberattacks, EW, and psychological operations.

In all these scenarios, the effectiveness of military operations has been closely tied to the robustness of communication and information systems—areas where the Corps of Signals plays a decisive role.

The Case for Formal Recognition

Given its expanding role, there is a compelling case to formally acknowledge the Corps of Signals as a combat contributor in its own right:

- Doctrinal recognition of its role in multi-domain and cognitive warfare.
- Integration into operational planning at the same level as other combat arms.
- Enhanced training, equipping, and career pathways reflecting its combat responsibilities.

Such recognition is not merely symbolic—it is essential for aligning mindset, resources, and doctrine with the realities of modern warfare.

In the era of cognitive warfare, the Corps of Signals does far more than enable communication—it fights and wins battles in the invisible domain of information and perception. By disrupting adversaries, protecting own cognitive space, and enabling decision superiority, it delivers tangible combat effects that shape the outcome of operations.

To continue viewing Signals as a purely support arm is to overlook a critical dimension of modern combat. It is, in every meaningful sense, a combat force in the cognitive battlespace, and its role must be acknowledged, institutionalised, and strengthened accordingly.

The Corps of Signals has emerged as a cornerstone of cognitive warfare. By ensuring secure communication, enabling information dominance, and supporting decision-making, it directly influences the cognitive dimension of conflict. Experiences from modern conflicts and operations such as Sindoor reaffirm that control over information and perception is as decisive as control over territory. In the future battlespace, where the mind may be the primary battleground, the Corps of Signals will continue to play a defining role—not merely as a support arm, but as a strategic enabler of national power and military effectiveness.

The Evolving Operational Role of the Corps of Signals

The evolving character of warfare necessitates the transformation of the Corps of Signals from a predominantly communications-support organisation into an active combat enabler central to network-centric and information-driven operations. The character of modern warfare is undergoing a profound transformation. Traditional battlefield paradigms, dominated by platforms such as tanks, aircraft, and infantry, are increasingly giving way to data-driven, network-centric operations. Commanders now operate in a multi-domain environment where the rapid acquisition, processing, and dissemination of information often determine success more decisively than sheer firepower. In this milieu, the battlefield is no longer defined solely by terrain or force strength, but by the

ability to sense, decide, and act faster than the adversary, often from the very edge of operations.

The nature of warfare has fundamentally changed, making communication a primary domain of contestation rather than a mere utility. Some obvious inferences are:

- **The contest is in the EMS.** Modern conflicts are defined by contested communications environments, where adversaries actively jam, intercept, and disrupt signals. The EMS is now a key terrain on the modern battlefield. In this environment, simply maintaining connection is a combat challenge.
- **Integration into the core war fighting.** Communication systems are the backbone of advanced C2 structures, now referred to as C2, Communications, Computers, Cyber-Defence and Combat systems, and ISR. This integration means that communicators are directly involved in intelligence gathering, cyber defence, and enabling MDO that synchronise land, air, sea, and cyber forces.
- **The Risk Decision.** It is no longer just a question of whether communication is possible, but if it is required. Communicators must now provide commanders with critical risk assessments related to EMS, advising on the trade-offs between connectivity and risk of detection or cyberattack.

This places them squarely in the participatory, decision-making process.

The information battlespace is the new arena of warfare where information itself becomes both a weapon and a target. It covers all actions involving cyber operations, EW, intelligence, and perception management—aimed at controlling the flow of information and denying the same to the adversary. Modern conflicts increasingly show that victory depends on who can gather, protect, and exploit information faster and more accurately. By achieving this information superiority, commanders can make quicker and smarter decisions, shape public perception, and even neutralise threats without physical combat. In today's wars, control of information means control of the battlefield. In contemporary warfare, the battlefield extends far beyond the physical terrain into the domains of data, networks, and decision superiority. Information manoeuvre—the ability to observe, influence, and act upon the flow of information—has emerged as a decisive operational instrument. It enables commanders to shape the battlespace, synchronise effects across multiple echelons, and outpace adversaries in decision cycles.

Within this emerging framework, the Corps of Signals assumes a central, strategic role. No longer confined to providing communications and technical support, Signals units act as force multipliers, enabling commanders to leverage cyber, electronic, and networked capabilities to influence outcomes directly. Tactical decision-making at the edge, integration of multi-domain

assets, and dominance over information flows place the Corps at the heart of combat operations, transforming it from a support arm into a core combat enabler.

