

अगस्त
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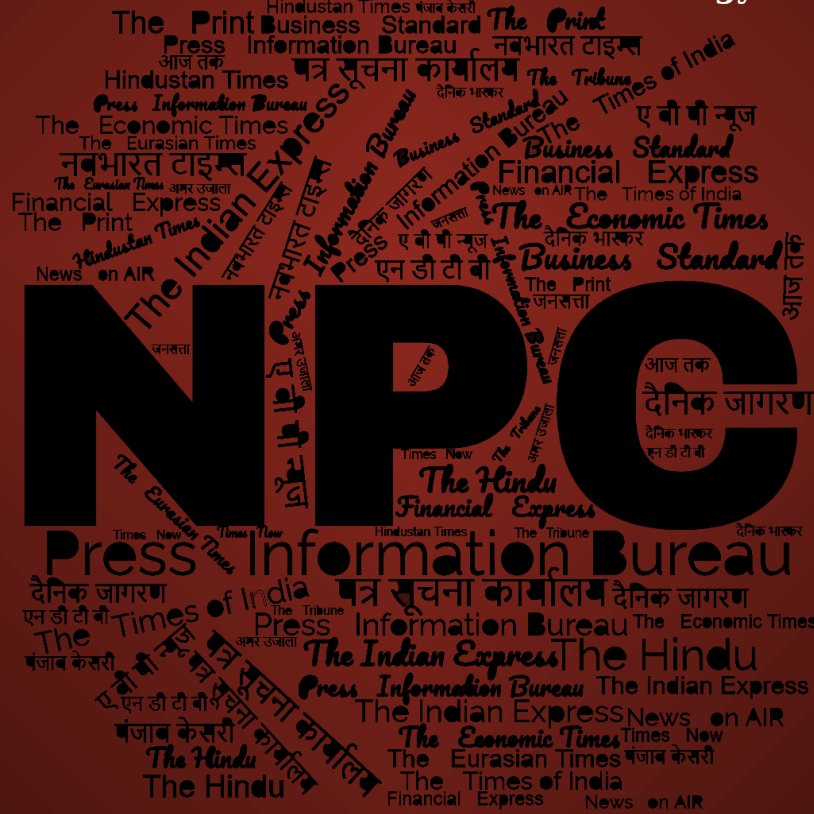
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समाचार पत्रों से चयित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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CONTENTS

S. No.	TITLE		Page No.
Defence News			1-11
Defence Strategic: National/International			1-11
1.	डीएसी ने सशस्त्र बलों की प्रचालन क्षमताओं को बढ़ाने के लिए 7,800 करोड़ रुपये के प्रस्तावों को स्वीकृति दी	<i>Press Information Bureau</i>	1
2.	India Gives Nod to Defence Buys worth ₹7.8k-Cr	<i>Hindustan Times</i>	1
3.	Fighter Squadrons Depleting, IAF Eyes 100 More Tejas Mk-1A	<i>The Times of India</i>	2
4.	IAF Chief Expresses Concern over Delay in LCA Acquisition	<i>Business Line</i>	3
5.	BRICS Summit: PM Modi, Senegal President Discuss Strengthening Defence Ties, Infrastructure Development	<i>ANI</i>	4
6.	BRICS to Admit Six New Members Next Year; Iran, Saudi and Egypt among New Entrants	<i>The New Indian Express</i>	5
7.	India, Japan Hold Deputy NSA Strategic Dialogue, Discuss Defence, Economic Security	<i>The Economic Times</i>	6
8.	Standalone Legislation Required for Theatre Commands to Take Shape	<i>The Tribune</i>	7
9.	Engaging Artificial Intelligence: From Sci-Fi to the Battlefield	<i>Financial Express</i>	8
10.	Taiwan Proposes \$3 Billion Spending on New Weapons, Gets F-16 Boost	<i>The Print</i>	11
Science & Technology News			12-14
11.	New Technology Developed to Transport of Radio Frequency (RF) through Optical Methods could Improve Digital & Satellite Communication	<i>Press Information Bureau</i>	12
12.	Chandrayaan-3's Pragyan Rover has Begun Mobility Operations, Says ISRO	<i>The Hindu</i>	13
13.	With 7-MW Solar Power Plant, Pune's CME is India's First Carbon Negative Garrison	<i>The Indian Express</i>	14



