



CENTRE FOR AEROSPACE POWER AND STRATEGIC STUDIES (CAPSS)

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IAF Chief-Air Chief Marshal AP Singh undertakes USAF F15EX sortie during visit to Nellis Air Force Base (Photo: US Airforce)

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“The two-day national seminar ‘Ran Samwad’ anchored around the theme “Multi-Domain Operations (MDO): An Imperative for Addressing Conventional and Irregular Threats” concluded in Air Force Training Command, Bengaluru on April 10, 2026. Chief of Defence Staff (CDS) General Anil Chauhan delivered the closing address, emphasising that the multi-domain operations require convergence across physical, synthetic and cognitive realms.”

- PIB, Delhi

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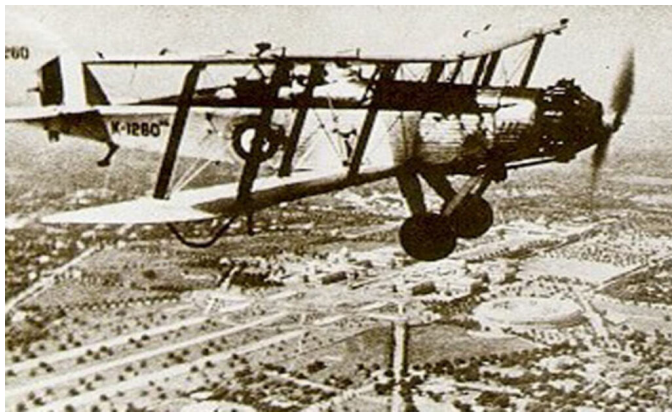
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Opinions and Analysis

When the Army and Navy Wanted to Abolish an Air Force: Revisiting Inter-Service Rivalry 100 Years Ago

Wg Cdr A Pichipoo Raja | 24 April 2026

Source: CAPSS | <https://capssindia.org/when-the-army-and-navy-wanted-to-abolish-an-air-force-revisiting-inter-service-rivalry-100-years-ago/>



Indian Air Force Website

Introduction

The war in West Asia has triggered an interesting set of debates in the Indian military. Veterans from each service have been highlighting the irrelevance of the other services on social media, in TV debates, and in print media. Some have argued that the surface navy is irrelevant, especially the aircraft carriers. Others have opined that manned aircraft are irrelevant and suggested moving to an independent drone and rocket force. Some have questioned the utility of massive ground forces in modern battles, especially tanks and armoured formations. The civilian

audience is amused by why the services are fighting amongst themselves in the media when they should ideally be fighting the enemy. While it may appear to be something new and unique to India, it is absolutely common behaviour worldwide. In fact, some past debates have been much fiercer. This article revisits one such debate from the 1920s to show how little things have changed over a century and what lessons can be drawn from these inter-service rivalries.

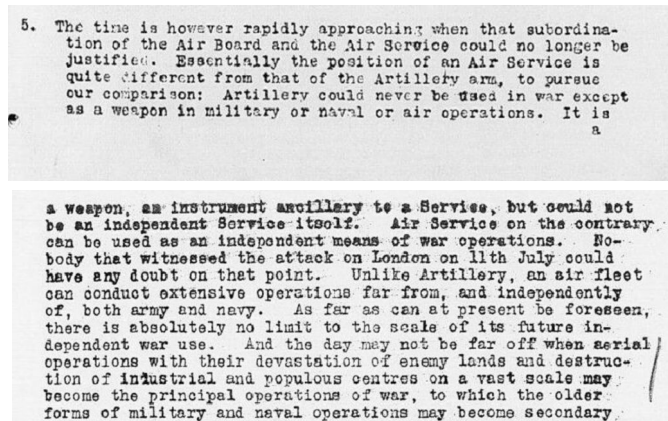
Origin of Twentieth Century Inter-Service Rivalries: Birth of the RAF

The German air raids on London in 1917 were a turning point in inter-service relations. While millions had died on the Front since 1914, it didn't matter as much to the politicians as the air strikes on the capital of the mighty British Empire. This was beyond the policymakers' imagination. Immediately, the British Prime Minister George Lloyd constituted the Committee on Air Organisation and Home Defence Against Air Raids with General Jan Smuts as its head. Its mandate was to examine how to defend Britain from air raids and how air operations and their supporting structures should be organised.

This Committee recommended the creation of an Air Ministry and an Independent Air Service at par with the Army and the Navy. The committee concluded by stating that, "Air supremacy in the long run will become as important a factor in the defence of the empire as sea

supremacy.” This laid the foundation for the Royal Air Force (RAF) in 1918. A key argument that justified the creation of an independent air force is reproduced here:

Smuts Committee Arguments as to Why the Air Force Should be an Independent Force



Source: Cabinet Papers, CAB 24/22/58, The National Archives, UK.

The Royal Air Force was created as the world's first independent air force, on April 01, 1918, introducing the youngest and most energetic player in inter-service rivalries. The RAF was created by merging the assets and personnel from the air arms and was granted equal status with the Army and the Navy. This naturally caused resentment, as the services essentially viewed it as an elevation of their own support arms to equal combatant status. However, they had no choice but to comply since it was a political decision by the Cabinet.

Every Man for Himself: Survival in the Decade of Fiscal Austerity – 1920s

The timing of the creation of the RAF couldn't have been worse. The First World War ended within a few months of the

creation of the RAF, and the defence budget immediately dried up. As part of post-war demobilisation, there were massive cuts in manpower and material. All institutions created during the war were put under review, and several were threatened with closure. To avoid the axe, each ministry/service often questioned the rationale for the existence of the other while justifying its own relevance.

The Cabinet, on its part, suspended all new warship building until the effectiveness of submarines and aircraft could be assessed through a detailed study. The Army vehemently argued for retaining its manpower in the infantry despite new forms of warfare such as aircraft and tanks, but was overruled by the political authority.

The RAF got a lease of hope when Air Marshal Hugh Trenchard conceived the idea of 'Air Substitution'- a policy of using aircraft to police colonies without deploying the British Army regulars on the ground. This was both economical and politically preferred, but it challenged the Army's role in colonial control, leading to a reduction in manpower.

Cabinet Note on The Separate Existence of the Royal Air Force and the Air Ministry Scheme of Expansion for Home Defence, July 1923

In this connection they instanced the reduction of Middle East estimates by some £14,000,000 as a result of the substitution of air for military control in Iraq. The General Staff, it should be remembered, opposed the Air Staff's scheme throughout, and were only finally overruled by the Cabinet.

* This independent Air Command has to date proved completely successful, despite the fact that peace with Turkey has not even yet been concluded; it has, moreover, saved the country many millions. Further economies are in prospect, and the Air Officer Commanding is anxious to reduce the Infantry garrison forthwith to six battalions. The only obstacle to this reduction is the opposition of the General Staff in India.

† See this Committee's 1st report.

‡ See in this connection C.P. 3197 and C.P. 3240.

[10272]

B 2

Source: CAB 24/161, The National Archives, UK.

Meanwhile, both the Army and the Navy took the extreme step when they moved the case to abolish the independent RAF

3. The General Staff arguments for the abolition of the Air Force.

In C.P. 296/23 the General Staff develop their arguments for the abolition of the Royal Air Force under three main heads which may be summarised, in order of importance, as follows:—

(a.) That there is no justification for the present British organisation, inasmuch as the Air Force is essentially a supplementary Force;

(b.) That this organisation is extravagant, and leads to unnecessary duplication;

(c.) That no other Power has adopted it.

Source: Cabinet Papers, CAB 24/161, The National Archives, UK.

Role of Political Leadership in Inter-Service Rivalries

Had the military been allowed to decide for themselves, there is a very strong possibility that the independent RAF would have been abolished there and then based on consensus. Here, politicians like Winston Churchill played a major role. One must remember that it was on their initiative that the independent air force was created, not through the military's efforts. Therefore, while all this intense rivalry amongst the services was on, the Cabinet set up a committee on the Amalgamation of Services Common to the Navy, Army and Air Force on February 17, 1922. This was to identify areas of duplication and bring in economy

by amalgamating wherever feasible. All branches except Defence Estates were supposed to be examined. It had already been decided to manage the defence land centrally. This committee had a diverse set of members drawn from the civilian and the military, with the following mandate:

Terms of Reference for the Committee on Amalgamation of Services

should be set up at once to make definite proposals for amalgamating as far as possible the common Services of the Navy, Army and Air Force, such as Intelligence, Supply, Transport, Education, Medical, Chaplains, and any other overlapping Departments, in order to reduce the cost of the present triplication. The Committee should consider each branch separately and submit interim Reports to the Cabinet as soon as possible.

Source: Report of the Committee on the Amalgamation of Services Common to the Navy, Army and Air Force, 1926, Published by His Majesty's Office

It is very interesting to compare what the committee instinctively thought and what the actual data finally revealed. The initial thoughts, based on the arguments put forth by each service, gave the impression of enormous duplication/triplication, and a huge scope for rationalisation. However, the results at the end of the study by experts revealed quite the opposite. Contrary to popular belief, not much duplication/triplication actually existed.

SUMMARY OF RECOMMENDATIONS.

- (1) We are of opinion that in existing circumstances the complete or partial amalgamation of the common Services of the three Fighting Departments is not advisable, and we do not believe that any substantial economies would thereby be effected.

The committee finally recommended only amalgamating Work Services and setting a committee to further examine the medical services. Today, there is a common MES (Military Engineering Services) and

a commonly administered medical arm for all three services- an outcome that could be traced to this committee a hundred years ago.

So, Why Discuss This 100-Year-Old Case Now?

History has plenty of lessons to offer those who seek to benefit from it. The terms of reference of the Amalgamation Committee in 1926 and the Department of Military Affairs' mandate towards optimisation are very similar. Both these initiatives tried to achieve economic benefit by aggregating the service demands or organisations. This 1926 committee laid the initial foundations of the joint services that the Indian Armed Forces subsequently inherited post-independence. A hundred years later, in 2026, it remains the same time-tested structure, with common Defence Estates, MES, and medical services across the Indian Armed Forces. Yet, this committee has not been referred to in any debate/talk so far. This is possibly due to a lack of academic rigour and enquiry into the history.

A reading of this 1926 report would also have revealed how operationally ineffective several peacetime jointness ideas are. Take the case of joint logistics. Ships need to be loaded at ports before they sail, air forces need frequent replenishment from fixed bases due to the tempo of air operations, and the Army needed prior positioning in places as the

war progressed. During wartime, these places weren't usually co-located. The report cited the practical difficulties in achieving common technical equipment, as each service had a unique role and therefore unique equipment. This difficulty was in an era when equipment wasn't so technically complex. Today, the problem is much more severe. An anonymous user on social media platform X compiled images from the official social media handles of the Indian Army and concluded that the Infantry alone operates 29 small arms across 10 calibers from 16 countries. Thus, even single-arm logistics is a nightmare during operations. Why have lessons from history not been considered?

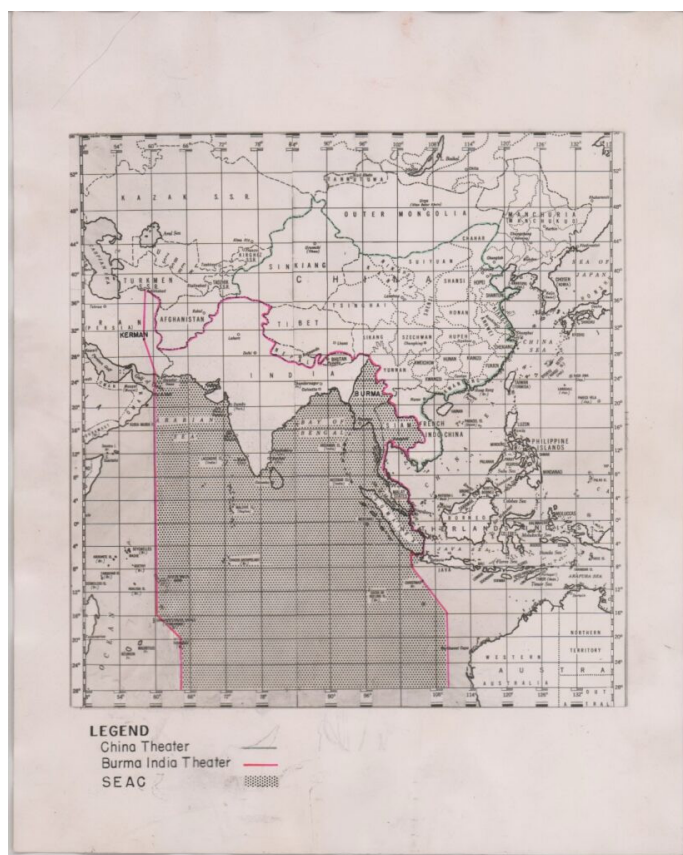


Screenshot of Post by an Anonymous User on X

Similarly, instead of looking to theatre commands in the United States, China, or Russia for inspiration, it would be better to refer to India's own history. The Second World War was fought with China-Burma-India as a single theatre under a single commander, Admiral Louis Mountbatten. If the communication capabilities of that era could facilitate command and control over this expanse of geography and millions of personnel, there is no reason why, in 2026, command and control cannot be exercised by a single India Theatre Command for the whole of India.

"The further backward you can look the further forward you are likely to see." In the ongoing reforms in India, whether it is a deliberate action to ignore the lessons of the past, since the outcomes do not support the current course of action, or plain ignorance, remains unknown. In the author's opinion, thorough research of own history and analysis are essential before any policy change. This is as a matter of national interest and needs attention.

1943-44 Map of China-Burma-India Theatre Source: The National Archives, US



These are just two instances in which the past can guide present reforms. There are many more. Churchill once said,

Return Of the Total War

Wg Cdr Akash Godbole | 23 April 2026

Source: *Bharat Shakti* | <https://bharatshakti.in/return-of-the-total-war/>



A year after the Pahalgam attack, India remembers and mourns the lost lives, while the Indian Army issued a strong message to Pakistan, stating that Operation Sindoor continues

On the first anniversary of the Pahalgam attack, it is sobering to remind ourselves of the emotions that surrounded drawing rooms across the Indian household. Apart from the sheer scale and nature of the cowardly attack, it also brought unnerving memories of the first decade of the 21st century that saw multiple terror attacks across the breadth of Indian territory. It is not to say there were no terror attacks thereafter.

However, the targets were predominantly members of the armed forces. It allowed the general populace to return to normalcy, or, to say, become a little complacent. The aftermath and operation Sindoor have been

discussed in as much detail as any national action in the last two decades. What has gone amiss in much of this discussion is the non-insulation of the general population from these terror attacks, in particular, and any warfare in general.

The piece aims to assess whether the days of frontiers and borders as secluded conflict zones are over, and whether the Indian population is as insulated as we all think it is.

While the article is titled “Return of the total war,” such a close engagement with violence is a distant memory for the Indian population at large. Classically, the concept of total war is one in which there is no distinction between front lines and civilian rear areas. For most of the present generation, it is something that happened on TV sets during the Gulf Wars, which saw attacks on industrial capacity, urban centres, and entire populations.

For those with a little academic inkling, these tales were read from stories of the world wars they would have come across. However, for most Indians, their imaginations are at best defined by the visuals of the Kargil War, which was limited and distant in the Himalayan heights. The idea is not to sensationalise the situation in any manner but to point out that the boundary between the battlefield and home is eroding once again, albeit in a very different manner from the world wars.

The assertion is not based solely on

kinetic actions. It is stressed that the character of war is changing rapidly, and the new domains of warfare are rapidly moving the means of warfare away from those traditionally trained to conduct it. Be it cyber, information, cognitive, narrative, or increasingly space, the capability and capacity to engage the adversary lies beyond uniformed personnel. The worry is that the scenario doesn't augur well for the intended economic trajectory that Viksit Bharat 2047 has laid down.

The violence has been brought to our doorstep, and the worry is that we are not ready. We scroll past it on our phones, but we have not yet adjusted our mechanisms, drills, or, for that matter, civic habits to living in a contested cyber and information space. Some examples of such complacency were reported during the air-raid siren drills and during Operation Sindoor, when many citizens treated serious preparedness measures as either a theatre or an inconvenience, rather than a rehearsal for real disruption.

Though the kinetic action was largely confined to border states, the reach of social media meant that the visuals were being played out in real time.

Another buzzword in strategic circles is the 'Whole of Nation Approach.' Israel is often cited as an example, but the geopolitical realities of our two countries are very different. It is not required for us to turn every citizen into a soldier. What is required is recognition that non-kinetic

fields like cyber, information, space and the security of critical infrastructure need resilience backed by civil institutions, private industry, and social discipline as much as by the armed forces.