This shift is not merely functional but structural and doctrinal. The Corps of Signals must adapt to meet the demands of real-time warfare, evolving its organisation, training, and operational concepts to secure a decisive edge. Lessons from contemporary military forces, such as China's restructured Strategic Support Force (SSF) and the United States (US) Cyber Command, underscore the importance of embedding information and network dominance within the combat force itself. The IA, by embracing this transformation, positions the Corps of Signals as a strategically indispensable arm in the battles of the 21st Century.

Modern battlefield realities demand a rethink because:

- Information dominance is now as critical as firepower. India's own Joint Doctrine (2017) and the Army's Land Warfare Doctrine (2018) emphasise 'Information Dominance' as the new battlefield objective. It places information dominance at the heart of its strategic vision, making a significant doctrinal shift from traditional 'Kinetic-centric' approaches to a 'Multi-domain, technology-driven paradigm'. This places the Corps of Signals in a combat role.

- Information superiority is no longer an enabler; it is a decisive combat capability. Signals now operate in domains that can directly disable or deceive the enemy—EW, spectrum dominance, and cyber defence. These are offensive and defensive operations in the information domain, akin to combat. The Corps of Signals must lead from the front as India's combat arm in the information domain.
- A networked force wins or loses based on its ability to share data, intelligence, and situational awareness. Success of integrated battle groups, UAVs, and precision fires depends on reliable networks. If the network fails, combat collapses, making Signals as vital as kinetic arms.
- In the tactical frontline role, presently Signals elements are deployed forward in tactical battle areas, laying battlefield networks under fire—not merely rear-echelon activity.
- Many advanced militaries (US, Russia, China) now treat cyber, space, and information operations as warfighting domains, often equivalent to combat arms. The US created Cyber Command, and the People's Liberation Army (PLA) has SSF—both co-equal with traditional combat arms.

- Adversaries (China, Pakistan) are investing heavily in cyber, EW, and space assets to disrupt Indian networks.
- As a deliberate pivot in the concept of operations, India will now wield manoeuvre power across the combat domain, both within Army echelons and in joint operations with air and space forces. Information Manoeuvre (IM) is already a decisive force in these domains, and India will fully leverage it.

From Support to the Information Manoeuvre Arm: The Changing Role of Communicators

The shift in the operational environment transforms the communicator's day-to-day function and strategic importance. The table below contrasts the traditional and emerging roles.

Aspect	Traditional Support Role	Information Manoeuvre Arm (Dynamic and Participatory)
Primary Focus	Ensuring Connectivity Managing Technical Systems	Managing Risk in EMS, Ensuring Survivable C2

Operational Transformation and Expanding Roles

Involvement in Operations	Implementing Communication Plans	Integrated with EW, Intel, and Operations for a Common Picture
Key Skills	Tech Proficiency with Equipment	Risk Assessment, Understanding Adversarial Capabilities, Strategic Planning
Impact	Enabling Communications for Decision-makers	Active Participation in Decision-making, Shaping Operational Outcomes

Table 1: Traditional and Emerging Roles of Corps of Signals

Note. In its revised, IM role, the Corps of Signals will continue to discharge all its traditional support functions with equal diligence and professionalism as before. However, with the emerging reclassification towards a true combat role, additional responsibilities will accrue to its personnel. These will include operating as active participants in IW, safeguarding the integrity of networks in contested environments, enabling real-time decision superiority, and directly influencing outcomes in MDOs.

Thus, while retaining its foundational tasks, the Corps must also embrace new operational functions that align with the demands of the future battlefield.

The Corps of Signals is no longer confined to enabling operations—it now shapes and secures them. In an era where information is both weapon and target, its operational role extends beyond communication to command dominance, cyber resilience, and network warfare. The evolution is clear: from communicator to combat enabler, and from enabler to decisive actor in the modern battlespace. Signals actively defends digital assets, dominates the EMS, and supports offensive information operations. By transforming data into actionable intelligence and ensuring seamless flow of information in combat, the Corps of Signals stands as a combat enabler—and increasingly, as a combat arm—in modern NCW.

Chapter 4

Comparative and Conceptual Anchors

Comparative Perspectives: Signals in China's Restructured Strategic Support Force and the United States Cyber Command

While traditionally considered a support service, the Signals component in modern militaries is increasingly viewed as the backbone of IW. A comparative examination of China's restructured SSF and the US' Cyber Command provides valuable insights into how different powers have reorganised their signals and IW elements into higher operational and strategic roles.

China's Restructured Strategic Support Force

The PLA officially dissolved the SSF on 19 Apr 2024. Its various components (departments and units) were redistributed or elevated into new entities.