Press Information Bureau
Government of India

Ministry of Defence

Thu, 24 Aug 2023

डीएसी ने सशस्त्र बलों की प्रचालन क्षमताओं को बढ़ाने के लिए 7,800 करोड़ रुपये के प्रस्तावों को स्वीकृति दी

रक्षा मंत्री श्री राजनाथ सिंह की अध्यक्षता में आयोजित रक्षा अधिग्रहण परिषद (डीएसी) की बैठक में 24 अगस्त, 2023 को लगभग 7,800 करोड़ रुपये के पूंजी अधिग्रहण प्रस्तावों के लिए आवश्यकता की स्वीकृति (एओएन) प्रदान की गई। भारतीय वायु सेना की दक्षता बढ़ाने के लिए डीएसी ने खरीद (भारतीय-आईडीडीएम) श्रेणी के तहत एमआई-17 वी5 हेलीकॉप्टरों पर इलेक्ट्रॉनिक वारफेयर (ईडब्ल्यू) सुइट की खरीद और संस्थापना के लिए एओएन की स्वीकृति दी, जो हेलीकॉप्टरों की उत्तरजीविता की क्षमता में और वृद्धि करेगा। ईडब्ल्यू सुइट की खरीद भारत इलेक्ट्रॉनिक्स लिमिटेड (बीईएल) से की जाएगी।

डीएसी ने मशीनीकृत पैदल सेना और बख्तरबंद रेजिमेंटों के लिए मैदान-आधारित स्वायत्त प्रणाली की खरीद के लिए एओएन भी प्रदान किया है जो मानवरहित निगरानी, गोला-बारूद, ईंधन और पुर्जों की लॉजिस्टिक डिलीवरी और युद्ध क्षेत्र में हताहतों की निकासी जैसे प्रचालनों में सक्षम बनाएगी।

7.62x51 मिमी लाइट मशीन गन (एलएमजी) और ब्रिज लेइंग टैंक (बीएलटी) की खरीद के प्रस्ताव को भी डीएसी द्वारा स्वीकृति दे दी गई है। जहां एलएमजी के समाविष्ट होने से पैदल सेना बलों की लड़ने की क्षमता में वृद्धि होगी, वहीं बीएलटी के शामिल होने से मशीनीकृत बलों की आवाजाही में तेजी आएगी। प्रोजेक्ट शक्ति के तहत भारतीय सेना के लिए रग्गोडाइज्ड (मजबूत) लैंपटॉप और टैबलेट की खरीद के लिए एओएन भी प्रदान की गई है। ये सभी खरीद केवल स्वदेशी विक्रेताओं से की जाएगी। भारतीय नौसेना के एमएच-60 आर हेलीकॉप्टरों की प्रचालन क्षमता को बढ़ाने के लिए डीएसी ने हथियारों की खरीद के लिए एओएन प्रदान किया है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1951727>



Thu, 24 Aug 2023

India Gives Nod to Defence Buys worth ₹7.8k-Cr

India on Thursday gave its initial approval to defence purchases worth ₹7,800 crore, including light machine guns, bridge laying tanks, electronic warfare suite for air force helicopters and

weapons for naval choppers, to boost the combat readiness of the armed forces, officials aware of the development said.

The defence acquisition council (DAC), chaired by defence minister Rajnath Singh, accorded its acceptance of necessity (AoN) for the capital acquisition proposals, setting in motion the process to buy the military hardware. Under India's defence procurement rules, AoN by the council is the first step towards buying weapons and systems needed by the armed forces.

While the induction of light machine guns (LMGs) will enhance the fighting capabilities of the infantry, the induction of bridge laying tanks will result in faster movement of mechanised forces, the defence ministry said in a statement. The army has a requirement of tens of thousands of LMGs. It is looking for 7.62mm x 51mm LMG with an effective range of at least 800 metres.