The government of the day rightly bears the responsibility for the security and welfare of the population at large; however, that does not take away every citizen's responsibility for their own security and the security of their fellow countrymen. Yes, the clarion call is for the government to act, but also to recognise the value that every individual carries in this modern battlefield.

US President John F. Kennedy famously said, 'Ask not what your country can do for you—ask what you can do for your country.' The choice before us is simple: either we continue to bury our heads in the sand, treating war as a distant spectacle, or else accept the responsibility because, in this scenario, citizen indifference itself is a vulnerability.

As we step into this new form of total war, it is imperative for those mandated to ensure security to create institutional space for citizen participation. The armed forces must acknowledge the civilian capability and capacity to successfully plug into and engage in this total war. They need to understand that within the civilian population lies not only vulnerability but also capacity in terms of technical expertise, infrastructure, and national resilience that strengthen and augment national defence.

Hence, the task for the politico-military system is as much to protect society from war as to identify how this society can contribute to resilience and, possibly, deterrence in structured and responsible ways.

However, this cannot be left to sentiment or improvisation. It must be facilitated through policy, coordination and trust-building. The government's job is to recognise this, organise it, and build frameworks that allow for such engagement across the whole nation. Patriotism may be the sentiment that underlies such an effort, but in an era where the homefront is part of the battlespace, patriotism must express itself through preparedness, civic discipline, and the willingness to be part of a wider national security ecosystem.

Democracy and the Collapse of Strategic Credibility

Gp Capt VP Naik VM | 16 April 2026

[Source: CAPSS | https://capssindia.org/democracy-and-the-collapse-of-strategic-credibility/](https://capssindia.org/democracy-and-the-collapse-of-strategic-credibility/)



Image Source: Created by Autor using AI

Introduction

The oldest democracy in the world, the United States of America (USA), has always styled itself as the harbinger of peace, stability, and the rule of law, undertaking the onerous task of ensuring a rules-based international order. US democratic values have been deeply anchored in constitutional checks and balances, credible and effective institutions and the rule of law. Despite that, military actions in Venezuela and Iran in 2026 expose an interesting and stark paradox, wherein a system that was designed to prevent executive overreach proved to be unable and unwilling to restrain the unilateral war-waging spree of President Trump and his administration. This failure heralds far-reaching consequences well beyond Capitol Hill, shaking the USA's alliances, undermining deterrence guarantees, and casting a very long shadow over potential crises in the East and South China Seas.

This article seeks to examine how a democracy as old as the USA failed to safeguard itself from the idiosyncrasies of an incumbent President. It also explores the fracturing of long-lasting alliances, such as the North Atlantic Treaty Organisation (NATO), the destabilisation of global energy supplies, and more importantly, the erosion of strategic credibility as the world's lone superpower. Furthermore, the article seeks to understand the geopolitical ramifications of these actions by contrasting their complexities, juxtaposing the West Asian imbroglio with the East and South China Seas.

The Breakdown of Constitutional Restraint

At the very heart of the American constitutional system lies a deliberate allocation of power to declare war and associated activities. While Section 8 of Article I of the US Constitution empowers Congress to declare war, Section 2 of Article II designates the President as the Commander-in-Chief of the armed forces of America. The writing is very clear; no single individual could drag the country into a state of war. Yet, the current year has seen this balance waver. [Operation Absolute Resolve](#), launched in January 2026, was widely considered [illegal and carried out without congressional authorisation](#). The operation was seen not only as a violation of American domestic constitutional norms but also as a significant [violation of International Law](#). On similar lines, [Operation Epic Fury](#)

in February 2026 was also carried out without formal authorisation, and attempts by Congress to invoke the [War Powers Resolution](#) (WPR) failed in both chambers. [2] The [WPR has regularly been ignored](#) by various Presidents (Republicans and Democrats alike), and the resolution has never been decisively enforced by the American judiciary. The ensuing result was not just executive assertiveness but also institutional paralysis in the oldest democratic nation in the world. The cumulative effect was the President's ability to declare war, unconstrained by institutional measures, and simultaneously to discredit the Constitution and the Congress. What follows is pure anarchy in a democratic set-up.

Normalising Unilateral Aggression

Analysing the opening salvos in both operations reveals some common threads. In both cases, initiation of war or the use of force conveniently bypassed legislative approval. The President and his administration tried to legally justify actions post facto, which was contested. International norms and law were blatantly disregarded, and apex domestic institutions, including the Supreme Court, proved reactive and not preventive. This reflects the fragility of the system and brings out large chasms in an otherwise robust system.

The Collapse of Extended Deterrence

Ever since the end of the Second World

War, US alliances have always rested on a simple bargain. A guarantee of security in exchange for basing rights, alignment, technological support, and strategic dependence. Collective defence and extended deterrence capability, specifically in Europe, West Asia, and the Indo-Pacific, are now increasingly being questioned by allies and partners and deeply analysed by rivals. Structural fragility and defiance of the rules-based order are now questioning the very basis of the alliance formation. Trump's Greenland rhetoric deeply undermines [Article 5 of NATO](#), and if that is a sign of what is coming, many other US allies and partners need to start worrying.

The Three Critical Failures

Analyses of the two conflicts of 2026 have revealed some important facets of the security guarantee provided by the US, and the writing on the wall is becoming clearer. The two operations have revealed three critical failures of the US-led system.

(a) **Credibility Deficit.** Given that President Donald Trump has started acting unilaterally, disregarding domestic and international regulations and violating international norms, commitments made by the US now have an inherent credibility deficit. Allies and partners will no longer ask what the US can do; they would rather ask what this President can do. This is a direct reflection of an autocratic or an authoritative style of functioning rather than a democratic set-up guided by directive principles enshrined in the constitution.

(b) **Increased Risks to Allies and Partners.** Countries that have been hosting US bases now face retaliatory strikes from enemies of America. The war in West Asia reflects how all West Asian nations have been drawn into it without any decision-making authority. The countries have now got entangled in their own web, which was designed to provide them with comprehensive security.

(c) **Moral and Legal Erosion.** Traditionally, America has justified its global role by way of adhering to international law and ensuring democratic accountability. Both these have now eroded, and as a result, alliances have lost not only their normative legitimacy but also their military utility.

The broader conclusion on strategic deterrence and security guarantee is that the umbrella has not just weakened but been conceptually broken. It no longer guarantees security; it exports uncertainty.

Taiwan: A Crisis Reframed

The developments in West Asia will have profound implications for Taiwan. The traditional assumption is that Taiwan's strategic security relies heavily on US military deterrence, forward deployment, basing of elements of the US Indo-Pacific Command (USINDOPACOM), and a credible US commitment to defence in the event of Chinese aggression. Post-Operation Epic Fury, there is therefore a need to reassess such a strategic security framework.

(a) **Credibility is Now Contingent.** If US intervention largely depends on Presidential discretion rather than on an institutional commitment, deterrence would become very unpredictable, and adversaries would want to test the red lines. A situation like this could also alter the regional balance of power, as allies may resort to hedging because back-ups and security guarantees will always be required. Regional actors may, as a result, diversify security partnerships and focus on strategic autonomy.

(b) **The Chinese Strategic Interpretation.** From Beijing's perspective, two very relevant lessons emerge. Firstly, the Americans may act unilaterally and irrationally, which would translate into effective deterrence by the US because Beijing will not be able to anticipate Washington's thought process. The other lesson that emerges is that the American system lacks internal cohesion and support. This, therefore, presents an opportunity for China to capitalise. The emerging strategic ambiguity is systemic, and therefore, the red lines would have to be recalibrated.

(c) **Increased Escalation Risk.** The geopolitical situation around Taiwan is unique. The main competitor is a peer with credible nuclear capability and the wherewithal to target mainland USA. The region also has many players in the fray, and an impulsive unilateral action may lead to regional entanglement. In such a fragile environment, the escalation ladder is likely to become compressed, and the situation may quickly spiral out of control.

(d) **Efficacy of Overseas Operations Against an Equal Adversary.** Operations in West Asia have clearly indicated the pitfalls of conducting operations far from one's own territory. While overseas bases ensure continuous presence, they do not ensure logistics sustenance in a high-tempo conflict. As supplies diminish, supply chains become unusually long, making them more vulnerable to disruption. The presence of a peer adversary in the region further complicates the matter.

(e) **Relevance of Choke Points.** Another interesting facet that emerges is that the world's most advanced and powerful Navy was unable to control transit in the Strait of Hormuz. What emerges is that extra-regional powers may not be able to secure vital choke points and straits, and littorals will play an important role. Controlling the Straits of Malacca, Ombai-Wetar, and Lombok may therefore be an interesting strategy on paper, but physically achieving and maintaining control may not be possible. Navies, the world over, will need to recalibrate their strategies because the oft-touted goal of developing the capability to control the Sea Lines of Communication (SLOCs) may not be viable in a severely contested maritime environment.

Key Takeaways

(a) **Institutions Matter Much More than Intentions.** In the modern era, deterrence is not just about capability; it has more to do with credibility. While

intentions are subjective and often hidden, institutions provide the much-needed assurance, facilitate cooperation, and hold states accountable.

(b) Executive Dominance Undermines Stability. When war-making authority concentrates in one individual, predictability collapses. If that happens, the global system shifts from a state of manageable risk to assured uncertainty. Long-established norms, institutions and diplomatic rules break down, increasing the likelihood of strategic miscalculations.

(c) Alliances Require Trust, Not Just Power. Whilst power (military strength and material capabilities) provides the foundation for an alliance's utility, trust (reliable and non-detrimental behaviour) remains vital for long-term sustenance. In times of uncertainty, trust permits alliances to function without making the parties vulnerable.

(d) Norms are Strategic Assets. While short-term benefits may accrue by violating laid-down norms, the long-term strategic position may erode. Norms provide strategic legitimacy, which is essential in forging ties and developing partnerships.

(e) The Taiwan Imbroglio. Developments in West Asia and the ensuing conflict underscore a pertinent fact: Taiwan is not just a military problem. It is a credibility test of the American system, and, given what has happened in West Asia, the concept of collaborative

defence may need a revisit.

Conclusion

Collaborative defence, anchored in alliances and partnerships, has the potential to multiply capability, distribute risks and reinforce legitimacy. Deterrence becomes a shared venture, thereby raising the threshold for aggression. On the other hand, unilateral wars like the ones being waged by President Trump and his administration erode institutional credibility, strain alliances, and generate long-term instability, which outweighs any short-term gains that might have accrued. One thing is clear: cooperative security architectures underpin credible deterrence. Nations that invest in trust and shared strategic objectives are better positioned to prevent conflict, provided that they avoid strategic overreach and isolation. Any perceived hesitation, fragmentation among allies, or gaps between declared policy and action will shape Beijing's assessment of how Washington might respond in a crisis involving Taiwan, especially during President Trump's tenure.

3 Things Indian Military must keep out of its Reforms Agenda

Wg Cdr A Pichipoo Raja | 03 April 2026

[Source: ThePrint | https://theprint.in/opinion/indian-military-reforms-agenda/2895595/](https://theprint.in/opinion/indian-military-reforms-agenda/2895595/)



Indian Army | Yuri SmityukTASS via Getty Images

India's Ministry of Defence declared 2025 as the 'Year of Reforms'. This was followed by the release of Defence Forces Vision 2047 in March 2026. While these efforts list several goals for the military reforms, such as enhancing jointness and optimising resource utilisation, what they don't specify are the anti-goals — things that we don't want to happen.

Avoid continentalisation of Indian military strategy

The Great Wall of China is a testament to the predominant continental mindset of China in the past. Interestingly, China was a dominant maritime power in the early decades of the 15th century. It had the largest ships in the world and sponsored the remarkable voyages of Zheng He. This growth was achieved in a very short time and was strongly favoured by the rulers. However, this status enjoyed by

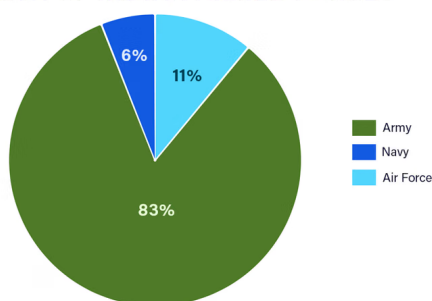
the newcomer navy was a regular cause for bureaucratic tensions and budgetary rivalry. With successive kings, a deliberate reorientation of the old continental strategy was orchestrated by the bureaucrats. Thus, China abandoned the maritime interests of its own volition and resumed construction of the Great Wall. The timing of this decision couldn't have been worse, as it was done exactly when the Europeans were beginning the exploration of the seas that later led to colonialisation.

Arzan Tarapore, in a 2020 working paper for Carnegie, argued that the Indian military strategy since Independence has revolved around ground forces managing threats on the continental periphery. This was primarily based on the use of large ground formations with air power in an adjunct role and never projecting sea power. Six years hence, things have possibly changed. Operation Sindoor demonstrated the growing confidence among the political leaders and the public in the employment of air power. On 14 Jan 2026, INSV Kaundinya, a stitched ship, completed its maiden voyage from Porbandar to Oman, demonstrating the government's interest in reviving maritime affairs. Yet, all this can be reversed in the absence of an anti-goal.

In other countries, reforms aimed at increasing jointness often entailed deliberate efforts to reduce the number of land forces. For China, the aim was to bring it to less than 50 per cent of the total armed forces. During the latest reforms in

the PLA, the total strength of the armed forces was reduced by 300,000, with the ground forces slashed by 40 per cent, the Navy's strength marginally increased, and the Air Force's strength kept the same. As a result, both the US and China now have land forces that are numerically less than 50 per cent of the total active duty military personnel. The strength of the Indian armed forces personnel (active duty) is shown in a chart below:

STRENGTH OF INDIAN ARMED FORCES



Source: Eighth Report (18th Lok Sabha) of the Standing Committee on Defence on Demands for Grants of the Ministry of Defence for the year 2025-26

ThePrint

Graphic by Deepakshi Sharma | ThePrint

In the absence of proportional force restructuring, the representation of the Indian Armed Forces is skewed toward the land forces. Further, since the creation of the post of Chief of Defence Staff (CDS) in 2019, the appointees have always been from the Army. This has historic precedence. All Commanders-in-Chief (C-in-Cs) of India before independence were from the Army, despite the post being open to the Navy and Air Force as well.

Although it is a myth that the Great Wall of China is visible from space, the modern-day equivalent of the Great Wall, the Indo-Pak border fence, is actually visible from space. With the Army constituting 83 per cent of the total strength and the CDS

always from the Army, like 15th-century China, it is possible that a continental approach emerges once again, exactly at a time when air, sea, and space are gaining prominence.

Avoid Achieving Interoperability through Downgrade

In the 1991 Gulf War, the communication networks on the US Navy ships and the theatre command HQ (CENTCOM) were not interoperable. Therefore, to transfer the classified data of Air Tasking Orders, data was burned on CDs (compact discs) and flown by helicopters between the places. This caused communication delays and affected operations. In 2026, this example of a CD might appear archaic, as some young readers must have never used one in their lives. However, this example illustrates that capabilities such as additional features, message transfer speeds, and encryption standards are often degraded to the lowest common denominator to ensure compatibility.

All three services have followed different technical paths. For example, the IAF took logistics online through the Integrated Material Management Online System (IMMOLS) as early as 2006, whereas a similar project was implemented in the Army in 2017. Likewise, there would be examples where the Navy or the Army would have been the pioneers. A quick way to achieve interoperability is by scaling down other users to the lowest specifications. This results in an

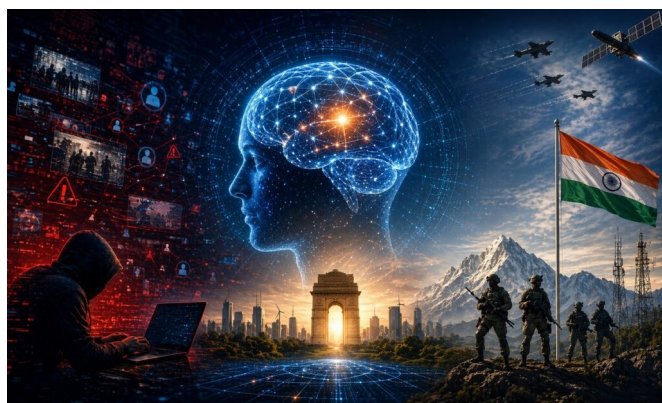
overall capability downgrade and must be avoided.

Appraising Cognitive Warfare for Vision 2047

Gp Capt PK Mulay, VM (Retd) | 22 April 2026

Source: CAPSS | <https://capssindia.org/appraising-cognitive-warfare-for-vision-2047/>

Created by the Author using AI



“The purpose of warfare is not to fight; it is to achieve a political objective. If you can achieve this objective without kinetic conflict, so much the better.”