Creation of Three New Forces or Arms. The SSF's functions were broken out into three newly established forces:

- **Aerospace Force.** Essentially, the former SSF's Space Systems Department. Responsible for space operations, launches, space-related reconnaissance, etc.
- **Cyberspace Force (CSF).** Taken from the earlier SSF's Network Systems Department. Handles both offensive and defensive cyber

operations, network sovereignty, detecting and countering intrusions, cyber border defence, etc.

- **Information Support Force (ISF).** Incorporates parts of the SSF dealing with communications, information support, information networks, battlefield C4ISR, information security, and assurance, possibly psychological and IW support. Also includes the former Information Communication Base.

4+4 Force Structure. After the reform, the PLA is structured as four services (Army, Navy, Air Force, and Rocket Force) and four arms (Aerospace Force, CSF, ISF, and Joint Logistics Support Force). These arms are subordinate to the Central Military Commission (CMC) rather than a single SSF headquarters.

Flattening of Command Layers and Increase of Direct Central Military Commission Control.

- **Streamlining Command.** One of the motivations appears to be reducing bureaucratic layers; previously, many functions under SSF were mediated via SSF headquarters; now the new arms report directly to the CMC. Greater political oversight, tighter control under Xi Jinping, and the CMC appears to be in place.

- **Information Dominance.** Signals marks a shift; future wars are seen as battles for information dominance as much as for territory. China is elevating information, cyber, and space operations as co-equal pillars of military power—an indicator of how Beijing envisions the next war.
- **Improved Effectiveness.** Improved warfighting effectiveness in space, cyber and informationised warfare.

United States Cyber Command

The US established Cyber Command in 2009, later elevating it to a Unified Combatant Command in 2018. Unlike the Chinese restructured SSF, Cyber Command focuses primarily on cyberspace operations, although its mission intersects with signals intelligence and communications security through its close relationship with the US-National Security Agency (US-NSA).

The US Cyber Command employs the Cyber Mission Force, structured into:

- **National Mission Teams.** Protect critical US infrastructure and homeland networks.
- **Combat Mission Teams.** Conduct offensive cyber operations in support of combatant commands.
- **Cyber Protection Teams.** Defend Department of Defense networks.

- **Support Teams.** Provide planning and technical support.

Here, the signal's function is embedded within broader cyber operations, with the US-NSA providing signals intelligence and network security. Communications and signals expertise are not confined to a support role but serve as the foundation for offensive cyber actions and network defence. Importantly, the US Cyber Command has embraced the doctrine of 'Defend Forward', actively disrupting adversary networks before they can threaten the US interests.

To conclude, China's restructured SSF and US Cyber Command represent two different models of employing Signals: one as part of an ISF and the cyber operations, both defensive and offensive overseen by CSF (China), and the other as a part of the unified Cyber Command (US). The PLA's restructuring offers valuable insights into enhancing the effectiveness of support forces through specialisation, integrations, streamlined command, joint operations, and continuous modernisation. By adopting similar strategies, IA's Corps of Signals can bolster its capabilities and responsiveness in the evolving landscape of modern warfare.

The study of China's SSF and the US Cyber Command underscores a clear trend—nations are elevating their information, cyber, and space capabilities to core combat functions. Both models highlight the fusion of signals, cyber, and EW under unified command structures.

For India, the lesson is evident—the Corps of Signals must adapt, integrate, and assert its central role in the emerging domain of IW to remain operationally decisive.

Recasting Signals: Doctrine, Structure, and Organisation

As warfare increasingly expands into cyber and electromagnetic domains, electronic warfare capabilities are likely to evolve from supporting functions into decisive operational instruments central to combat effectiveness. Doctrine must explicitly recognise that signals units deliver offensive and defensive effects, on par with other combat arms. The reclassification of the Corps of Signals as a combat arm in the information domain has far-reaching implications for doctrine, structure, and organisation. Doctrine must now move beyond the traditional paradigm of communication support to the one that recognises the Corps as an operational entity, capable of offensive and defensive actions in cyberspace, the EMS, and the cognitive domain. They must emphasise Signals' role in cyber, EW, space, and network-centric operations, aligning its capabilities with the manoeuvre of kinetic forces. This requires codifying the role of the Signals in joint IW, C2 operations, and multi-domain battle concepts.

The doctrinal emphasis must shift toward achieving information superiority as a deliberate operational objective, on par with fire and manoeuvre. Guidance must position Signals as a decisive enabler of real-time command decisions, ensuring continuity of C2 even under

contested conditions. The traditional concept of ‘Fire’ and ‘Manoeuvre’ now inherently extends to include IM as an indispensable element of modern operations.