DAC also cleared the procurement of electronic warfare suite for Mi-17 V5 helicopters to enhance their survivability, the statement said. This will be procured from Bharat Electronics Limited (BEL). Another proposal greenlit by the council is for buying ground-based autonomous system for mechanised infantry and armoured regiments to enable unmanned surveillance, delivery of ammunition, fuel and spares and casualty evacuation from the battlefield, the statement said.

The council also gave its go-ahead to a proposal to buy weapons for the navy's new MH-60R helicopters to boost their operational capabilities. The helicopters have been ordered from the US to boost the navy's anti-submarine warfare, anti-surface warfare and surveillance capabilities.

The navy has thus far received a few of the Lockheed Martin-Sikorsky MH-60R multi-role helicopters from the US as part of a 24-chopper deal signed three years ago to modernise the country's ageing naval helicopter fleet. The government-to-government contract for the helicopters was worth around ₹17,500 crore.

To be armed with AGM-114 Hellfire missiles, MK 54 torpedoes and advanced precision weapons, the twin-engine helicopters can operate from frigates, destroyers and aircraft carriers.

Among the projects cleared by DAC is one for the procurement of rugged laptops and tablets for the army.

<https://www.hindustantimes.com/india-news/india-approves-rs-7-800-crore-defence-purchases-to-boost-armed-forces-combat-readiness-101692904022537.html>

THE TIMES OF INDIA

Fri, 25 Aug 2023

Fighter Squadrons Depleting, IAF Eyes 100 More Tejas Mk-1A

The IAF now plans to order around 100 more Tejas Mark-1A jets to meet the shortfall in the number of its combat squadrons till a much more powerful and capable version of the indigenous fighter is operationally ready.

This proposed deal for around 100 Tejas Mark-1A jets will add to the 73 such jets and 10 trainers already ordered under the Rs 46,898 core contract inked with Hindustan Aeronautics (HAL) in February 2021. These 83 jets, powered by the American GE-404 engines, have to be delivered by HAL in the February 2024-February 2028 timeframe.

Sources said the Tejas Mark-2 jets, with the GE-414 engines in the 98 Kilonewton thrust class power that will be made in India under the recent pact inked with the US for transfer of technology (ToT), will be ready for production only by 2030-2031.

“The IAF is desperate to stem the depletion in the number of its fighter squadrons, which is down to just 31 now. They include three old MiG-21 Bison squadrons that have to be retired soon. Moreover, there should be no break in the production schedule of HAL,” a top defence source said.

“Consequently, after the earlier order for 83 Tejas jets, the IAF has now made a statement of case for an additional 100 Mark-1A fighters. The proposal is being submitted to the defence ministry for approval,” he added.

The IAF currently has two Tejas squadrons, the “Flying Daggers” and “Flying Bullets” at Sullur, after 40 Mark-1 fighters were earlier ordered for Rs 8,802 crore. The jets were recently also temporarily deployed in a forward base in J&K, which looks after the fronts with both China and Pakistan.

The Tejas Mark-1A fighters will have 43 “improvements” over the Mark-1 jets. They include AESA (active electronically scanned array) radars to replace existing mechanically-steered radars, air-to-air refuelling, long-range BVR (beyond visual range) missiles and advanced electronic warfare to jam enemy radars and missiles, though the majority of them are designed to improve maintenance.

HAL, of course, has to majorly upgrade its annual production capability to ensure deliveries take place in time. The Cabinet Committee on Security in August last year had also cleared the development of the Tejas Mark-2 fighter at an overall cost of over Rs 9,000 crore.

IAF plans to induct at least six squadrons (110-120) of Tejas Mark-2, which will have a longer combat range and greater weapon-carrying capacity than the Tejas Mark-1 and Mark-1A jets, which have the older GE-F404 engines procured without ToT.

The eventual plan is for India to develop its fifth-generation stealth AMCA(advanced medium combat aircraft). The first two AMCA squadrons are also likely to have GE-F414 engines, while the next five AMCA Mark-2 squadrons will have a more powerful 110 Kilonewton engine to be developed with foreign collaboration.