Prof Nora Bensahe

Introduction

On March 10, 2026, India’s Ministry of Defence released Defence Forces Vision 2047: A Roadmap for a Future-Ready Indian Military. The document outlines reforms, capability enhancements, and structural

changes to make the Indian military future-ready. This document envisages, among other initiatives, the setting up of a Cognitive Warfare Action Force. The concept of cognitive warfare capability is a novel inclusion.

Inclusion of Cognitive Warfare may have its genesis in the war of narratives that erupted during and in the wake of Operation Sindoor. The Pakistani narratives overshadowed the Indian stories, leading to the downplaying of the total dominance achieved by the Indian military. In today’s post-truth world, strong narratives catch attention and evoke emotions, shaping public opinion. Appealing narratives, even if based on misinformation and untruth, still manage to catch attention. Facts by themselves carry no story. The story or narrative emerges when facts are woven into a thread to reflect an opinion. Selective inclusion of facts can craft stories that align with the beliefs and emotions of a target constituency. In such a scenario, retaining public support and garnering support of allies requires strong capabilities in crafting and sustaining dominant narratives and discrediting those that are contrary. There is thus a need to craft narratives that advance one’s opinions and challenge and discredit opposing narratives spread by adversaries.

Cognitive Warfare and Narrative Shaping

Narratives are becoming increasingly influential in international relations. A nation’s hard power comprises its

capabilities in the military, economic, and social domains. On the other hand, narratives are a powerful tool of a nation's soft power and shape other states' perception of its actions and events. Narratives are used to gain influence and may be used as a weapon against rivals and enemies. They facilitate good relations and, if used inappropriately, derail dialogue. The United States (US) and the West are prime examples of narrative weaponisation through news and media control. During the initial days of the Ukraine-Russia War, news and opinions emerging from Russia were blocked, and a one-sided narrative of the war was projected to the world, casting Russia as the villain of the piece.

The Indian focus on cognitive warfare in the Vision 2047 is therefore very timely. Cognitive warfare involves creating compelling narratives that resonate with people, influencing local public opinion and shaping the opinions of target audiences. Cognitive warfare has come to the fore even in the USA, with Frank Hoffman (credited with popularising the term Hybrid Warfare) stressing the need for the US military to actively appreciate its importance.

Understanding Cognitive Warfare

But what is cognitive warfare? Cognitive warfare is a non-kinetic means of supporting the achievement of the nation's security objectives. It attempts to influence the decision-making of the adversary's leadership and the opinion of

its population. According to Frank Hoffman, it is the application of targeted and tailored messages and nonviolent methods against civilian and military decision-makers, or the general population of a target state, to gain a positional advantage in the cognitive domain or to achieve desired political, military, and informational outcomes.

As per the North Atlantic Treaty Organisation (NATO), cognitive warfare aims to affect attitudes and behaviours by influencing or disrupting individual and group cognition. According to the Defence Forces Vision 2047, cognitive warfare identifies the human mind as a key battlefield. With its three key enablers of cyber, psychological, and information operations, it poses a critical security challenge. Focused disinformation exploits societal, cultural, religious, and economic fault lines to sow disorder and chaos, and to weaken nations from within.

While the term may appear to be of recent origin, a peek into history would reveal that this mode of warfare has a long history. Many would recollect that in the Eastern theatre during the 1971 Indo-Pak War, Indian forces were advancing towards Dacca. Around December 13, 1971, the Chief of Army Staff (COAS) General Sam Manekshaw sent a stern, direct message to Pakistani forces in East Pakistan to surrender or face annihilation. He declared, "You surrender, or we wipe you out." In return for surrender, he promised treatment according to the Geneva Convention and protection from attacks by Mukti

Bahini and agitated Bangladeshis. This message, to a large extent, influenced the Pakistani forces' decision to surrender. The messaging from General Manekshaw may well be considered as cognitive warfare, shaping the enemy's decision to align with the Indian military's objective.

A more recent example of this kind of warfare is China's attempts over decades to create a mindset among the Taiwanese population to accept reunion with the mainland. On average, Taiwan is flooded with up to 2,400 pieces of disinformation from the mainland daily. Most of these attempts aim to induce people to elect a leadership that is favourable towards reuniting with the mainland. These attempts have yet to yield the desired results for China.

This kind of warfare has therefore been with us for some time. In recent times, however, new technologies have enhanced the efficacy of communication by an order of magnitude. Gone is the earlier model: a large number of posts, millions of fake accounts, and battalions of bots pushing content across the media. Now the measure is not the volume of posts but algorithms and Artificial Intelligence (AI)-driven storytelling. These changes have transformed cognitive warfare into a viable means of manipulating public opinion, influencing the decision-making of target countries.

Cognitive Warfare and Other Non-Kinetic Tools

Cognitive warfare, as per the Defence Forces Vision, employs psychological warfare and cyber and information operations as enablers. In any case, cognitive and psychological warfare both aim to target the adversary's mind and thinking and are thus similar. Considering that cognitive warfare depends on crafting and spreading narratives, the action group would need to control the necessary cyber and information resources to launch its messages. The proposal for setting up the cyber command and centralisation of cyber operations may restrict the scope of the cognitive action force. Similar interference may occur in information operations as well. A solution may lie in an omnibus non-kinetic action force that combines cognitive action force, cyber, and information operations. This will improve functional efficiency, avoid coordination issues and prevent each function from operating in silos.

The other aspect is that cognitive and other non-kinetic forms of warfare differ substantially between military and civilian applications. Cognitive warfare, when employed by the military, may aim to exploit opportunities for deception or target the will and morale of enemy forces in specific operational contexts, with results expected in the near-term. When used against the adversary's population or civilian leadership, the objectives would be to change behaviour or alter the thinking on certain contentious issues, such as China's

attempts to influence the Taiwanese population to reunite with the mainland. The means and processes would differ between the military and the civilian applications. In civilian applications, the time frames extend to years or decades, as seen in China's attempts to influence Taiwan. Influencing people presupposes knowledge of their culture, behaviour, and beliefs. This would require expertise generally residing with the Ministry of External Affairs (MEA) and academicians. Though the Defence Forces Vision 2047 appears to include even civilian applications that relate to sowing disorder among the population, such initiatives are best left to other professionals. It would be better for the military to focus on employing non-kinetic forms of warfare to further their plans rather than assuming responsibility for other facets, such as influencing the adversary's political leadership or population.

Political Warfare

The coining of cognitive warfare and its inclusion in military parlance reminds one of the eminent military analyst, Colin S. Gray's term 'presentism'. He described it as a tendency of each generation to view the problems it faces as unique, something not encountered earlier, disregarding historical continuities. A much better approach to cognitive or non-kinetic warfare was articulated long ago during the Cold War period by George F Kennan, an eminent American diplomat famous for his "Long Telegram." He called all these non-kinetic means "Political Warfare." He defined it as

applying Carl von Clausewitz's doctrine in peacetime. Political warfare, as per him, was the employment of all means at a nation's command short of war, to achieve national objectives.

Cognitive, information, psychological, and cyber operations, which overlap in scope and are often employed together, need to be discussed in the language of political warfare, which refers to the employment of non-kinetic methods in peacetime. It would also obviate the need to look at each of these categories in isolation, leading to operating in silos, duplicating effort, or interfering with each other's functioning.

Since the use of these tools differs between military and civilian purposes, each is best managed by a different agency. In the Indian context, the civilian part of "Political Warfare" may be managed by the National Security Advisor's (NSA's) secretariat, while the military aspects of "Non-Kinetic Warfare" are undertaken by individual Services and coordinated by the Integrated Defence Staff Headquarters (HQ, IDS), which may also liaise with the NSA's secretariat for improved military-civil coordination.

Limitations of Cognitive Warfare

Even as the military contemplates creating a Cognitive Warfare Action Force, there is a need to understand the major limitations of cognitive warfare. Cognitive warfare results in dissension

and harassment within the target country's military or in confusion in decision-making. However, the disruptions and inconvenience are unlikely to be so severe as to force opponents to yield to unpalatable demands. Such non-kinetic tools are weak, slow to produce outcomes, and their impact is nebulous, making them unlikely to coerce an opponent or tilt the balance of power. Unlike force or violence, cognitive warfare does not threaten death and destruction and thus cannot bring about finality in a confrontation. It is therefore best employed in conjunction with other domains such as land, sea, air, and space. Cognitive operations can be employed in peace and before the commencement of military operations to dent enemy morale and interfere with decision-making by feeding disinformation and sowing discord. During war, all domains can be integrated to overwhelm the adversary.

Another major limitation of cognitive warfare, or of crafting dominant narratives, is their long-term efficacy. Any narrative in the long-term will need to align with reality. In this regard, the Ukraine-Russia War may be illustrative. In the early stages of the war, major global news agencies such as Reuters, Associated Press (AP), and Agence France-Presse (AFP) banned the broadcast of Russian news. As a result, only a one-sided perspective from the West was shared worldwide. Videos such as "Ghost of Kyiv," which depicted a Ukrainian MiG-29 shooting down innumerable Russian fighters, went viral. The video turned out

to be false. Over time, everyone realised the video was fabricated. Even today, news emerging from this war continues to be one-sided, showcasing Ukrainian heroism and resistance. However, all these narratives cannot hide the fact that Russia is today in occupation of over 20 per cent of Ukrainian territory, with Ukraine unable to recapture it. Narrative shaping sounds very good and enthrals followers for some time. But ultimately, reality cannot be brushed aside.

The cliché, "shaping the narrative is as important as shaping the battlefield," remains what it is: a cliché. Stories ultimately have to yield to reality. Pakistani narratives about air superiority during Op Sindoor initially dominated social media. However, the bull horns have quietened over time when countered with facts. Reality emerged when Western think tanks accepted Indian dominance and commended the exceptionally crafted and controlled punitive strategy. Reality over time doused the flames of false narratives.

Conclusion

The Indian military's focus on cognitive warfare is timely and appropriate. Enhancing narrative crafting and dissemination skills is necessary in today's socially connected, wired world. Narrative dominance does bring dividends in the form of improved domestic and foreign support. The methodology of implementing this concept, however, needs more thought. Considering the overlap in scope and similarity of objectives, it would be desirable to bring

all non-kinetic tools under unified control. This would enable better coordination and integrated employment. The military should focus only on military applications with immediate, measurable outcomes. The civilian applications, which are long-term and nebulous in their impact, are best undertaken by an agency within the NSA. IDS could enable coordination between the military and civilian applications.

Cognitive warfare is appealing because of its promise to achieve security interests without resorting to force. But it must be understood that, while it may appear formidable, it cannot ensure decisive outcomes. Projecting it as an effective tool to preclude war and violence is, therefore, somewhat of an exaggeration. Such exaggeration would be harmless were it not for the fact that it relates to the serious business of war and a country's survival. Cognitive warfare and other kinetic tools are best visualised as options for political warfare: employing Clausewitz's doctrine in peacetime. In war, these may be employed in an integrated multi-domain operation. Any overestimation of the efficacy of this particular tool may distort the overall strategy during wartime, jeopardising the chances of victory. In peacetime, such thinking may lead to the allocation of resources to bolster capabilities in cognitive operations, reducing those for kinetic warfare. The results can prove disastrous when expectations are belied. Prudence and perspicacity demand that cognitive warfare should not be considered as a substitute for force or violence. These

tools are best employed to support military operations in wartime and to further diplomatic interests in peacetime. When considering non-kinetic tools, it is best to keep in mind Hannah Arendt's advice that "The chief reason warfare is still with us is ... the simple fact that no substitute for this final arbiter in international affairs has yet appeared on the political scene."

Third Gulf War: What Lessons for Switzerland?

Mr Adrien Fontanellaz | 22 April 2026

Source: CAPSS | <https://capssindia.org/third-gulf-war-what-lessons-for-switzerland/>



Image Source: Author's creation

A high-intensity war erupted in Western Asia between 28 February and 7 April 2026, before leading to a ceasefire that may only be a brief pause before the resumption of hostilities. This 38-day war was primarily an air campaign: the Israelis and Americans deployed around five hundred tactical combat aircraft, supported by a wide array of force multipliers such as aerial refuelling tankers, electronic warfare aircraft, and airborne early warning and command platforms. Dozens of reconnaissance and strike drones, a vast intelligence apparatus, communications systems, and cyber warfare capabilities—including a satellite ecosystem with unique capabilities—along with long-range precision strike capabilities from naval and land-based systems, completed this operational setup.

Operating most often from bases or ships located far from Iran's borders,

the Americans, according to their own statements, had struck more than 13,000 targets by 6 April 2026, conducting more than 13,000 combat sorties. As of 1 April, Israeli aircrews had struck 4,000 targets and dropped 16,000 munitions on Iran. More than 2,000 separate aerial refuelings were required to enable their fighters to operate over Iran, approximately 1,500 kilometres from their home bases. These figures attest to a very high-intensity campaign following a classical methodology aimed first at decapitating the enemy's command structure, then targeting its defences, offensive capabilities, and finally the infrastructure needed to regenerate them.

For their part, the Iranians resisted as best they could despite the overwhelming superiority of the coalition forces and the considerable damage sustained. Their air defences notably succeeded in damaging at least three coalition combat aircraft (a F-15, a F-35, and two F-18), shooting down three others (an F-15E and two A-10s), as well as 30 large reconnaissance and combat drones (11 Hermes 900, 4 Heron TP, 13 MQ-9 Reaper, and 2 Wing Loong II). In addition, between 28 February and 7 April 2026, Iranian forces launched at least 2,300 ballistic and cruise missiles and more than 6'500 attack drones in counter-force strikes—targeting military objectives—and counter-value strikes, aimed at economic, civilian, or symbolic infrastructure in order to inflict maximum cost on their adversaries. They managed to maintain a relatively steady firing rate from 9 March 2026 onward, with an average of about one hundred munitions

launched per day, achieving several notable military successes along the way, such as the destruction on the ground of an E-3 airborne early warning and command aircraft, as well as several radars essential for intercepting ballistic missiles.

At this stage, although still little is known about the exact conduct and course of these operations, their observation already allows for some lessons to be drawn that are applicable to Switzerland and its security policy.

Centrality of Cyber

The Israeli-American offensive was not only kinetic: it also involved a multitude of cyberattacks, highlighting the critical importance of secure and hardened communications infrastructures. It was also preceded by numerous information and influence operations, which nevertheless did not achieve their objective, namely a popular uprising. These elements encourage the Confederation to continue and intensify the efforts already undertaken in this area within the framework of its security policy.

The Importance of Civil Protection

The fact that Israel recorded only 21 civilian deaths after enduring 479 waves of Iranian attacks is due not only to the effectiveness of its missile defences, but also to a highly developed civil protection infrastructure. It is indeed unrealistic to assume that all enemy munitions can be intercepted. This infrastructure notably

includes protected rooms in newer buildings, a large number of public shelters, as well as an alert system enabling the population to be informed in real time. This confirms the crucial role of civil protection in Switzerland, which must be funded accordingly.

Worrisome Capability Gaps

The assessment is worrying regarding Switzerland's ability to face a long-range air campaign. The modernisation of its integrated air operation command and coordination system has been delayed, while no system capable of intercepting ballistic missiles is currently in service. Due to repeated delays in the delivery of Patriot systems and the slow decision-making processes in Switzerland to find a substitute, this capability gap is likely to persist. In contrast, the order of five medium-range IRIS-T systems should help meet another major requirement. However, the segment of decentralised air defence systems, designed to intercept low-cost munitions fired in large numbers—particularly long-range attack drones—remains neglected, even though addressing it would require modernising and expanding the existing anti-air artillery inventory or acquiring new dedicated systems.

Extended Ranges

The campaign also highlights the limitations of Switzerland's small fighter fleet, nowadays based around 30 aging F/A-18 C/D. Operations in the Persian Gulf showed that the first line of defence against

long-range strikes rests on fighter aircraft, which can intercept part of the enemy munitions (attack drones, cruise missiles) before they reach the engagement envelope of air defence systems. For a small air force, this requires aircraft capable of sustaining repeated missions while carrying a significant number of air-to-air missiles. On the offensive side, the campaign underscores the need for very long-range air-to-ground munitions, allowing targets to be struck without entering adversary defence bubbles. Switzerland currently lacks such capabilities entirely. It must therefore acquire long-range precision strike capabilities, whether ground-based or air-based, adapted to contemporary engagement distances, otherwise it will only be able to absorb attacks without being able to disrupt them.

Stockpiles and Attrition

After Ukraine, this third Gulf war confirms the importance of maintaining substantial ammunition stockpiles, essential for sustaining a conflict over time, given that several months or even years can pass between the order and delivery of sophisticated munitions. This issue is even more critical as such munitions—long-range air-to-ground missiles, missile interceptors, or air-to-air missiles—are very expensive. There is a temptation to reduce quantities in order to acquire more weapon systems, at the risk of severely limiting their usefulness due to a lack of available ammunition. This reasoning also applies to reconnaissance drones, which, given their high attrition in combat, must be considered consumables.