Information Manoeuvre

The Headquarters Integrated Defence Staff, Joint Doctrine for MDO 2025 defines IM as the ‘Coordinated application of communications, cyber, EW, and cognitive actions to achieve information superiority and influence adversary decisions’. It outlines the concept of multi-domain IM, which involves influencing adversaries and potential adversaries across all domains of warfare. IM doctrine is grounded in five capability clusters—intelligence, networks, influence, cyber or EW, and security—that deliver four outputs: understand, protect, disrupt, and influence. Unlike traditional fire and manoeuvre, which act on tangible assets, IM operates at the speed of data, integrating cyber, EW, AI-driven analysis, and secure communications. It is no longer an auxiliary function; it is a force multiplier that directly impacts operational tempo, situational awareness, and the successful execution of mission objectives.

The changing character of warfare demands a re-evaluation of the traditional roles of military arms. For the IA, this presents a strong case for positioning the Corps of Signals as a combat arm.

- **From network provider to information warrior.** The Corps has already evolved from being merely a provider of communication networks to being the Army's 'Information Warriors'. By handling complex functions like cyber operations, EW, and data management, the Corps of Signals directly creates military power and shapes the battlefield.
- **Execution of offensive and defensive actions.** As a combat arm, the Corps of Signals would not just protect friendly communication but would actively engage in offensive operations to deny, degrade, and destroy enemy information and networks. This includes jamming radar, disrupting satellite communications, and launching cyberattacks.
- **Integrated operations with combat formations.** The Corps of Signals is intimately involved in every aspect of army operations, with Signal companies and detachments embedded within every combat formation or unit. Elevating its status to a combat arm would formally recognise this critical, close-quarters role in facilitating the real-time flow of C2, intelligence, and targeting information to achieve operational success.
- **Specialised and high-tech skillsets.** The Corps is already investing heavily in advanced technologies and trains its personnel in sophisticated areas like cybersecurity, AI, and

NCW. A combat arm designation would better align its organisational structure and training with its highly technical and specialised warfighting functions.

- **Institutional alignment with modern doctrine.** The new joint doctrines for MDO and cyberspace operations formally recognise the importance of these new war-fighting domains. Reclassifying the Corps of Signals as a combat arm would align its institutional standing with the modern doctrine it is tasked with enabling, giving it the necessary mandate, resources, and operational authority to perform its combat role effectively.

IM differs from Information Operations (IO) by emphasising manoeuvre—the dynamic, offensive exploitation of information rather than static messaging.

Old Way: Information Operations	New Way: Information Manoeuvre
Primarily focused on static messaging and influence.	Emphasizes the dynamic, offensive exploitation of information.
Often treated as a support function, planned separately.	Fully integrated with physical manoeuvre, fires, and intelligence.
Goal is often to shape narratives over the long term.	Goal is to generate immediate decision advantage on the battlefield.

Table 2: Comparison Table of Information Operations vs Information Manoeuvre

Technological Dimensions of Combat in the Information Domain

Contemporary warfare is increasingly shaped by technological ecosystems in which data dominance, algorithmic processing, resilient networks, and information superiority influence operational outcomes as significantly as traditional kinetic capabilities. Technology is the defining driver of contemporary warfare. Rapid advances in AI, cyber operations, electronic spectrum management, and network systems are fundamentally reshaping how conflicts are conducted and resolved. Superiority lies not merely in platforms, but in the control of data, network resilience, and the ability to make rapid, informed decisions. For the Corps of Signals, mastery over these technological dimensions is imperative to secure dominance across the electromagnetic, cyber, and cognitive fronts of modern conflict. It is central to its evolving role as a combat arm.

Artificial Intelligence and Automation

The convergence of cyber, space, electromagnetic, and AI domains is changing the nature of warfare more rapidly than at any time in history. AI is seen as transforming Signals from a communication provider into an AI-driven combat integrator. AI and ML have emerged as critical enablers of real-time decision-making. Intelligent systems can autonomously analyse vast data streams, detect anomalies, and anticipate adversary actions. Integrating AI into communication networks, cyber defence, and SIGINT

will significantly enhance situational awareness and reaction speed.

AI is not only optimising existing military operations but is also reshaping strategic doctrines, operational methods, and defence-industrial relations. Its horizontal impact—cutting across intelligence, surveillance, logistics, deception, and psychological operations—sets it apart from the vertical focus of EW and cyberspace, ushering in a fundamentally new era of warfare by broadening the conflict domain and empowering rapid innovation.

While AI multiplies military power, it also introduces vulnerabilities unique to its architecture. Adversarial attacks—data poisoning, model theft, and deception—pose serious risks to autonomous systems, potentially leading to unpredictable behaviour or loss of control on the battlefield. Moreover, the democratisation of AI technologies means more actors, including small states and hacker collectives, can create or deploy advanced cyber-physical threats. Leaders must remain mindful of AI's limitations—while powerful, it lacks human intuition, judgment, and ethical reasoning. The decisive factor in future operations will be the seamless fusion of machine efficiency with human discernment.