The value of hardened infrastructure

The Iranians succeeded in preserving most of their missile arsenal, as well as a large part of their drones and combat aircraft, thanks to deeply buried underground facilities, largely protected against American penetrating munitions. Carved into mountainsides, these installations recall the caverns built in Switzerland during the Cold War. This observation supports maintaining and refurbishing existing fortified infrastructure.

Dispersion and Mobility as Imperatives

The Iranians also dispersed and concealed their assets, making extensive use of decoys and frequently changing their positions. In contrast, the Americans suffered several losses due to their tendency not to relocate their air defence batteries. In the Swiss context, this confirms the relevance of efforts aimed at operating flexibly from dispersed bases, as well as the need to acquire weapon systems that are easily deployable and compatible with rudimentary infrastructure.

Issues Related to the F-35 Procurement

These lessons also raise questions about the ongoing acquisition of the F-35 to replace the Hornet. While it has proven effective as a spearhead of the coalition operations thanks to its stealth and advanced information-gathering and exploitation capabilities, its availability rate remains lower than that of other aircraft, and its operation depends

on a substantial support infrastructure. Moreover, its design prioritises stealth at the expense of payload capacity. These factors, combined with the known challenges of the programme, suggest that—short of a politically difficult cancellation of the order, already reduced from 36 to 30 aircraft—it could be further reduced to a single squadron of about a dozen aircraft, in favour of a mixed fleet including aircraft better suited to sustained high-intensity operations, such as the Gripen E or the Rafale.

The End of Air Supremacy as a Given

Since the early 1990s, it has been widely assumed that Western armed forces would operate with air superiority, or even air supremacy. This third Gulf war, like the conflict in Ukraine, demonstrates that it is now possible to conduct asymmetric air campaigns based on relatively inexpensive long-range precision munitions. This challenges many doctrinal fundamentals and requires relearning how to operate in an environment where the air threat is omnipresent..

Air Power

Airbases in the Crosshairs of Warring Nations—Is India Ready?

Air Vice Marshal Anil Golani (Retd), DG, CAPSS and Ms Bantirani Parto | 08 April 2026

Source: The Print | <https://theprint.in/opinion/airbase-attacks-modern-wars-india-air-defence/2898698/>



File photo | Al Udeid Air Base, Qatar | Picryl

Airbase attacks have become commonplace in both major and minor, as well as symmetric and asymmetric, conflicts across the world. Though not a novel phenomenon, such attacks are a direct result of the decisive advantage air power holds, compelling warring actors to strike each other's airfields and associated infrastructure.

“It is easier and more effective to destroy the enemy's aerial power by destroying his nests and eggs on the ground than to hunt his flying birds in the air,” Italian Army General Giulio Douhet acutely observed in 1921.

The development of modern

sophisticated weaponry—from missiles to the proliferation of unmanned aerial systems and loitering munitions to precision strike capabilities—has further facilitated such attacks.

Although attacking an airfield does not necessarily translate into air denial, which is the ability to prevent an adversary from operating in the air domain, it can impede an air force's capacity to conduct both offensive and defensive operations. This is especially so if the attack is on a forward airbase. Such attacks can deny a force from achieving air parity, and consequently, from establishing air superiority.

A study by RAND Corporation identified four broad objectives behind airbase attacks: capture airfield, deny defender use of airfield, harass defenders, and destroy aircraft and equipment. Not every airbase attack strives for all of these goals; it typically depends on the level of threat perception linked to the airfields and accordingly, the degree of damage the attacker wants to wreak.

What Recent Conflicts Lay Bare

Three months into 2026, the world has already witnessed umpteen airfield attacks. On 3 January 2026, the United States launched 'Operation Absolute Resolve' to capture Venezuelan President Nicolás Maduro. Key to its success was the US forces infiltrating the country's airspace by neutralising its air defences in different bases such as Catia La Mar and

Port of La Guaira. In any case, Venezuelan air defence units, composed mainly of Russian-made S-300 and Buk-M2Es, were uncamouflaged and vulnerable, with some even being non-operational.

More recently, Iran's retaliatory response following the assassination of Ayatollah Ali Khamenei by a US-Israeli strike consisted of attacks on US military bases across the Middle East. It targeted US airbases in Qatar, the United Arab Emirates, Kuwait, Jordan, and Iraq.

Closer to home, in May 2025, India struck 11 Pakistani airbases in the aftermath of the Pahalgam terror attack. Most notable among them was the Nur Khan airbase, located in Rawalpindi's Chaklala Cantonment, not too far from Islamabad. Using the four objectives outlined by the RAND study, it can be said that India's goal was neither to capture these airfields nor to deny the defender the use of airfields. Rather, it had the latter two aims: harassing defenders, and destroying aircraft and equipment by striking air defence units, logistical infrastructure, and runways to temporarily degrade operational capability. Pakistan, too, attempted to strike the Indian Air Force's forward bases in Udhampur, Pathankot, Adampur, and Bhuji.

While airbase attacks are typical in conventional wars, such attacks are now being witnessed in conflicts that fall well below the threshold of a full-scale war, without full-scale military mobilisation.

This was apparent in the latest conflict between Afghanistan and Pakistan, where the Afghan Taliban claimed to have struck Pakistan's Nur Khan airbase, while satellite images show that Pakistan hit Afghanistan's Bagram base.

Also read: Naxalism was on decline under Manmohan Singh. Modi govt moved in at the time of consolidation

India's Preparedness

It is against this backdrop that taking stock of India's air defence architecture assumes greater importance. India's air defence is a mix of long, medium, and short-range missiles; aircraft interceptors; electronic warfare systems; and the Integrated Air Command and Control Systems (IACCS). The long-range variant consists of the Russian-made S-400 Triumf surface-to-air missile (SAM) system, famously known as the 'Sudarshan Chakra', which was used effectively in Operation Sindoor to neutralise Pakistani drone and missiles. The Barak-8 missile system, co-developed by India and Israel, has both long-range and medium-range options.

The medium-range variants comprise the indigenously developed Akash SAM, also used successfully during Operation Sindoor. The short-range consist of Man Portable Air Defence System (MANPADS). India also managed to operationally integrate the L-70 guns into its integrated air defence system.

To ensure continuity in air operations and minimise damage to combat aircraft, India has diversified its air assets. Among other measures, this means investing in Emergency Landing Facilities (ELFs), which turn highways into runways in contingencies. In February 2026, India inaugurated the first ELF in the Northeast. The Moran Bypass highway in Assam's Dibrugarh district has been converted into an emergency landing strip, on which aircraft such as C-130J, Rafale, and Su-30MKI were put on display. The first ELF to be constructed was on the National Highway-925A in Rajasthan's Barmer in 2021, although mock landings had been conducted as far back as 2017 on the Lucknow-Agra Express Highway.

More Ought to be Done

India's air defence architecture, based on the IACCS, proved its mettle in the last conflict. However, more can be done to fully integrate all three services and civil aviation radars to provide a composite air situation picture to decision-makers. The Air Battle Managers (ABM), who manage every node of the IACCS, exercise distributed control and decentralised execution to the weapon systems that would engage hostile threats.

This command and control architecture needs to be made resilient, jam-resistant, and integrated with AI tools to respond to incoming and evolving threats. From hard-kill options to soft kills, the entire system needs to be indigenous, with

the ability to integrate sensors from the space domain, so as to protect against ballistic missile threats. This is in tandem with Prime Minister Narendra Modi's goals of Atmanirbhar Bharat and Mission Sudarshan Chakra, which aims to build an indigenous, robust air defence system by 2035.

While no air defence system would be foolproof, India must ensure that its sovereign airspace is as impregnable as possible, in particular its airbases, which hold crucial assets for offensive and defensive air operations. This is especially considering the stark cost asymmetry at play. It is cheaper to strike an airbase than defend one. Offensive weapons are mushrooming rapidly at low costs, while defence systems, exorbitant to build and sustain, are racing to keep pace with evolving threats. But no matter how expensive air defence is, it arguably helps control the escalation ladder, because it limits the damage an adversary can cause.

In addition, if the air defence weapon systems are mobile, their survivability and effectiveness would only increase against enemy air attacks.

Rethinking Air Power: Precision, Persistence and the Future of Force Application

Wg Cdr Vikas Kalyani | 10 April 2026

Source: CAPSS | <https://capssindia.org/rethinking-air-power-precision-persistence-and-the-future-of-force-application/>



Image Source: Created by the Author using AI

Introduction

Air power's strategic potential remains constrained not by technological limits, but by doctrinal inertia rooted in the 1991 Gulf War paradigm. Modern capabilities of air power, such as persistent Intelligence, Surveillance, and Reconnaissance (ISR) tracking, mass precision effects, and real-time logistics observation, enable decisive air campaigns that can either terminate conflict or soften the way to it. Military history warns that such technological-doctrinal mismatches persist until battlefield reversals compel reassessment, underscoring the urgent need to shorten the doctrinal lag by rethinking at the pace of technological evolution.

The Obsolescence of Gulf War Doctrine in Modern Conflict

The targeting philosophy that defined Operation Desert Storm in 1991 represented a paradigm shift in military affairs. The integrated air campaign designed to systematically degrade Iraqi command and control, destroy air defences, eliminate Scud missile batteries and achieve air superiority before committing ground forces, reflected a particular strategic logic: air power existed to enable ground operations, not to replace them. This doctrine, refined through subsequent interventions in Kosovo, Afghanistan, and Libya, has become the default framework through which military planners evaluate the utility of air power. Yet as geopolitical tensions between the United States (US) and Iran escalate, this inherited wisdom demands rigorous reassessment. The assumption that air power alone cannot achieve strategic objectives is increasingly a statement about outdated doctrine rather than inherent limitations of the medium.

The Ground Force Assumption

The conventional wisdom that wars cannot be won from the air rests on a historically grounded but doctrinally static premise. Critics of air-centric strategy correctly observe that air power struggles to hold terrain, control populations, and destroy the diffuse organisational networks that sustain insurgent and conventional adversaries alike. These limitations are real. However, the critics conflate the

limitations of historical air power with those of air power as such, a category error that obscures transformative developments in reconnaissance, precision strike, and persistent surveillance that have fundamentally altered the equation.

The ground-centric view of victory emerged from conflicts in which air power operated with significant constraints: limited sensor reach, weapons with finite persistence, communications architectures that could not process battlefield information at machine speed and adversary forces that could disperse, conceal and regenerate faster than targeting cycles could eliminate them. These conditions no longer describe the operational environment that advanced air forces can create.

The ISR Revolution

The transformation of ISR represents perhaps the most consequential shift in the air power equation. Modern ISR systems, such as satellite constellations, high-altitude unmanned platforms, networked sensor grids, and artificial intelligence-enhanced data fusion, have created an unprecedented capacity for persistent awareness of adversary activities across vast geographic expanses. While Cold War and Gulf War-era planners worried about “area denial” and the fog of war, advanced ISR has fundamentally compressed the sensor-to-shooter timeline and expanded coverage to continental proportions.

The implications for targeting philosophy

are profound. Traditional air campaigns focused on achieving localised effects against high-value, relatively static targets: airfields, command centres, radar installations and industrial facilities. Modern air power can now maintain continuous tracking of mobile targets, observe adversary logistics in near-real time, and identify patterns of operation that reveal intentions before they materialise into action. This is not merely an incremental improvement in targeting accuracy; it represents a qualitative shift toward what some strategists term “omniscient awareness” of the battlespace.

Mass Precision: A Contradiction Resolved

The phrase “mass precision” may appear oxymoronic to those trained on twentieth-century military theory, which held that precision and mass were inversely related. Precision weapons were few, expensive, and required ideal conditions; massed fires were inaccurate, indiscriminate, and politically costly due to concerns about collateral damage. This dichotomy no longer holds.

Contemporary precision-guided munitions can be delivered at scale. The economics of precision strikes have been transformed by advances in guidance technology, manufacturing efficiency, and networked targeting, which allow multiple platforms to engage multiple targets with a high probability of effect. The operational concept of “mass precision” now describes the simultaneous

or near-simultaneous application of precision effects across a wide area, overwhelming adversary decision cycles and generating cascading system failures across their operational architecture.

When combined with advanced ISR, mass precision enables a targeting philosophy that operates not on individual high-value nodes but on the connective tissue of adversary systems: logistics convoys, maintenance facilities, communications relays, fuel depots and the human networks that sustain military operations. The objective shifts from destroying enemy forces to degrading enemy capacity and making the adversary’s military apparatus inoperable rather than eliminating it piece by piece.

Persistence and the Elimination of Regeneration

One of the core limitations of historical air power was the adversary’s capacity to regenerate losses. Air campaigns could destroy factories, but industry could relocate. Planners could eliminate tank battalions, but reserves could be mobilised. The temporality of air power operated on a different scale than the adversary’s ability to recover, adapt and reconstitute.

Modern air power, particularly when using unmanned systems and long-endurance platforms extensively, introduces a new variable: persistence. Persistent presence over the battlespace, maintained not by rotating crews through

exhausting sorties but by platforms that can loiter for days or weeks, fundamentally alters the regeneration calculus. When a logistics convoy destroyed today is followed by continuous observation that prevents its replacement tomorrow, when maintenance facilities are struck before repair efforts can be brought in, and when leadership is engaged before coordination can be re-established, the adversary's organisational capacity to recover erodes not gradually but systematically.

This is the conceptual foundation for what some military theorists now call "time-sensitive targeting at operational scale," as in the sustained, intelligent application of precision strike against the operational rhythms of adversary forces, degrading their capacity faster than they can adapt or regenerate.

Doctrinal Re-imagination

The practical obstacle to realising this transformation is not technological but organisational and intellectual. Military institutions, including the United States Air Force, have inherited doctrinal frameworks, career promotion patterns, and operational concepts that privilege the Gulf War model. Joint force integration still treats air power as a supporting arm rather than a potentially decisive instrument in its own right. Acquisition programmes prioritise platforms and systems designed for the previous era's conflicts. Training and education emphasise tactics optimised for scenarios that no longer exist.

Rethinking the application of force requires addressing these institutional dimensions. It requires developing operational concepts for air power used independently of ground operations and concepts that account for political constraints on collateral damage, the specific vulnerabilities of twenty-first-century adversaries, and the integration of cyber, electronic warfare, and space capabilities into a coherent operational design.

The Iran scenario illustrates these challenges. An Iranian adversary presents a complex target set: distributed leadership, resilient command networks, tunnel systems, mobile missile launchers, and a population whose attitudes toward military operations are not uniform. Traditional air power doctrine would prescribe a campaign of degrading these targets in preparation for a ground invasion that may never come. But a reimagined approach might instead focus on systematically isolating Iranian military capacity from its support structures by targeting energy infrastructure, financial networks, supply chains, and the technological inputs that sustain military capability, while maintaining persistent observation to prevent adaptation and reconstitution.

Conclusion: The Imperative of Doctrinal Evolution

The proposition that air power alone cannot win wars is an empirical claim about historical experience, not a theoretical law. It reflects what air power has done under

particular doctrinal, technological, and political constraints, but not what it could do under conditions of transformed ISR, mass precision, persistent presence, and reimagined operational concepts.

Military history demonstrates that periods of technological transformation are often followed by periods of doctrinal lag, during which institutions cling to inherited frameworks until strategic failure forces reassessment. The current tensions between the United States and Iran, and the broader challenge of deterring or defeating adversaries across the spectrum of conflict, provide the strategic impetus for that reassessment.

The future of force application through the medium of air will not resemble the Gulf War. It will be characterised by distributed, networked operations; by precision effects delivered at scale and speed; by a persistent presence that denies the adversary the time and space to adapt; and by targeting philosophies that aim at system degradation rather than force attrition. The intellectual challenge is to develop these concepts, to resource them appropriately and to overcome the institutional inertia that privileges the familiar over the effective.

Air power has always been the medium of the future. The question is whether today's air forces will seize that future or remain trapped in the targeting philosophy of thirty-five years ago.

Beyond the Kill Zone: Why Fighter Jets Still Matter for India

Ms Ritu Sharma | 25 April 2025

[Source: CAPSS | https://capssindia.org/beyond-the-kill-zone-why-fighter-jets-still-matter-for-india/](https://capssindia.org/beyond-the-kill-zone-why-fighter-jets-still-matter-for-india/)



Image Source: Created by the Author using AI

Introduction

The Indian Armed Forces are undergoing one of the most significant reforms in their history – theatreisation, wherein the resources of the three forces will be consolidated under three unified commands. This has sparked debates over resource allocations among the three services – army, navy, and air force, particularly regarding the role of crewed fighter jets in the Indian Air Force (IAF).