Network Resilience and Spectrum Dominance

Resilience is a combat characteristic. Networks must be resilient by design—employing multi-path

communications, deception, emissions control, and rapid reconstitution to withstand attack. Modern operations are predicated on uninterrupted connectivity. Adversaries will inevitably attempt to disrupt, degrade, or deceive networks through jamming, spoofing, and cyber intrusions. Network resilience—achieved through redundancy, encryption, and adaptive routing—has, thus, become a combat imperative. Simultaneously, the EMS has emerged as a contested domain; control of the spectrum equates to control over perception, command, and coordination. The Corps must integrate EW and spectrum operations into its core combat philosophy to maintain operational superiority.

Human–Machine Teaming

The battlespace of the future will demand close collaboration between human operators and autonomous systems—ranging from unmanned aerial platforms to AI-enabled sensors and decision aids. The Corps of Signals will serve as the integrator of this networked ecosystem, ensuring seamless human–machine interaction that enhances speed, precision, and survivability.

Signals as a Combatant Arm in the Disruptive Tech Era

Emerging disruptive technologies leveraging the EMS are reshaping modern warfare by enhancing speed, precision, and connectivity across domains. These include DEWs, EW systems, cognitive radio networks, and quantum communication technologies—all of which depend on efficient EMS utilisation. For the Corps of Signals, awareness of such advancements is crucial, as battlefield

dominance increasingly depends on spectrum superiority, secure communication, and resilient networks.

India has, in recent years, formalised several joint doctrines and policies which reflect similar thinking about MDO, cyber spectrum, jointness, and modern electromagnetic-enabled warfare. In essence, India's doctrinal evolution shows clear recognition that control of the EMS—through disruptive technologies—is now as vital as control of land, air, or sea. Mastery over the EMS is the new artillery of the digital battlefield—the Corps of Signals must wield it as both shield and sword.

Future Integrated Technologies and Indigenous Capability

Preparing for emerging integrated technologies is critical, as is the development of indigenous firmware and software tailored to Indian systems. Emphasis must be placed on in-house capabilities for maintenance, first- and second-line repairs, and the ability to upgrade technical equipment as required. Technological self-reliance and resilience will be essential for the Corps as it transitions into a combat-ready force within the digital battlespace.

Technology Change Management

Technology change management—while essential for progress—faces several common challenges that can delay, derail, or reduce the effectiveness of transformation efforts. These challenges typically fall under human, organisational, and technical dimensions.

The biggest hurdles in technology change management stem not from the technology itself, but from people and processes. Overcoming these requires a blend of clear communication, leadership vision, continuous training, and adaptive culture. Leadership plays a decisive and transformative role in ensuring the success of technology transitions. The introduction of new technology demands not just technical upgrades but also behavioural and cultural adaptation. Effective leaders bridge this gap by inspiring confidence, aligning strategy with purpose, and guiding their teams through uncertainty.

In sum, technology presents both opportunity and challenge. The Corps must harness its potential while remaining cognisant of its limitations. Ultimately, success in the digital age will belong to those who combine technological mastery with human ingenuity, foresight, and ethical restraint.

Chapter 5

Human Capital and Capability Development

Training Transformation for Combat Readiness in the Corps of Signals

Future combat readiness will depend not merely upon modernisation of equipment, but upon the integration of simulation technologies, data-driven learning systems, adaptive doctrine, and digitally enabled operational training. The transition of the Corps of Signals from a combat support arm to a combat arm necessitates a comprehensive transformation in its training philosophy, structure, and content. The focus must now shift from primarily ensuring communication support to preparing personnel who can operate, fight, and lead in the dynamic, contested, and information-driven battlefields of the 21st Century.

Training will need to evolve to produce signal personnel who are not only technically proficient but also combat-ready, tactically agile, and capable of sustaining communication dominance under hostile conditions. This demands the development of multi-domain competency—encompassing cyber operations, EW, space-based communication systems, and IOs.

In addition, there is a clear need for an expanded skill set that integrates situational awareness, data analytics, AI applications in C4ISR systems, and decision-support technologies. The training curriculum should also emphasise physical endurance, battlefield survival, and

leadership under pressure—ensuring that each signaller can operate effectively alongside, fighting arms in the forward zone.

Joint exercises, war-gaming, and simulations replicating realistic multi-domain battle environments must become core components of the training ecosystem. This transformation will enable the Corps to bridge technology and tactics, evolving from a provider of communication support to a decisive contributor in combat power and mission success.

Combat readiness in the information age demands a transformed training ecosystem—one that fuses technology, tactics, and joint warfighting skills. For the Corps of Signals, this means moving beyond technical proficiency to cultivating combat-oriented, adaptive warriors—equally skilled in networks, cyber operations, and battlefield integration. Training, thus, becomes the bridge between legacy competence and future dominance.

AI necessitates comprehensive adaptations in both Professional Military Education (PME) and joint organisational structures. These changes aim to evolve military forces from being reliant on communications support to achieving algorithmic superiority and decision dominance. Few suggestions are under merit consideration:

- Update curricula at the Military College of Telecommunication Engineering (MCTE), Defence Services Staff College, and College of

- Defence Management to include cyber-EW, AI in decision systems, and network resilience.
- Introduce ‘AI in Military Decision-making’ as a mandatory module across all PME levels.
- Create an AI Warfighting Chair at MCTE in collaboration with the Indian Institutes of Technology and Defence Research and Development Organisation’s Centre for AI and Robotics.
- Elevate MCTE to a Centre of Excellence for IW under the Army Training Command.
- Transform MCTE as the IA’s nerve centre for information domain warfare.
- Create a separate ‘Faculty of IW’ at the MCTE to address all issues related to training on IW. Capsules for training officers and staff should be planned for junior, mid-level, and senior ranks.

Leadership Framework for the Combat Arm Role of Signals

Leadership within technologically intensive military organisations requires intellectual adaptability and systems-oriented thinking alongside traditional qualities of courage and operational competence. The elevation of the Corps of Signals to a combat arm brings with it significant leadership implications, demanding a shift in mindset, command approach, and operational responsibility.

Leadership within the Corps must now transcend its traditional technical and support orientation to embrace a combat ethos—one rooted in initiative, decisiveness, and adaptability under battlefield conditions. Signal leaders will be required to function not merely as technical experts but as combat leaders, capable of integrating communication, cyber, EW, and IOs into the larger tactical and operational plan.

This transformation demands leaders who are not only technologically astute but also tactically informed, physically resilient, and mentally agile. Leadership development programs must, therefore, incorporate exposure to MDO, joint service environments, and crisis decision-making under high-pressure scenarios.

Equally important is the cultivation of a command culture that encourages innovation, mission command, and accountability. Leaders at all levels must be empowered to take calculated risks, ensure resilience of networks and personnel, and maintain morale in high-threat conditions.

Assuming a combat arm role calls for a distinct leadership paradigm—visionary, tech-savvy, and operationally decisive. Leaders in the Corps of Signals must inspire transformation, integrate across domains, and command the information battlespace with confidence. The future will belong to those who can fuse technology with tactical instinct and lead from the front in both thought and action.

In essence, the new leadership paradigm for the Corps of Signals combines strategic foresight with combat instinct, ensuring that its officers and men can lead from the front in the information battlespace—decisively shaping outcomes rather than merely enabling them.

Chapter 6

Ethical, Cultural, and Organisational Dimensions

Ethics and Strategy in the Expanding Information Battlespace

The responsible and ethical employment of information capabilities remains essential for preserving operational legitimacy, strategic credibility, and moral authority within the contemporary battlespace. As the Corps of Signals assumes its role as a combat arm in the information domain, it must also confront the ethical and strategic dilemmas that accompany technological power. The very capabilities that confer advantage—cyber intrusion, information manipulation, AI, and autonomous systems—can, if misapplied, erode the moral foundation of military conduct and blur the distinction between legitimate combat and coercive overreach. Hence, the pursuit of information dominance must always be tempered by ethical clarity and strategic foresight.

Ethical Dimensions

In the digital domain, the lines between offence, defence, and deception are often indistinct. The use of data-driven targeting, psychological operations, or AI-assisted decision-making raises questions of accountability and proportionality. The Corps, as the custodian of military information and communication, must uphold the principles of legality, necessity, and discrimination even in the intangible realms of cyberspace. Human judgement

must remain central to all decisions involving lethal or disruptive technologies. Ethical education, therefore, must form an integral part of leadership development, reinforcing that technology serves the warrior, not the other way around.

Strategic Dimensions

From a strategic standpoint, information dominance must be pursued not in isolation, but as part of a balanced approach to deterrence and stability. Overreliance on technology creates vulnerabilities that can be exploited by adaptive adversaries. The Corps must, thus, cultivate both technological resilience and strategic humility, recognising that control of the information domain is transient and contested. Strategic success will depend on adaptability, interoperability with other arms, and maintaining initiative even under degraded conditions.