The recent wars, including the Ukraine-Russia War and the US-Israel-Iran conflagration, have seen the efficacy of low-cost, high-impact technologies like the drone and long-range missiles. During Operation Sindoor, one of the most successful platforms has been the Russian-origin S-400 Surface-to-Air Missiles (SAMs) and drones. Against this backdrop, many

Indian Army veterans argue that long-range vectors can achieve similar results without risking pilots.

This argument comes at a critical juncture, as the IAF, at a historic low in its fighter jet strength, is undertaking a massive modernisation drive with the purchase of 114 multi-role French Rafale fighter jets. This much-overdue modernisation will require a major cash infusion, which raises the question of whether the IAF would be better off investing in more long-range missiles, as one of the Generals argued, “Why risk aircraft when missiles can do the same job?” He added that BrahMos, whether ground-launched or aircraft-launched, has the same effect.

Against this backdrop, this article seeks to weigh whether crewed fighter jets will remain central to the IAF’s future warfare strategy or whether advancements in missile and drone technology will render them obsolete.

Evolution of Air Power in the Indian Sub-continent

The IAF is the youngest of the three Indian Armed Forces and has been deployed in all the wars that India fought against Pakistan after independence. In 1947-48, 1965, 1971, and 1999, air force assets were deployed to varying degrees. In the 1962 war against China, air power was not utilised in an offensive role; it was one of the wars in which India had to bear the ignominy of defeat.

The last time India deployed its fighters offensively in enemy territory was in the 1971 war against Pakistan, where it “drove home the fury of war to the people of Pakistan,” and derailed Pakistan’s military strategy in East Pakistan.

For a long time, the Indian strategic experts held the view that the utilisation of the IAF assets could lead to escalation and hence refrained from deploying them in limited conflicts. All that changed in 2019, when Jaish-e-Mohammad’s (JeM) terror attack targeted a convoy of the Central Reserve Police Force (CRPF) in Jammu and Kashmir, killing 40 security personnel. The IAF’s Mirage-2000s carried out the punitive strikes against terrorist training camps in Balakot, Pakistan. It was the first time since 1971 that Indian fighter jets breached Pakistan’s airspace to conduct strike missions and return to their bases.

Balakot strikes created a strategic shift as India demonstrated that air power could be used to carry out limited, conventional warfare between two nuclear powers. Air power, in fact, was considered to be a preferred tool for swift, precise, and deep strikes, replacing ground operations that can be riskier.

How Operation Sindoor Unfolded

On April 22, 2025, terrorists armed with guns killed 26 people in Pahalgam, Jammu and Kashmir. After taking a slew of diplomatic measures, India launched air strikes against nine terror sites on

the intervening night of May 6-7. Nine terror sites—Bahawalpur, Muridke, Gulpur, Bhimber, Chak Amru, Bagh, Kotli, Sialkot, and Muzaffarabad—were struck.

Out of these two, Lashkar-e-Taiba's (LeT) Markaz Taiba in Muridke and JeM's Jamia Masjid Subhan Allah in Bahawalpur were taken out by the IAF, and the remaining seven targets were hit by the Indian Army's artillery. The IAF's fighters did not cross the Line of Control (LoC), but took out the two targets with precision weapons with no visible collateral damage, as shown in the satellite images. The strikes were carried out at 1:05 am on May 7.

Within minutes of the strikes, at least 125 fighter jets from both sides were airborne at standoff ranges. The battlespace was constantly monitored by the IAF's Integrated Air Command and Control System (IACCS) nodes. The nodes continuously received inputs from multiple radars, civil aviation sensors, observation posts, and its Airborne Early Warning & Control (AEW&C) aircraft. After processing the multiple inputs, it communicated a common picture of the battle space to the fighter jets, surface-to-air missile units, and counter-drone systems.

The Pakistan Air Force (PAF) had fielded a mix of Chinese fighter jets -J-10 CE and Joint Fighter JF-17s. The PAF fired several PL-15, the new-generation Chinese Beyond Visual Range (BVR) air-to-air missiles with a range of around 200 kilometres. The long-range missile is said to have damaged IAF fighter jets, a fact

accepted by the IAF without going into specifics.

Following this, the IAF's fighter jets moved away from the "kill zone" of the Pakistani missiles and multi-layered air defence system comprising of Russian-built S-400, Israeli-designed Medium-Range Surface-to-Air Missile (MRSAM), made-in-India Akash, Israeli Spyder, Russian Pechora and L-70 guns; were deployed to neutralise aerial threats emanating from Pakistan. It was on the night of May 7 that the IAF fired its first S-400 missile, forcing the PAF fighter jets to fly low and remain outside the S-400's kill envelope.

On the intervening night of May 8-9, the PAF tried to saturate the Indian air defence by attacking air bases along the Line of Control (LoC). The attacks were not about deep penetration but about probing Indian air defence positions and gaps. India responded by taking out PAF's radar and surface-to-air missile sites and creating blind spots, which could later be exploited by Indian fighter jets.

On the night of May 9, the PAF threw everything it had to target the Adampur airbase, the home of S-400 missiles. From drones to CM-400 missiles launched by PAF's fighters were pointed at the frontline air bases. The S-400 took out many of the high-speed vectors, including the land attack missile CM-400.

IAF Chief Air Chief Marshal AP Singh later asserted that the S-400 system was

responsible for downing 4-5 aerial platforms of the PAF, including a SAAB Erieye 2000 and JF-17.

After its air defence systems did the ground work, between 2:00 and 5:00 am on 10 May, IAF strike packages comprising Rafales and Sukhoi-30MKIs turned the firepower against Pakistan's key military installations, including Nur Khan airbase in Chaklala, Rahawali, Rafiqui, Rahim Yar Khan air base, Sukkur, Murid, and Naya Chor. The Sukhois were armed with air-launched BrahMos supersonic cruise missiles, proving that the indigenous integration had come of age.

Five hours later, the IAF's long-range standoff weapon supersonic cruise missile BrahMos was used to hit Sargodha, Bholari, and Jacobabad.

Reductionism has been used to treat developments during Operation Sindoor as proof that fighter jets are no longer relevant on the battlefield and that the same effect can be achieved with missiles.

Why India Needs Its Fighter Jet Fleet

Missiles Infrastructure

Before seeking to emulate Iran's formidable response to the United States (US), one should keep in mind that a country of the size of India would require at least 400 to 500 hardened missile launch bases. At present, the total number of air bases is around 40 to 50. The sheer infrastructure required to rely completely on missiles

would punch a big hole in the IAF's capital budget.

A study by the RAND think tank compared the cost of penetrating bombers and expendable missiles over 30 years. The study indicated that if a country fights a war in which cruise missiles require no more ISR support than bombers for 20 days or more over the next 30 years, penetrating stealth bombers would cost less than expendable missiles for similar missions.

The study, conducted for the US Air Force, also pointed out that relying on one-time use missiles could have its own risks. According to Project Air Force's findings, if the US has a limited stockpile of missiles, it would not be able to continue the conflict once those stocks are depleted. And it would just encourage the adversary to ride out the American attacks.

Air Launched Missiles

A ground-launched missile utilises a heavy booster to accelerate to supersonic speed, and during the coast phase, the propellant carries it to the target. The same missile can be launched from a fighter jet without this booster. The fighter jet can accelerate to supersonic speeds using kerosene-fed multi-use engines and then launch this missile.

For short- to medium-range missiles, this lack of a booster or lesser propellant can offer a higher warhead weight, up to the fighter-carriage limit, obviously. Air-launched missiles, therefore, can be

smaller, lighter, deadlier, cheaper, and easier to manufacture. This entails a higher production rate for the same cost, a game-changing factor in protracted wars.

A fighter jet can do a Lo-Lo-Lo profile, evading an adversary's radars and then launch a low-flying cruise missile. With the initial speed push given by the fighter jet, the air-launched missile can have the same range as a ground-launched ballistic missile. A ground-launched missile, however, has to go up in the atmosphere to achieve the same range and will be picked up by the enemy's radar when it goes ballistic.

Air-launched missiles are smaller in size, and their movements on the ground are relatively easy to conceal compared to large ground-launched variants. A missile can be road- or rail-mobile, but the movement of large trucks entering and leaving a missile base can be tracked through human intelligence (HUMINT) or electronic intelligence (ELINT). The Fighter Jets can take off from a base deep in the country, fly a totally random pattern below enemy radars and can attack from multiple angles. It is difficult for the adversary to track all the fighter jets in our territory.

The pilot can carry out strikes deep in the enemy territory without entering the enemy's air defence range. The same missiles can be used to hit maritime targets or ground targets.

The case in point is the supersonic BrahMos. Its integration with a long-range

fighter jet has expanded its "engagement zone." The air-launched BrahMos has a range of 290 to 450 kilometres, and when launched from the Su-30MKI, it extends the aircraft's operational radius to about 3,000 km.

Multi-Role Fighters

A multi-role fighter aircraft can do both air defence and strike missions by just changing its weapon package. Missiles are designed for a particular role and cannot do multi-role. A surface-to-air missile cannot conduct a ground attack, and vice versa.

The Missiles can perform only one role—strike. But besides strike missions, the fighter jets ensure air superiority; perform close air support (CAS) roles; carry out Suppression of Enemy Air Defences (SEAD); conduct Intelligence, Surveillance and Reconnaissance (ISR); and can take part in Electronic Warfare (EW).

If the cost-benefit analysis is taken care of, the most compelling argument in favour of a fighter jet is its dynamic decision capability. A missile once fired cannot be diverted to another target or recalled. A fighter jet has the advantage of changing the target midway, if so required. It keeps a man in the kill chain loop.

Flexibility of Fighter Jets

Ground-launched cruise and ballistic missiles are best suited to take out stationary high-value targets like runways, radar sites, fuel depots or command

centres. These missiles carry a single warhead (generally 450-500 kg) and have a circular error probability of 10-100 metres.

But to take out moving targets, or time-sensitive targets like terrorist hideouts in urban areas where chances of collateral damage are greater, high-precision air-launched munitions with a CEP of less than 5 metres are better suited. The Su-30MKIs are equipped with SPICE 2000/1000 bombs that are smart and precise. They achieve a CEP of less than 3 metres.

The Rafales are equipped with French-made SCALP (Storm Shadow) missiles with a range of approximately 560 km and a 450 kg bunker-penetrating warhead. As the Indian government is showing more resolve to not let any terror attacks go unpunished, the SCALP will wreak havoc against terrorist infrastructures should any such opportunity arise in the future.

Also, a fighter jet can carry multiple such weapons in a single sortie, altering its payloads mid-flight.

Missiles and Fighter Teaming

The other major issue is that it is difficult for a ground-based centre to maintain a data link with a ground-to-ground missile after launching. A fighter aircraft can, however, continue to remain data-linked with a missile even in a GPS-denied environment owing to its altitude. Its data link can be networked with ground-based launchers. High-speed data links can ensure the sharing of targets.

The advent of datalink has also opened up avenues for fighter and Surface-to-Air missiles to engage targets together. For instance, the Russian Air Force has data-linked its Su-35 fighter jets with the S-400 units, which helps the two to share targets. The Su-35s act as airborne sensor nodes and can directly forward targets to the S-400, overcoming the limitations of ground-based radars.

The Man-Unmanned teaming and swarm drones are definitely going to be part of future warfare. Taking out a cheap drone with an expensive missile can be a costly proposition, whereas a fighter jet in the air can ascertain which is the brain in the swarm of drones and can either take it out itself or pass on the target to the SAMs on the ground.

As of now, the missiles cannot talk to the Airborne Warning and Control System (AWACS) or satellites. The fighter jet can be the missing link in the equation and help improve a force's situational awareness.

On the 3rd or 4th day of war, when the IAF has achieved air superiority, a fighter jet can carry out a strike mission deep in the enemy territory and drop a one-ton or two-ton warhead on the target, completely decimating it. Packing this kind of firepower in a missile would make it as heavy as ground-based Agni missiles.

Conclusion

The debate over finding cost-effective weapons is as old as the military itself.

While it is imperative that taxpayers' money is spent judiciously, the goal of the armed forces is not creating the most favourable balance sheet, but to create a military that can commiserate with India's national security priorities.

For a country with limited resources, exorbitant costs can be prohibitive. The IAF cannot make a binary choice between the fighter jets and the long-range missiles. It needs to strike a balance between the two options, as offensive air power and air defence will remain important pillars of air power in the future.

Operation Sindoor demonstrated how India can use fighter jets, missiles and drones in tandem to achieve national objectives of inflicting cost on the sponsors of terrorists while tightly controlling the escalation.

In terms of absolute cost, expendable missiles might be cheaper than a fighter jet, but they lack flexibility, human-in-the-loop adaptability and the power of political signalling. In network-centric warfare, the fighters can act as airborne sensor nodes, linking the AWACS with SAMs and drones.

Building a missile stockpile capable of sustaining a long-drawn-out, high-intensity war would require years. Even major powers like the US don't have an infinite stockpile. In 2022, the US was producing about 500-600 missiles per year. In a few weeks of high-intensity war, several hundred can be used.

Operation Sindoor lasted just 88 hours.

However, the picture could have been different had it been carried out for a longer duration. India would have required a potent fighter jet fleet to quarterback a missile stockpile.

The Fighter Aircraft Market, valued at USD 29.11 billion in 2024, is expected to grow 4.1 per cent annually from 2026 to 2033, achieving USD 41.25 billion by 2033. This is despite advances in Unmanned Aerial Vehicles (UAVs). The global trend is that air forces are transitioning to 5th-generation fighter jets, prioritising stealth and multi-role.

Lessons can also be drawn from the major powers—the US is investing billions in 6th-generation fighters while carrying out massive procurement of long-range missiles and drones; Russia has learned to survive in the face of strong air defence by linking its fighter jets with SAMs, and China is mass-producing 5th-generation fighters at a rate that has made countries in the region anxious. The bottom line is that none of the major powers is abandoning fighter jets; these war jets are gearing up into hybrid platforms for future warfare.

India should also resolve its dilemma and move forward with a hybrid doctrine. Missiles and drones will provide cost-effective strike capabilities, but fighter jets will be indispensable for strategic deterrence, escalation control, and, above all, political signaling. Crewed Fighter jets are an important instrument for air control.

There will be a time when the crewed fighter jets will fly into the sunset, but that day is not today. If the IAF has to draw lessons from the major powers, the time calls for a hybrid doctrine rather than missile dominance. Invest in multi-role fighter jets and build a credible rocket force.

Western Theatre Against Pakistan to be Headed by IAF, Northern Theatre Under Army to Focus on China

Bala Chauhan | 23 March 2026

[Source: The Print | https://theprint.in/defence/western-theatre-against-pakistan-to-be-headed-by-iaf-northern-theatre-under-army-to-focus-on-china/2899327/](https://theprint.in/defence/western-theatre-against-pakistan-to-be-headed-by-iaf-northern-theatre-under-army-to-focus-on-china/2899327/)



The IAF had played a significant role in Operation Sindoor that targeted terror infrastructure backed by Pakistan | Force India

New Delhi: The broad contours of the proposed theaterisation of the Indian military have been finalised with the plan to set up three theatre commands focused on China, Pakistan and the seas, ThePrint has learnt. Along with this, the military will also get a Vice Chief of Defence Staff who

will also be a four star officer along with the Theatre Commanders, the Chief of Defence Staff (CDS) and the Service Chiefs.

Multiple table top exercises are being held regularly with multiple scenarios in play and the responses too. Sources in the defence and security establishment told ThePrint that the Western theatre focused on Pakistan will be headed by an Air Force officer while the Northern Theatre, focused on China, will be headed by an Army officer. The maritime theatre command will be headed by a Navy officer.

Sources said that these positions are more or less fixed and there is unlikely to be any rotation unlike the earlier plan featured rotation.

The finalisation of the theaterisation's contours is happening within the military. Once it is completed, the whole process will be reviewed by the defence ministry and the apex leadership of the country. It will then be finalised before it is implemented. It is not clear yet if the current CDS will be able to present a blueprint before his tenure, extended by six months to finish off the process, gets over end of May.

Sources explained that the idea of the Western Theatre to be headed by an Air Force officer is that Operation Sindoor showed that Pakistan can be countered by long-range weapons with the Indian Air Force (IAF) playing a critical role besides any ground operation that may come by.

However, for the northern front with

China, the thought process is that it will involve bigger role for ground troops when it comes to defence, and hence the Northern Theatre would be headed by an Army officer.

All theatres will have deputy commanders who will be from another service, the sources said.

ThePrint had first reported in July 2023 that Jaipur, home to the Army's South Western Command (SWC), will be the headquarters for the theatre command that will look after Pakistan.

The other theatre command to take care of the borders with China will come up in Lucknow, which currently is the headquarters of the Central Command. The Army's South Western, Western and Southern Commands and elements from the Northern Command will come under the Jaipur-based theatre command, apart from the IAF's Western and South Western Air Commands and elements from the Central and Southern Commands.

It was not yet clear on how the Air Force assets would be divided. Sources said that there is a possibility of air assets being centrally controlled for seamless operation across the theatres since they provide strategic value in terms of not just strike but also airlift capacity.

Asked if the CDS will have an operational role, the sources explained that the CDS will head the Joint Chiefs of Staff Committee and everyday operational issues will be

taken care by the Vice CDS. The CDS will focus on his role as Secretary, Department of Military Affairs.

Incidentally, the developments come ahead of the second edition of Ran Samvad, Indian military's marquee event being formulated on the lines of the Shangri La Dialogue. During the first edition in August last year, a dissonance had been evident among the armed forces over theatre commands.

CDS General Anil Chauhan had then welcomed the frank discussion and opinions but said the final decision would be reached in the best interests of the nation.

His comments came after IAF chief Air Chief Marshal A.P. Singh batted for a joint planning and coordination centre in Delhi, involving the service chiefs and CDS, rather than theaterisation. Navy Chief Admiral Dinesh K. Tripathi, on his part, underlined that theaterisation remained the ultimate aim of all 'jointness'.

In a 17 June 2021 report, ThePrint was the first to state that, contrary to claims regarding implementation, theaterisation will be delayed. The theatre concept, under which India's military was to be divided into different, independent theatres—as in the US or China—has since then undergone several permutations and combinations.

India's Air Power Calculus after the Union Budget 2026

Mr Vedant Saigal | 12 April 2026

Source: CAPSS | <https://capssindia.org/indias-air-power-calculus-after-the-union-budget-2026/>



Image Source: Created by the Author using ChatGPT

Introduction

The world has entered a more volatile phase. From the prolonged Russia-Ukraine War to emerging political tensions involving the United States (US). This environment has led to increased defence budgets globally, and India is expected to follow suit. The United States recently proposed a significant budget, targeting nearly USD 1.5 trillion by 2027, which is approximately 50 per cent higher than previous projections. As global political tensions continue to escalate, governments are prioritising their defence spending to address these challenges.

The Union Budget 2026-27, presented by the Finance Minister of India, Nirmala Sitharaman, on February 01, 2026, has placed importance on increasing India's defence spending. This reinforces

the twin imperatives of Atmanirbharta: modernisation and innovation. Compared with last year's budget allocation of approximately INR 6.81 lakh crore, there was a sharp 15 per cent increase this year, according to the detailed report released by the Indian government. The current allocation to the defence spending stands at INR 7.85 lakh crore. Of this, the largest share is in revenue expenditure (INR 5.5 lakh crore), and a little goes to capital outlay (INR 2.19 lakh crore) and pensions (INR 1.7 lakh crore). This number is not just about size. It has signalled a shift in mindset – from reactive defence to long-term preparation. However, the question is 'Why Now?'

Strategic Imperatives

There is undoubtedly a strategic context behind India's increase in defence spending. Recently, India has faced heightened tensions with Pakistan, especially following Operation Sindoor in 2025. The Union Budget for 2026, which followed Operation Sindoor, reflected the need for enhanced operational readiness in light of this brief conflict. Concurrently, Pakistan has raised its defence spending by 20 per cent, despite facing economic constraints.

On the other hand, India's geographical position compels it to focus on protecting its national security, with China remaining the major strategic challenge. China's military is much larger and far better funded than India's (more than three times as much).

The Line of Actual Control (LAC) requires 24×7 surveillance, mobility, air defence, and rapid deployment infrastructure. The contested neighbourhood continues to explain why India needs to strengthen its defence infrastructure. Modernising the old and ageing military equipment has become a necessity today rather than a choice.

The idea of a “twin threat” and a “two-front war” remains the ever-present threat. [4] The existential nightmare is primarily the silent creeping aggression along the vast LAC. The examples of the Galwan Valley bloodbath, new military outposts, land grabbing, and its arrogant dismissal of Indian sovereignty are indeed a part of the larger playbook to crush India’s rise. With Pakistan acting as Beijing’s attack dog, it is keeping India’s war room lit 24×7.

It is perhaps a moment of systemic geopolitical rupture, one that brings a wider global conflict knocking at the door. The fuse is lit in Beijing, with assistance in Islamabad. Imagining the worst-case scenario – what will be the case if India ever enters a full-scale two-front war with China and Pakistan? Pakistan will step in if there is a full-scale Indo-China conflict. However, if there is ever a full-scale invasion between India and Pakistan, it is still doubtful whether China will enter or not. Either case requires strategic rebalancing and even lessons from history. In the 1965 Indo-Pak war, India had made sure that its borders with China were secured first before it shifted all its focus to Pakistan.

Building Future-Ready Air Power Capabilities

While a full-scale war between the two nuclear neighbours is not desirable and unlikely, India is still well placed to pin down the Pakistan Air Force and dominate the skies. The bigger problem is China, as it feverishly modernises its nuclear forces and the fighter aircraft fleet. India must address the fighter jet crisis first. The current fighter squadron strength is 31, and it must be around 42 or more. After the MIG-21 retirement last year, the IAF is down to 29 squadrons already.

The planned solutions indicate expansion of Rafale fighter jets and Su-57 fighter jets, which are the two parallel paths being contemplated for India’s future fighter fleet. A large-scale expansion of the Rafale fleet through indigenous manufacturing, and perhaps the renewed technical talks with Russia on the fifth-generation Su-57. Why is it a parallel path and not a competitive one? India is not viewing the Rafale and the Su-57 as competing or mutually exclusive choices. Instead, each addresses a distinct operational requirement in India’s evolving air combat doctrine. Precisely, the Rafale induction means near-term force density with reliability. Integrating Su-57 fighter jets into the IAF will be about capability exploration and technology absorption. On the other hand, the Advanced Medium Combat Aircraft (AMCA) programme would bring long-term sovereignty.

The defence ministry plans to procure 114 Rafale fighter jets – the largest-ever procurement that India has undertaken, if cleared. Manufacturing will initially be around 30 per cent indigenous and later increase to 60 per cent. Since there are already 36 aircraft inducted by the Indian Air Force (IAF), 26 Rafale-M jets ordered by the navy, and it plans to induct 12 to 18 more aircraft in fly-away condition, the total would reach around 176. Why the push?

Rafale reportedly played a significant role during Operation Sindoor, particularly against advanced Chinese air-to-air missiles using the Spectra electronic warfare suite. Rafale is a 4.5-generation, twin-engine, delta-wing multirole fighter aircraft with an extended combat radius. It has a maximum speed of Mach 1.8 at high altitude and Mach 1.1 at low altitude. It features an advanced avionics suite and the SPECTRA electronic survival system, incorporating a Radar Warning Receiver (RWR), a Laser Warning Receiver (LWR), a Missile Approach Warning (MAW), a phased-array jammer, and a decoy dispenser. The programme will not only be a replacement for the ageing MiG-21 and MiG-27 aircraft, but primarily play select roles of the Mirage 2000s as they undergo phased upgrades to extend the service life. Integrating Rafales with a wide array of Indian weapons, such as Astra and BrahMos, will be crucial to harnessing the aircraft's full potential. It will be a win-win for India and France altogether.

Running in parallel is Russia's constant

pitch for the Su-57 – a fifth-generation stealth fighter jet, after years of dormancy following India's exit from the earlier Fifth Generation Fighter Aircraft (FGFA) programme. It is a highly maneuverable fighter aircraft with Integrated Modular Avionics Combat Systems that uses fibre-optic channels. The radar suite comprises the N036-1-01 X-band Active Electronically Scanned Array (AESA) embedded in the forward fuselage cheeks to improve angular coverage and an additional L-band array positioned along the leading edges. The aircraft is equipped with a comprehensive electro-optical suite comprising an Infrared Search And Track (IRST) system, Directional Infrared Countermeasures (DIRCM), ultraviolet-based missile approach warning sensors, and a thermal imaging system to support low altitude operations and landing, in addition to a dedicated navigation and targeting pod. It can employ defensive aids such as flares, radar decoys, and single-use programmable Electronic Countermeasures (ECM) transmitters. However, some questions remain regarding the platform's production scale, sensor fusion maturity, and combat validation.

In the Dubai Air Show 2025, Sergey Chemezov, CEO of Rostec, underlined the long-standing defence partnership between the two countries. Additionally, a major Russian state arms exporter, Rosoboronexport, offered "technology transfer" and "technological learning of a few generation technologies, including engines, optics, AESA radar, Artificial

Intelligence (AI) elements, low signature technologies and modern air weapons.” The maximum use of the Indian industry and the Indian systems signals the attempts from Moscow to re-enter India’s fighter ecosystem, to majorly contribute to its future combat readiness. Assistance from Moscow, even in India’s indigenous AMCA programme, has effectively positioned the Su-57 as a technological bridge.

Earlier this week, the United States blew its trumpet and the warnings of sanctions over the countries which acquire Russian Su-57 fighter jets, waved over the globe. The US has warned that it could impose sanctions under its Countering America’s Adversaries Through Sanctions Act (CAATSA) on countries that acquire Russian Su-57 fighter jets, citing concerns over deepening defence ties with Moscow. This is particularly in the case of Algeria’s confirmed purchase of twelve Su-57s. How will India be impacted once it finalises its deal with Russia? If India were sanctioned, it could affect its broader defence relationship with the US, mainly revolving around the General Electric (GE) Jet Engine for the Tejas Programme, MQ-9B Drones, and Apache helicopters, ultimately minimising US exports to the sanctioned recipients. Turkey was removed from the F-35 Joint Strike Fighter (JSF) programme after it was hit with sanctions by the US under Section 231 for purchasing Russian S-400 air defence systems.

At the same time, this does not necessarily mean it will expand to India, as

such deals have historically been subject to preferential treatment for India. For instance, India bought five regiments of S-400 air defence systems from Russia in 2018, and around the same time, Turkey bought a single regiment of the same. Consequently, Ankara was slapped with CAATSA Sanctions; however, no such penalties were imposed on New Delhi.

In 2022, the Indian-American Congressman Ro Khanna introduced a stand-alone bill in the US House of Representatives that gave India waivers from the punitive CAATSA sanctions. Under the Iran Freedom and Counter-Proliferation Act (IFCA), the US sanctions many dealings with Iran’s economy. However, the US granted a waiver for the Chabahar port, allowing India to participate in its development and operations without facing US penalties, given India’s role in Afghanistan’s reconstruction and regional activities. This waiver has now been revoked by the Americans, and India has been told to end its operations at the Chabahar port.

However, the geopolitical context and the waivers granted were directly related. It had evolved amid US-China rivalry, the Russia-Ukraine conflict, and growing scrutiny of defence technology transfers, narrowing Washington’s margin for flexibility. The historical incidents that worked in favour of India do not mean they will always do so. Trump still imposed hefty tariffs on India when it bought Russian oil. Every move by India should be cautious in terms of the Su-57 agreement, as New Delhi is awaiting

many crucial defence platforms, such as MQ-9B drones, Javelin Anti-Tank Guided Missiles, Apache helicopters, Stryker Combat Vehicles, etc. It primarily depends on the US for the continued production of its indigenous Tejas fighter jets. CAATSA can jeopardise the entire programme of Tejas deliveries to the IAF, for which GE will supply the engines.

The discussions on the fifth-generation aircraft remain open; it seems that India is still prioritising Rafale fighter jets for near-term induction. The budget 2026 cycle will play a crucial role in determining and shaping the trajectory of the future Indian fighter fleet – most likely it will be a combination of LCA Mk1A, an expanded Rafale fleet, the indigenous AMCA after 2035, and the upgraded versions of Su-30 Mk1. The fighter fleet debate is less about the aircraft choice and more about managing risks across time. How India proceeds with the deals in hand, only the future will tell.

Space

Will the Future World Order be Determined by who Controls Low Earth Orbit?

Meredith Chen | 25 April 2026

Source: SCMP | https://www.scmp.com/news/china/military/article/3351345/will-future-world-order-be-determined-who-controls-low-earth-orbit?module=top_story&pgtype=homepage



When US special forces raided Caracas and abducted president Nicolas Maduro and his wife in early January, the Venezuelan capital was hit by widespread power outages and communication blackouts.

Yet, within hours of the attacks, connectivity began to return – not from paralysed ground infrastructure, but from space.

Elon Musk's Starlink, a subsidiary of SpaceX, activated communications services across Venezuela via its vast constellation of low Earth orbit (LEO) satellites on terminals residents acquired

via informal channels.

It was not merely a case of business operation, observers said, but an episode that underscored the disruptive potential and strategic implications of LEO satellite networks in future warfare and defence building.

For countries such as China, the growing role of LEO constellations as critical communications infrastructure during crises raises concerns – about information sovereignty, operational dependence, access to orbital resources and control over connectivity – as satellite networks are increasingly seen as a potential geopolitical game changer.

LEO constellations typically comprise hundreds or thousands of satellites operating below 2,000km (1,250 miles), enabling faster data transmission and lower latency than traditional geostationary satellites positioned much farther away.

Starlink's deployment in Venezuela highlighted a "direct challenge to traditional telecommunications sovereignty", according to an article published in the April issue of *Aerospace Knowledge*, a journal sponsored by a leading professional academic group, the Chinese Society of Aeronautics and Astronautics (CSAA).

Venezuela was not an official Starlink market but the ability of a private company with US defence contracts to provide communications to another sovereign country without government approval

showed how LEO constellations could bypass national regulation and directly project connectivity across borders, the article said.

"What we are witnessing is the first large-scale stress test of information sovereignty in the space age," it said.

While it became an important wartime asset for Kyiv, Russia also adopted the networks in its operations, although in February Musk reportedly denied it access, blunting Moscow's advance.

China's pursuit of a proliferated LEO (pLEO) capability has become "more urgent" following Starlink-enabled operations by Ukrainian and Russian forces, according to Howard Wang, a political scientist at US think tank Rand.

"The most important lesson that China is learning ... is the resilience of a largely decentralised pLEO constellation bolstered by rapid reconstitution via affordable launch," he said.

Destroying a handful of satellites would have limited operational impact, while new satellites could be launched rapidly to replenish the network – a concept described as "swarm resilience". This fundamentally changes the economics of space warfare and weakens traditional strategies aimed at disabling critical nodes.

That resilience, Wang noted, challenged the People's Liberation Army's core operational concept of multi-domain

precision warfare, which prioritised striking key nodes in an adversary's network information system-of-systems, its military nervous system, to paralyse the enemy without the need to escalate to more destructive measures.

It could also shake China's long-held view that an attack on space assets guaranteed an easy win because, with the advent of Starlink, meaningful offensive effects might require riskier escalation, he said.

China is accelerating its own constellation development – including the Guowang network and the Shanghai-government-backed Qianfan broadband network – and exploring options to counter Starlink, although Wang cautioned that “it's not clear how successful either of these efforts will be”.

As LEO satellites became deeply integrated into drone warfare, they might also introduce new vulnerabilities, including outages and dependence on private providers, warned Victoria Samson, chief director of space security and stability at the Secure World Foundation, a body aiming for peace in space.

Several US Navy tests have been disrupted during Starlink outages, including one case in August that affected communications and temporarily interrupted operations, according to a Reuters report this month.

While Starlink's ability to provide

connectivity in conflict zones has turned Musk into a geopolitical force, the CSAA article warned against “a new form of power” – the ability to grant or deny access to connectivity in real time, potentially creating strategic vulnerabilities when military operations depend on corporate decisions.

This has prompted a number of governments to accelerate plans to develop domestic or regionally coordinated LEO constellations, most notably China and the European Union, to reduce reliance and bolster strategic autonomy.

China could use its versions of Starlink as “soft power outreach” and make them available to potential allies or partners, Samson said.

The CSAA article also highlighted the growing role of on-orbit computing. It noted that LEO satellites were beginning to evolve from communications relays into processing nodes capable of analysing data in real time.

Such capabilities, once realised, could improve battlefield awareness by detecting troop movements or missile preparations, potentially compressing decision-making timelines, it said.

“When artificial intelligence is integrated with low Earth orbit satellite constellations, we are facing an intelligent system capable of real-time global surveillance and autonomous decision-making, operating beyond the control of any single country,”

the article said.

It also warned of another layer of vulnerability: if adversaries gained on-orbit AI capabilities, they could manipulate data, causing commanders to act on distorted information rather than reality.