In the expanding information battlespace, ethics and strategy must advance in tandem. The power to influence, disrupt, and dominate through information demands restraint, integrity, and adherence to military ethos. For the Corps of Signals, ethical conduct is not a constraint but a force multiplier—ensuring credibility, trust, and legitimacy in achieving strategic advantage.

In essence, the transformation of the Corps of Signals into a combat arm is not merely a technological or organisational shift—it is an evolution of military ethos. It demands that the Corps combine its technical prowess with

ethical restraint, operational acumen, and a steadfast commitment to the principles of just and responsible warfare in the information age.

Cultural and Organisational Barriers to Combat Arm Recognition

Institutional and cultural resistance within military organisations frequently constitutes a more enduring obstacle to transformation than external operational threats. When considering the redesignation of the Corps of Signals as a combat arm, one cannot ignore the cultural and organisational resistance that such a transformation inevitably encounters. Institutions with a long and distinguished history develop deeply rooted traditions, norms, and mindsets shaped by decades of functioning within well-defined roles. The Corps of Signals, traditionally viewed as a combat support arm, has cultivated a professional culture centred on technical excellence, precision, and dedicated service to the fighting arms.

Recasting the Corps as a combat arm challenges not only organisational structures but also long-held self-perceptions and inter-arm dynamics. Resistance may emerge from:

- **Institutional Inertia.** Reluctance to move away from established hierarchies, comfort zones, and operational doctrines.
- **Cultural Identity.** Personnel take pride in being technical enablers; embracing a combat-

oriented identity requires mental and emotional realignment.

- **Perceptual Barriers from Other Arms.** some may continue to see Signals primarily as support providers, questioning the rationale for parity as a combat arm.
- **Leadership Adaptation.** leaders at all levels must internalise and project the new ethos, redefining training, roles, and expectations accordingly.

Cultural and organisational resistance remains the principal obstacle to recognising the Corps of Signals as a combat arm. Overcoming it requires sustained advocacy, demonstrable operational relevance, and a shift in mindset—embracing Signals not merely as support, but as a decisive force in modern warfare. Brotherhood, professionalism, and shared vision will be critical enablers of this transformation.

Addressing this resistance demands a clear articulation of purpose, visible institutional commitment, and a structured roadmap showing how redesignation enhances operational effectiveness rather than serving as symbolic change. Building a new culture—one that fuses technical mastery with a combat mindset—will take time, but it is essential for genuine and enduring transformation.

Transition and Conclusion

Roadmap for Transition to Combat Arm Status

The evolution of the Corps of Signals into a recognised combat arm requires more than structural reclassification; it necessitates doctrinal adaptation, transformational training frameworks, institutional confidence, and a conscious redefinition of operational identity within the changing character of warfare.

The desired end state will be ‘A combat-ready Corps of Signals—doctrinally empowered, technologically advanced, and organisationally aligned—capable of exercising leadership in EMS and cyber warfare, and fully integrated within the combat decision-making framework of the armed forces.’

A clear, phased roadmap is essential to translate intent into capability—linking doctrine, force structure, training, and certification with measurable milestones. The transition to combat arm status must be guided by demonstrable operational outcomes, institutional buy-in, and policy enablers that codify authority, resources, and accountability. Success will depend on synchronised reforms: doctrinal acceptance, targeted upskilling, interoperable platforms, and persistent advocacy at the highest levels. When executed with urgency and discipline, this roadmap can transform the Corps of Signals from indispensable enablers into a recognised, combat-capable arm of the Army.

The Corps of Signals stands at a critical juncture. While operational responsibilities have expanded significantly, its institutional positioning continues to reflect a legacy support arm status rather than that of a combat arm. To remain operationally relevant and strategically indispensable, the Corps must redefine its role—leading both defensive and offensive operations in the EMS and cyber domains and contributing directly to combat decision-making and mission execution.

Towards A Combat-Ready Information Force

The decisive advantage in future warfare is likely to accrue to military forces capable of achieving superiority within the information domain through integrated intelligence, communications, cyber, and electronic warfare capabilities. The evolution of the Corps of Signals from a traditional support element into a bonafide combat arm marks a profound shift in both identity and operational philosophy. In the 21st Century, the battlefield extends far beyond physical terrain, encompassing cyberspace, the EMS, and the cognitive and information domains. Mastery of these domains is as decisive as conventional firepower, positioning the Corps at the centre of modern combat.

This transformation carries deep doctrinal, structural, organisational, training, technological, and ethical implications. Doctrine must recognise the Corps as an operational force capable of both offensive and defensive action. Organisational structures should

integrate cyber, electronic, and network capabilities with field formations to ensure resilience, responsiveness, and adaptability. Training and leadership development must cultivate tactical, operational, and strategic acumen, emphasising agility, decision-making under uncertainty, and effective human-machine collaboration. Technological mastery—from AI and autonomous systems to spectrum control and network resilience—must be tempered with an awareness of limitations and ethical responsibilities. The implications across doctrinal, organisational, structural, technological, training, and leadership domains present both significant opportunities and complex challenges. Each requires careful, sustained study to understand second-order effects, interdependencies, and long-term consequences.

Above all, this evolution demands a synthesis of technical expertise, operational vision, and ethical judgment. Operating advanced systems alone is insufficient; the Corps must exercise foresight, restraint, and initiative to translate information superiority into operational success without compromising the principles of lawful and responsible warfare.

By embracing this expanded role, the Corps of Signals exemplifies the modern combat arm: a force that fights, enables, and sustains victory in the information battlespace. It demonstrates how tradition, innovation, and ethics can converge to meet contemporary challenges, ensuring that India's Armed Forces remain agile, adaptive, and decisive in an era defined by information dominance.

In essence, the Corps of Signals must transform from a supporting infrastructure provider to a forward-deployed, decision-enabling, combat-ready force. Achieving this will demand synchronised changes in doctrine, structure, training, and leadership, supported by continuous innovation and operational excellence. With foresight, structured reform, and disciplined execution, the Corps can reimagine its role and emerge as a decisive combat arm of the future.

Ultimately, the redesignation of the Corps into a combat arm is not merely an administrative adjustment but a profound cultural and organisational transformation. It requires a shift in mindset—from being a dependable enabler to an active combat contributor. Overcoming resistance will necessitate thoughtful, sustained change management guided by leaders who can harmonise vision with empathy, tradition with innovation, and structure with flexibility. The success of this transformation will depend on how effectively leaders inspire confidence, nurture new competencies, and instil a combat ethos while preserving the Corps' enduring strength in technical excellence. In doing so, the Corps of Signals will not only redefine its role but also reaffirm its indispensability in modern, technology-driven warfare.

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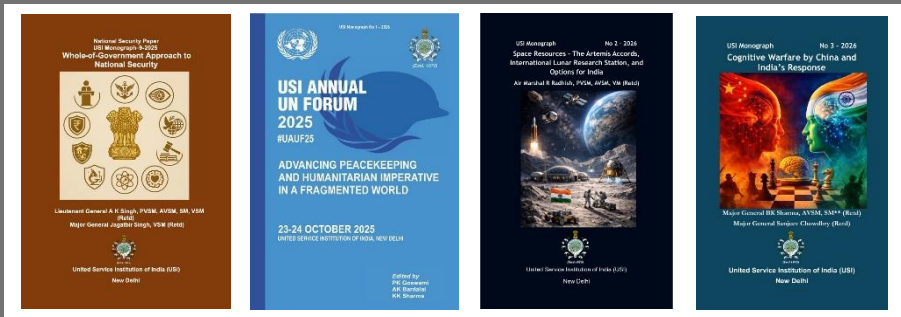
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Commissioned into the Corps of Signals on 11 June 1961, Lieutenant General SRR Aiyengar, PVSM, AVSM, VSM (Retd) graduated from the National Defence Academy and subsequently from the Indian Military Academy. He enjoyed a distinguished military career spanning nearly four decades in the Indian Army. During his service, he gained extensive operational and command experience across a wide spectrum of Signals units supporting Infantry, Mountain, and Mechanised formations. He commanded a Mountain Divisional Signal Regiment in the North-East, actively involved in counter-insurgency operations, and also served with the Indian Military Training Team in Bhutan. The officer held the prestigious appointment of Chief Signal Officer of a Strike Corps in the Western Sector. A graduate of the Defence Services Staff College (DSSC), he earned Master of Science and Master of Philosophy degrees in Defence Studies from University of Madras. His professional education also included the Senior Defence Management Course at the College of Defence Management, and he was nominated to attend the prestigious National Defence College (NDC) course. He is a Fellow of the All India Management Association. A keen scholar of military technology, national security affairs, and international strategic relations, the General Officer represented India at the Association of the Southeast Asian Nations Regional Forum on two occasions, interacting with over 20 strategic institutions worldwide. His instructional appointments included tenures at the Defence Services Staff College and the Military College of Telecommunication Engineering. He also had the distinction of commanding three premier Armed Forces training institutions: the Military College of Telecommunication Engineering, the DSSC, and the NDC. The General Officer has authored numerous papers, strategic studies, and articles for military journals and publications, besides writing twelve books on diverse subjects.

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