It further warned of a growing “space land rush”, as countries and companies rapidly deploy constellations to secure orbital slots and spectrum resources under first-come, first-served rules. Once occupied, latecomers may have to rely on foreign-controlled networks.

Guowang and Qianfan – both aiming to deploy more than 10,000 internet satellites – have deployed around 300 active satellites combined, while there are already more than 10,000 active Starlink satellites.

China “absolutely can catch up”, but the key bottleneck remains on price, reliability and speed of launch that would enable rapid reconstitution in LEO, Wang said.

“That is in large part an innovation problem, not just a resource problem,” he said.

“Whoever controls low Earth orbit will define the future world order,” the CSAA article said.

“At present, the dominant position is held by Elon Musk. The outcome of this race will shape how power is distributed as humanity enters the era of digital civilisation.”

AI in Space Operations: Opportunities and Challenges

Amoha Basrur | 02 April 2026

[Source: ORF | https://www.orfonline.org/research/ai-in-space-operations-opportunities-and-challenges](https://www.orfonline.org/research/ai-in-space-operations-opportunities-and-challenges)

Introduction

In the new golden age of space exploration, Artificial Intelligence (AI) is pushing the boundaries of human capabilities even further than previously imagined possible—by revolutionising space operations, from planning and automation to launch and communication. As the sector goes through a period of exponential growth, AI will be a key to unlocking the full potential of space exploration and creating breakthroughs for anticipated commercial ventures such as space tourism.

India has acknowledged the importance of this niche. The Indian Space Research Organisation’s (ISRO) Respond Basket 2023 included eight research areas focused on AI and Machine Learning (ML). It has also launched initiatives like the ‘AI for Space and Geospatial Innovation: ISRO Immersion Startup Challenge’ in 2024, that is aimed at fostering the development of AI applications in space.

However, like in any other sector, AI in space is fraught with challenges and uncertainties. Given the sector’s strategic nature, these threats are posed not just to the operations but to national security,

overall. India can learn from and partner with other spacefaring nations to address these challenges while driving innovation in its domestic ecosystem. This brief examines how key countries are deploying AI in space operations, the challenges they face, and their strengths and areas of development. It outlines a path for the future of AI in space.

Applications and Risks of AI in Space

AI applications for space operations can be broadly categorised as either Earth-based or onboard.

1. Earth-based AI covers activities such as predictive models for mission planning, resource allocation, trajectory optimisation, and data analysis from satellites and Earth-based instruments. Japanese astronomers have used AI to remove noise from astronomical data, accurately mapping the shape of galaxies. Digital twins and other AI solutions are also being developed to increase the cyber resilience of space systems.

2. Onboard AI comprises systems deployed on spacecraft to reduce reliance on ground control. Autonomous spacecraft and rovers use AI for navigation and decision-making. In the US, the National Aeronautics and Space Administration (NASA) is using AI to train Mars rovers to autonomously seek minerals based on real-time data. Machine Learning solutions are also

being explored for on-orbit servicing, assembly, and manufacturing. AI will also play a key role in the identification of weapons in space, and advancing robotics, virtual assistants, and crew support for human missions.

Applications like communication optimisation and debris tracking through space situational awareness can be deployed from either or both platforms. However, onboard AI in space faces unique environmental challenges, making its deployment complex. These systems must contend with radiation and extreme temperature variations. Additionally, AI systems consume massive computational and power resources. AI devices often require high currents at low voltages, which is hard to achieve in space. Both the software and hardware need modification to operate in extreme conditions, slowing the development of onboard AI despite numerous promising use cases.

Irrespective of the AI system's location, data quality and training remain key concerns. However, the nascent and strategic nature of both the technology and operational domains poses cumulative national security risks.

- 1. Cybersecurity:** AI systems used in space operations face the threat of cyberattacks that could disrupt communications, manipulate algorithms, and compromise sensitive data or control over key infrastructure. If the model data is corrupted, it could lead the system

to make flawed decisions, potentially resulting in strategic disadvantages.

2. Components: Both space and AI systems rely on specialised components sourced from multiple countries. With highly sensitive systems, there is concern that manufacturing nations may introduce backdoors or malware, compromising security and functionality. Overdependence on foreign suppliers also creates supply chain vulnerabilities for the importer.

3. Tampering: Hardware and software tampering during manufacturing or before deployment is another notable risk. Malicious firmware or hardware that allows adversaries to disrupt the AI system is particularly challenging in space, where physical access to the spacecraft is limited once deployed.

The following section discusses how key players in space are developing their AI ecosystems to enhance operations, along with their unique strengths and challenges in development and deployment.

India

Initiatives

India has ambitious plans for AI in space. In addition to the Respond Basket and ISRO Immersion Startup Challenge, India has already deployed AI for space missions and exploration. The Pragyan rover and Vikram lander in Chandrayaan-2, launched in 2019, and Chandrayaan-3,

launched in 2023, were AI-equipped to facilitate landing and navigation on the lunar surface.

For the Gaganyaan mission, India's maiden human space mission, which is tentatively scheduled for late 2026, ISRO will launch an AI-enabled half-humanoid, Vyommitra, into space. This robot will test the Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mk III) rocket and ensure its safety for human travel, tracking changes in the crew module during spaceflight and return.

The Indian private sector is also integrating AI into its operations. For instance, Dhruva Space uses AI and ML for onboard processing to minimise the need for downlinking large datasets. Edge computing improves operational efficiency by conducting initial data analyses in orbit.

Strengths Enabling Ecosystem: The Government of India launched the IndiaAI mission in 2024 to create a comprehensive AI system in the country. The plan aims to build AI computing infrastructure, create datasets, develop indigenous models, generate financing, and foster innovation across sectors. The government's enthusiasm to create a conducive environment is a strong sign of progress for AI development in India.

- **Cost-Effective Innovation:** India has built a reputation for cost-efficient advancements in space technology. The integration of AI in missions like

Chandrayaan-2 and Chandrayaan-3 further demonstrates its capability to leverage AI while keeping costs low.

- **IT and Software Industry Expertise:**

India's robust IT and software industry provides a strong foundation for developing AI technologies. Bangalore, the country's IT hub, has also become a centre for space technology. With a large pool of skilled engineers, India is well-positioned for the rapid development and deployment of AI in space.

- **Advanced Space Hardware Capabilities:**

ISRO has well-developed capabilities in designing and developing space-qualified parts such as Application-Specific Integrated Circuits (ASIC), and Field Programmable Gate Arrays (FPGAs). These can be adapted for AI-driven space systems. The onboard processing capabilities of Indian satellites further strengthen India's position for future advancements.

Areas of Development

- **Resource Constraints:** While resource allocation has improved in recent years, India's space programme is still not as well-funded as global missions. In 2024, India's Department of Space was allocated INR13,042.75 crores (approximately US\$1.57 billion), compared to NASA's US\$24.875 billion budget. AI systems in space require substantial investments, which are constrained by India's broader economic

limitations. The country's focus on cost-effective solutions is often driven by necessity, but increased access to resources could unlock the full potential of India's capabilities.

- **Data Processing Capabilities:**

India's AI development is hindered by limited computing infrastructure, representing less than 2 percent of the global total. In contrast, the US and China control nearly 60 percent. Bridging this gap is a challenge for India's ongoing AI development across AI industries.

China

Initiatives

China has been purposefully leveraging AI in space for both civilian and military applications. Researchers have claimed to conduct groundbreaking experiments, including temporarily giving AI full control of a satellite to test its decision-making. China's commercial Earth observation satellites, such as the Jilin-1, are equipped with AI to improve the precision tracking of small objects. Satellites launched by China in recent years feature processors capable of uploading; the latest AI algorithms to automatically identify and track moving targets in real time without ground assistance. China has also conducted experiments with using AI in space combat, training an anti-satellite AI to command three small "hunter" satellites to trick and capture a target in a simulated space battle.

China plans to continue expanding

its constellation of AI-enabled satellites. Chang Guang Satellite Technology, which operates the Jilin-1 satellite constellation, aims to grow it to 300 satellites by 2025.

Strengths

- **Strong Government Support and Strategic Vision:** The Chinese government has a strategic approach to AI, actively making concerted efforts to develop the domestic ecosystem. Substantial investments in research and development have propelled China into an AI leader. Following the US's Wolf Amendment, passed in 2011, which banned NASA from scientific cooperation with China, Beijing intensified efforts to build its own systems with a focus on space security.
- **Military-Civil Fusion (MCF):** China's MCF approach has helped drive AI development exponentially. The Artificial Intelligence Development Plan, announced in July 2017, identified MCF as one of the six main duties for AI development. The PLA's active pursuit and funding of AI have provided a boost for the ecosystem as a whole.

Areas of Development

- **Dependence on Foreign Technology:** Despite its advancements, China still relies on other countries, especially the US, for critical technology components in its AI and space systems. This makes it extremely vulnerable to supply chain disruptions, sanctions, and trade

restrictions. Since 2022, the US imposed export controls blocking China's access to advanced AI chips made using US inputs. In January 2025, Chinese AI firm DeepSeek, released an open-source large language model (LLM), DeepSeek-R1. Its cost, efficiency, and capabilities challenged perceptions of China trailing in the AI race and raised questions about the effectiveness of the export controls. However, export controls have a time lag and the compute gap that China faces will be a growing concern as deployment increases.

- **Lack of Self-Sufficiency:** China's generative AI initiatives are reliant on Meta Platforms' Llama system due to the absence of indigenous alternatives. Additionally, there is a shortage of quality Chinese-language data online, as most of this data tends to be either state media or spam websites, which create very low-quality and potentially problematic datasets.

United States

Initiatives

The US leads in both AI and space, maintaining a minor edge over China in output quality despite China's rapid development. The US has been innovating across sectors such as space exploration, satellite management, and debris tracking. The Perseverance rover, for instance, uses a computer vision system called AEGIS to detect and classify rocks on

Mars.Stanford's Center for AEroSpace Autonomy Research is developing AI projects that combine trajectory optimisation with generative AI to enable autonomous space flight.NASA's Europa Lander mission prototype[46] plans to leverage autonomy to reduce ground-in-the-loop (GITL) cycles, preserving mission time and energy. The mission's harsh environment and communication delays necessitate autonomous decision-making and in-situ data analysis. AI will help these missions to prioritise tasks, manage resources, and make real-time scientific discoveries without direct human intervention. The US also prioritises military applications, as reflected in its Data and Artificial Intelligence Strategic Action Plan, that emphasises the importance of modernity and agility in its data and AI systems.

Strengths

- **Technological Leadership:** The US leads globally in AI technology, driven by advanced research institutions like NASA and tech companies. Its extensive and diverse AI deployments in space highlight its capacity for innovation and integration of cutting-edge technology.
- **Robust Private Sector and Funding:** The US benefits from a vibrant private space sector, with companies like SpaceX, Blue Origin, and many AI startups contributing to advancements. This dynamism has raised venture capital funding to its highest point in

recent years.

Areas of Development

- **Adversarial Threats:** The US's competitive position against Russia and China has raised concerns about potential adversarial attacks.China's rapid development in AI increases the risk of sophisticated attacks on critical space assets.
- **Developing Low-Cost AI:** The US has long viewed AI development as capital-intensive, relying on massive investment for breakthroughs. DeepSeek's low-cost approach upended this assumption, causing panic in American markets. To avoid appearing less resource-efficient and innovative than China, the US must quickly adapt to this alternative trajectory.

Japan

Initiatives

Japan was an early adopter of AI in space, with the Japan Aerospace Exploration Agency (JAXA) using it for the launch of Epsilon in 2013. AI reduced the number of people needed at the launch centre through by serving as self-inspecting function. Japan also use AI to handle the enormous volumes of data collected by its telescopes. The Subaru Telescope, operated by the National Astronomical Observatory of Japan (NAOJ), used AI in its 2014 "Galaxy Cruise" project. The initiative used citizen science to train AI to classify galaxy morphologies

with 97.5 percent accuracy. Mitsubishi Heavy Industries developed AIRIS (Artificial Intelligence Retraining in Space), that can sift through Earth-observation data to identify dark ships and reduce delays in launching interventions.

Strengths

- **Automation and Robotics Expertise:**

Japan is globally recognised for its expertise in robotics, successfully integrating advanced AI-driven robots into space missions, including those used in lunar missions.

- **Strong Research and Development Ecosystem:**

Japan has a robust research and development ecosystem for space launch systems, involving collaborations between JAXA, academic institutions, and private companies.

Areas of Development

- **Ageing Workforce:**

Japan's demographic challenges, including an ageing workforce, pose difficulties in maintaining a steady pipeline of skilled professionals in AI and space technologies.

- **Absence of a Private Sector:**

Japan's space sector lacks strong private participation, remaining 90 percent dependent on government. The limited domestic market prevents economies of scale.

South Korea

Initiatives

South Korea, with decades of space operations behind it, established the Korea Aerospace Administration in 2024 to coordinate and further expand its space activities. Its long-term goals include landing a robotic spacecraft on the Moon by 2032 and a Mars mission by 2045, both involving significant AI integration for navigation, data collection, and autonomous decision-making. South Korea aims to become a key player in the global space industry with ambitious future plans.

Strengths

- **Concerted National Efforts:**

The South Korean government has released several policies to bolster AI development, including the 'National Strategy for Artificial Intelligence' in 2019 and the 'Plan to Strengthen the Competitiveness of Hyper-scale AI' in 2023. These plans aim to create a favourable regulatory environment, cultivate talent, and create infrastructure clusters to accelerate the growth of the AI industry.

- **Strong Semiconductor Industry:**

South Korea is a global leader in semiconductor manufacturing, crucial for space technologies, particularly in AI and data processing. Its expertise in chip production provides an advantage in developing advanced AI systems for

space applications, such as satellite technology and autonomous spacecraft

more robust to handle faults and unexpected situations without human intervention. The development of transparent, fault-tolerant AI systems will be a key challenge to overcome

Areas of Development

- **Limited Domestic Market:** Private companies in South Korea struggled to create new markets and form a self-sustaining space industry ecosystem, resulting in a lag in technological advancement.
- **Lack of Funding:** The Korea Aerospace Research Institute lacks adequate government funding. In 2015, the lunar module project exceeded the institute's annual budget. Larger projects consume the majority of the budget and manpower, leaving other missions underfunded or ignored.

The Way Forward for AI in Space

The use of AI in space will continue to grow. Earth-based systems are widely used for scientific, military, and developmental endeavours. As human space missions increase and new commercial ventures such as space tourism develop, onboard AI will become crucial for space missions. AI will automate mundane tasks, improve decision-making, counter cybersecurity threats, and improve biomonitoring and Earth-independent healthcare. Additionally, as spacecraft advance to traverse greater distances, AI-enabled communication and data transfer will be vital.

AI systems must be developed to be more transparent to build confidence and

Extensive testing of systems and components is essential to detect anomalies and tampering, requiring the development of diagnostic tools that can keep pace with evolving malicious technologies. Strengthening physical and cybersecurity measures across manufacturing, transportation, and deployment phases is also essential. Developing these solutions involves transnational cooperation.

The paralysis of multilateral organisations has highlighted the need for India to invest in and leverage bilateral and minilateral relationships to further its strategic interests. These choices must be based on the opportunities and drawbacks of potential partner countries.

India's relationship with China has been tense since the Galwan Valley clash in 2020. Despite the potential for a tactical thaw, the military standoff continues, and India remains wary of Chinese technology. Japan and the US also have strategic interests that conflict with China. However, despite shared reservations, these countries have more AI investment activity with China than with each other. This disjointedness between interests and actions must be remedied for safe and trusted technological development. India can collaborate with global leaders in space exploration and AI, prioritising scientific

and economic development without compromising its national security interests.

The US and India share strong private-sector ties, driven by substantial US funding in India's space ecosystem. India has taken this a step further by allowing 100 percent foreign direct investment (FDI) in the space sector. Going forward, India should build on its space situational awareness agreement with the US[68] beyond military data sharing and acquire access to large datasets required for training AI models, such as satellite imagery, environmental data, and mission telemetry.

Japan's ageing population has prioritised innovation in advanced automation and robotics, offering India an opportunity to absorb and contribute to these advancements. Japan can bridge manpower gaps in its technology ecosystem by outsourcing human resource-heavy stages of AI development to India. As Indian ministries and governments adopt space technologies, India also offers a larger market for the Japanese private space sector to grow.

South Korea excels in semiconductor technology—a key component of the compute infrastructure India aims to develop. It has reinforced its ambitions with a recent US\$19 billion investment in its chip industry. This presents a key area for India-South Korea collaboration. Collaborative efforts could involve the development of specialised space-AI chips that account

for factors like radiation resistance, power efficiency, and reliability. India, contributing 20 percent of the global chip design talent, can strengthen its role by developing a domestic ecosystem that generates Indian-owned patents. Combined with its AI software expertise, India can help optimise these chips for space missions.

International debates on sharing and managing space data have direct national security implications. Ethical issues, such as equity and inclusion in space access, will also contribute to the discourse and direction of policy. There is a need for widely accepted technical standards that permit interoperability, safety, and transparency in space. Countries must balance protecting sensitive data with enabling scientific collaboration. Harmonising standards through soft law approaches, as in the case of space debris management, could serve as a model for international cooperation, preventing monopolisation or militarisation of space data.

India must strengthen its position in the global space arena by learning from and collaborating with like-minded nations while fostering innovation within its domestic ecosystem. The path forward lies in driving technological advancements while creating robust frameworks to manage the associated risks.

Where Is the Space Force Budget for Commercial Services?

Clayton Swope | 08 April 2026

Source: CSIS | <https://www.csis.org/analysis/where-space-force-budget-commercial-services>



Photo: marian/Getty Images

For fiscal year 2027, the administration is requesting \$71 billion in baseline and reconciliation funding for the Space Force—a 77 percent increase over FY 2026. Based on the initial budget information, about \$1.4 billion of the Space Force budget is clearly earmarked for commercial services, with over \$1.3 billion of that amount intended for space launch. While the Pentagon has yet to release its most detailed budget information, which will happen in the coming weeks, there is little sign that the Space Force budget meaningfully boosts funding for purchasing non-launch commercial services. This appears counterintuitive given perennial rhetoric from defense and military leaders on the need to integrate and use commercial space services, but reflects a trend whereby the Pentagon asks for little money for non-launch commercial space services, only to have congressional appropriators add funding to such programs. This pattern, reinforced by the high-level budget information

released for FY 2027, signals to industry that the Space Force is only marginally interested in commercial services.

That commercial services, other than launch, receive so little attention in the Space Force top-line budget request, particularly given the record-breaking size of that request, is remarkable. This comes at a time when the White House is prioritizing government use of commercial solutions and emphasizing commercial solutions as part of its strategy to maintain space superiority. The Pentagon has also implemented a commercial-first policy. Space Force officials seem on board, echoing similar sentiments with a “buy what they can and build only what they must” approach. The release of two commercial space strategies in April 2024—the department-wide Commercial Space Integration Strategy and the U.S. Space Force Commercial Space Strategy—appeared to formalize a desire by military leaders to figure out how to better use space services. In addition to these two strategies, the Defense Science Board published a commercial space system report in May 2024 that included recommendations for improving the use and integration of commercial space. In 2025, the Space Force established a working capital fund for buying space services, indicated strong demand for satellite communications services, and made progress with the Commercial Augmentation Space Reserve initiative to use and integrate more services. But how is the Space Force funding these

initiatives?

The Space Force has never requested a robust budget for non-launch commercial space initiatives, instead relying on Congress to provide extra funds. Consider the case of commercially acquired space situational awareness, also known as space domain awareness (SDA) data and services. In its 2026 budget request, the Space Force requested \$34 million for a program used for commercial SDA data buys. For FY 2026, the Space Force received at least around \$738 million for SDA activities. In the FY 2027 budget, that amount would rise to an astronomical \$1.6 billion. While the Pentagon has yet to release detailed budget information about funding within its high-level budget account, there are no indications to date that commercial SDA data buys and as-a-service procurements will receive a significant funding boost.

Take, for example, the Tactical Surveillance, Reconnaissance, and Tracking (TacSRT) program, which uses commercial satellite data and analytics providers to provide actionable intelligence to the warfighter. In FY 2024, the Pentagon requested no money for the program, but Congress appropriated \$40 million for it anyway, as well as \$10 million for other commercial services. Once again, in FY 2025, zero dollars were requested for TacSRT; once again, Congress provided funding. Changing tack, the Pentagon requested \$36.6 million in FY 2026 for a budget line that funds non-launch

commercial services, including TacSRT. Congress appropriated an additional \$131.4 million on top of that amount, with \$80 million marked for TacSRT. While we do not yet know the specific number for TacSRT in the 2027 budget, the funding line in which this program resides is only budgeted for \$23.7 million. This is even less than was requested in 2026 for the same account, signaling, at best, a marginal and waning interest in commercial services.

It should be noted that, in addition to using commercial services for space launch, the military extensively uses commercial satellite communications. The Space Force projects around \$1.2 billion in spending on commercial satellite communications annually. However, funding for commercial satellite communications services—essentially, bandwidth on commercial satellites—comes from the other services and not from the Space Force budget. Space Force manages a working capital fund into which the other service branches transfer money to reimburse it for purchases.

Overall, the budget information released so far for FY 2027 shows no indication of greater Space Force spending on commercial space services. Commercial data buys and as-a-service procurements may be included in other program element budget lines—ones that are not solely designated for commercial solutions. This would actually be an ideal outcome, as it would indicate that commercial services are being integrated and used alongside

more traditional government-owned and -operated capabilities. While there are cases where this is indeed happening, such as for weather systems, this is likely an exception and not the norm. It is also possible that there is more commercial spending contained in the classified budget line. While there is no way to publicly know, if the past is any guide, there is little reason to expect greater funds in the classified budget for commercial services—the administration reportedly planned to make cuts in the FY 2026 budget to National Reconnaissance Office initiatives aimed at buying commercial space data.

Why does the Space Force budget so little for commercial services? It is easy to point the finger at traditional defense prime contractors and blame them for perpetuating the status quo. But the main issue comes from the government and a deep-seated reticence to use commercial services for critical space functions, which can be mistaken for either inherently governmental functions or activities closely related to inherently governmental functions. Somewhat paradoxically, the Pentagon already relies entirely on commercial services for space access—it is almost entirely dependent on just one company, SpaceX, to get it into space. And the other service branches, with a history going back to the first Gulf War, have heavily used commercial satellite communications services for their missions. But there are no indications that this outcome—use of commercial services for launch and communications,

but nothing else at scale—is the result of intentional deliberation or a comprehensive calculation, assessing factors such as cost, performance, and schedule. Rather, it is the result of recurrent barriers to the adoption of new ideas across many organizations: an attachment to the status quo.

It is time to break that attachment to the way things have been done and look at how things could be done better. Budgeting more money for commercial services—sending a real demand signal to industry—creates beneficial flywheel effects, bringing cutting-edge space capabilities to the warfighter today and shaping future commercial developments to meet the military needs of tomorrow. A continuous cycle of congressional funding additions does not accomplish the same effect because it shows that commercial services are not built into the planning processes of the Space Force. Non-launch commercial space services are merely extras that are not integrated into the broader force structure. Planning and budgeting for commercial space services allows the warfighter to use cutting-edge space capabilities today and allows the Pentagon to shape future developments of commercial services to suit military requirements.

For functions and missions like SDA, TacSRT, space-based environmental monitoring, positioning, navigation, and timing, and space servicing, mobility, and logistics—all areas the Space Force

has said it wants to explore buying as commercial services—the military is fortunate to have a cornucopia of U.S. companies, funded by private investment in many cases, interested and willing to develop services to meet the warfighter’s needs. But unless the Space Force starts budgeting for these areas, these companies may exit the market because their business models are built around selling services to the military. With the paltry sums to date, even with congressional additions, they are on starvation diets. If the Space Force is truly interested in integrating and using more commercial services, it should act before that happens. It should recognize that it may be the only customer for certain services—and that this is acceptable. It may be too late for the 2027 budget. But there will only be so many more chances before the market deteriorates and investors start to finally realize that the Space Force is not actually interested in budgeting for non-launch commercial services. Let 2027 be the last year of lukewarm interest in commercial space services.

Satellites: Warfare’s New Ultimate Weapon in Iran-Israel-US Conflict

07 April 2026

Source: [The420.in](https://the420.in/satellites-most-powerful-weapon-warfare-space-tech-iran-israel-us-conflict/) | <https://the420.in/satellites-most-powerful-weapon-warfare-space-tech-iran-israel-us-conflict/>



Modern warfare is no longer confined to borders; it has now expanded into space. Rising tensions between Iran, Israel, and the United States have made it clear that satellites and space technology have become the most critical assets in war. From surveillance and communication disruption to precision strikes, space is now playing a decisive role on every front.

U.S. defense officials have confirmed that before initiating conventional bombings, they targeted Iran’s Military Space Command. This approach, known as the “first-mover” strategy, aimed to jam Iran’s communication and intelligence networks, preventing effective coordination of any counteraction. As a result, many international satellite companies suspended live imagery of sensitive regions to prevent misuse.

Iran possesses satellites like Noor and Khayyam, but their capabilities are

limited compared to powers such as the U.S. and Israel. Defense experts say Iran is compensating for these limitations by acquiring satellite data from allies such as Russia. Meanwhile, U.S. intelligence agencies claim that Chinese satellite services in certain Middle East locations are also assisting Iran technically.

Israel's Focus: Blinding Iran Through Space Infrastructure

Israel has made it clear that its targets include not only Iran's missile programs but also its space infrastructure. Israeli officials believe that destroying intelligence gathered from space is akin to blinding the enemy. This strategy has made space control a decisive factor in warfare.

Experts note that in modern conflicts, satellites have become the backbone. They are no longer merely tools for surveillance or communication; they are essential for espionage, precision air and missile strikes, and secure command networks. The country that maintains control over space now gains a significant strategic advantage in conflict.

Satellites: Backbone of Espionage, Strikes, and Comms

International defense analysts state that the current struggle indicates that future wars will move far beyond traditional battlefields. The outcome of any conflict will increasingly depend on a nation's space capabilities and satellite control. Satellite-based surveillance provides

critical intelligence on enemy strategy, enables disruption of communications, and supplies data for precision attacks.

U.S. and Israeli experts emphasize that space technology is no longer just an auxiliary asset in war but a strategic priority. In any military operation, the security of satellite networks, the availability of their data, and timely information are determining factors in the direction and outcome of conflict.

Iran, despite its limited technology, is steadily working to strengthen its space network. Satellites such as Noor and Khayyam are part of this effort. Meanwhile, the U.S. and Israel are using their satellite capabilities to disrupt adversaries' communications and surveillance networks in the region.

Space Warfare: Measure of Future Military Power

Experts conclude that the importance of space in modern warfare is growing day by day. From espionage and precision strikes to secure communication and technological dominance, satellites and space technology have become the most decisive components of any country's military capability.

This trend makes it clear that in the coming years, space warfare and satellite-based strategy will not only be a technical consideration but also a primary measure of political and military power.

Aerospace Industry

India's Space Ecosystem Expands as Private Investment Crosses \$600 Million: Jitendra Singh

26 April 2026

Source: DD News | <https://ddnews.gov.in/en/indias-space-ecosystem-expands-as-private-investment-crosses-600-million-jitendra-singh/>



Union Minister Jitendra Singh on Sunday reviewed plans to establish space laboratories in universities and colleges across India, with seven such labs proposed in the first phase to provide hands-on training in satellite systems, rocketry and mission design.

The initiative aims to build a strong pipeline of skilled youth for India's expanding space sector, which has attracted over USD 600 million in private investment over the past five years following reforms that opened the sector to non-government players.

The review meeting followed a detailed presentation by Pawan Goenka, Chairman of IN-SPACe, who outlined progress in

space sector reforms and increasing private participation across the value chain.

India's private space ecosystem has witnessed rapid growth, with the number of startups rising from single digits in 2019 to over 400 by early 2026. These startups are engaged in areas such as launch vehicles, satellite and payload manufacturing, ground infrastructure, data services and emerging in-orbit segments.

To support this growth, the government is operationalising a ₹1,000 crore venture capital fund in collaboration with Small Industries Development Bank of India to assist growth-stage startups. In addition, a ₹500 crore Technology Adoption Fund is being implemented to help convert early-stage innovations into commercially viable products.

A seed fund scheme is also in place, offering grants of up to ₹1 crore to startups at the ideation and prototype stage, along with mentoring and ecosystem support.

Efforts to strengthen the talent base are underway, with 17 specialised training programmes completed and nearly 900 participants certified in areas such as satellite manufacturing, launch vehicle systems and space cybersecurity. The proposed space laboratories are expected to further enhance practical learning and skill development.

On the infrastructure front, initiatives include a privately-led Earth Observation satellite constellation under a public-

private partnership model, development of a shared satellite bus platform for startups, and expanded access to design, integration and testing facilities at the IN-SPACe Technical Centre in Ahmedabad. Technology transfer programmes, including the Small Satellite Launch Vehicle (SSLV), are also progressing with industry participation.

India's global engagement in the space sector is expanding, with partnerships now covering over 45 countries. Recent collaborations include agreements with Singapore and the UAE, along with participation of Indian companies in international space forums and efforts to connect domestic startups with global markets.

Since its inception, IN-SPACe has received over 1,000 applications from startups, MSMEs, academic institutions and industry, granting 129 authorisations so far, reflecting growing confidence in India's reformed space ecosystem.

CDS General Anil Chauhan Expresses his Belief that Space will Cast its Influence on Air, Maritime, and Land Domains in Future

18 April 2026

[Source: News on Air | https://www.newsonair.gov.in/cds-general-anil-chauhan-expresses-his-belief-that-space-will-cast-its-influence-on-air-maritime-and-land-domains-in-future/](https://www.newsonair.gov.in/cds-general-anil-chauhan-expresses-his-belief-that-space-will-cast-its-influence-on-air-maritime-and-land-domains-in-future/)

Chief of Defence Staff, General Anil Chauhan has expressed his belief that space will cast its influence on air, maritime, and land domains in the future. He said, space is an uncharted territory where concepts of combat are yet to evolve and mature.

Addressing the Indian Defspace Symposium in New Delhi through virtual mode today, the Chief of Defence Staff stressed that space must be used for the benefit of mankind. He said, India has proved its capabilities in space by developing several niche technologies.

Indian Defense Space Symposium which commenced today, will bring together military leadership, policymakers, scientists and industry captains to shape a roadmap for building formidable defense space capabilities. During the three day event, various sessions will be held to deliberate upon DefSpace challenges, space asset procurement, National Space Security Policy, China's defense space capability, battlefield communication, Space Tech and lessons from Ukraine conflicts.

Co-develop, Co-produce with India in Niche Tech: Indian Defence Minister's Message to German Defence Leaders

18 April 2026

[Source: Defence News | https://defence.in/threads/co-develop-co-produce-with-india-in-niche-tech-indian-defence-ministers-message-to-german-defence-leaders.17552/](https://defence.in/threads/co-develop-co-produce-with-india-in-niche-tech-indian-defence-ministers-message-to-german-defence-leaders.17552/)



Highlighting the significant untapped potential under the 'ReArm Europe' and 'Atmanirbhar Bharat' initiatives, Defence Minister Rajnath Singh on Thursday reiterated that Indian defence companies are keen to engage with German counterparts for co-development and co-production in several key areas.

Addressing the Indian and German Defence leaders on the future landscape of the defence industry at a Defence Round Table in Germany's Munich, Singh said that these areas include advance radar and sensor technology, multi-sensor Artificial Intelligence enabled Unmanned Aerial Systems, Sonobouys and High Power Low Frequency Underwater Transmitters.

"Had extensive discussions with the

defence industry leaders from Germany and India on tremendous potential available in the defence sector. They were appreciative of India's defence industrial reform trajectory. Urged the German industries to co-develop and co-produce with India in niche tech for secured national interests and global stability and resilience," Singh posted on X after the meeting.

The defence minister arrived in Berlin on Tuesday on a three-day visit to Germany, which will conclude later on Thursday.

On Wednesday, Singh visited the TKMS submarine building facility, accompanied by the German Defence Minister Boris Pistorius, in Kiel. This facility is known for manufacturing cutting-edge submarines.

"Delighted to meet Mr. Boris Pistorius, Federal Minister of Defence, Germany in Berlin. Exchanged views on a wide range of issues including deepening our defence cooperation and tackling emerging geopolitical challenges. Witnessed signing of the Defence Industrial Roadmap and Implementing Arrangement for Cooperation in UN Peacekeeping," Singh posted on X.

India and Germany also signed a defence industrial roadmap and an implementing arrangement for Cooperation in UN peacekeeping.

Prior to the meeting, Singh was accorded a ceremonial Guard of Honour upon his arrival at the German Ministry of

Defence. He placed a wreath at Bundeswehr Memorial as a mark of respect. It is the central memorial for the Bundeswehr's personnel who have laid down their lives in the line of duty.

The visit comes amid growing defence ties between India and Germany, with a focus on technology sharing, joint development, and strengthening naval capabilities.

The Indian Defence Minister was flown in a Special German Airforce Aircraft, escorted by Fighter jets during his flight from Munich to Berlin and accorded military honours on his arrival in Berlin.

“One character of air force(s) does not suit all countries in all circumstances.”

- Colin S. Gray



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