<https://timesofindia.indiatimes.com/india/fighter-squadrons-depleting-iaf-eyes-100-more-tejas-mk-1a/articleshow/103037265.cms>

THE HINDU
BusinessLine

Thu, 24 Aug 2023

IAF Chief Expresses Concern over Delay in LCA Acquisition

Chief of Air Staff (CAS) Air Chief Marshal VR Chaudhari expressed concern over delay in acquisition of Light Combat Aircraft (LCA) Tejas, being manufactured by state-owned Hindustan Aeronautics Limited (HAL), during Tuesday’s stakeholders meeting held to review the situation owing to the need to augment its fleet of fighter aircrafts down to 31 from the sanctioned strength of 42. The review of the status of the Light Combat Aircraft (LCA) Tejas programme was also necessary due to the fact that, said top Ministry of Defence (MoD) sources, the theaterisation of the tri-services into possible three commands will roll out only after the IAF gets its fleet strength back.

At the meeting at Air Headquarters here, Air Chief Marshal Chaudhari said “Notwithstanding the project delays that were brought out during the course of the review, the CAS lauded the efforts of all stakeholders and emphasised on the need to incorporate the lessons learnt from the LCA programme into future indigenous Design & Developmental projects. With timely deliveries of the more capable variant, the LCA Mk 1A is likely to see increased deployments at forward bases, besides participation in International exercises in the days to come,” the Ministry informed through an official statement. Senior functionaries from the Ministry, Defence Research and Development Organisation (DRDO), its lab Aeronautical Development Agency (ADA) and HAL., attended the meeting.

The Air Chief while complimenting the HAL indicated that based on these assurances, the LCA Mk 1A could be inducted in a newly raised squadron in one of the IAF’s operational bases, early next year, the MoD stated. It was brought out that all contracted fighter variants of the LCA Mk 1 had been delivered to the IAF. Representatives of HAL assured the CAS of the timely delivery of the contracted twin-seaters in the coming months, as well, the Ministry pointed out. Further to the LCA Mk 1, 83 LCA Mk-1A aircraft have also been contracted by the IAF in 2021 and Chairman & Managing Director of HAL C B Ananthakrishnan assured those present that the deliveries of this advanced variant of the LCA would commence by February 2024.

Given the nature of this project of national importance, it is required that all stakeholders adopt a collaborative approach towards its success, Chaudhari told the gathering. The programme has been the harbinger of Atmanirbhar Bharat and Make in India initiatives of the nation, he pointed out.

Tejas LSP-7 successfully fires ASTRA

Meanwhile, Tejas, Light Combat Aircraft (LCA) LSP-7, successfully fired the ASTRA indigenous Beyond Visual Range (BVR) air-to-air missile off the coast of Goa on Wednesday. The missile release was successfully carried out from the aircraft at an altitude of about 20,000 ft and all the objectives of the test were met and it was a perfect text book launch, the MoD announced.

The test launch was monitored by the Test Director and scientists of ADA, DRDO, HAL along with officials from Centre for Military Airworthiness and Certification (CEMILAC) and Directorate General of Aeronautical Quality Assurance (DG-AQA). The aircraft was also monitored by a Chase Tejas twin seater aircraft.

<https://www.thehindubusinessline.com/companies/iaf-chief-expresses-concern-over-delay-in-lca-acquisition/article67228002.ece>



Thu, 24 Aug 2023

BRICS Summit: PM Modi, Senegal President Discuss Strengthening Defence Ties, Infrastructure Development

Prime Minister Narendra Modi and Senegal President Macky Sall on Thursday discussed various aspects of strengthening bilateral ties such as defence, security and infrastructure development during the bilateral meeting held on the sidelines of the 15th BRICS Summit in Johannesburg.

Taking to its social media 'X', the Prime Minister's Office tweeted, "PM @narendramodi held a fruitful meeting with President @Macky_Sall of Senegal in Johannesburg. The leaders deliberated on various aspects of strengthening bilateral ties such as defence and security, and infrastructure development.

<https://twitter.com/pmoindia/status/1694708915660108234?s=46&t=CaS1JqRQMT7Q25SSV16HeQ>

PM Modi and Senegal President Macky Sall held a bilateral meeting on the sidelines of the 15th BRICS Summit in South Africa's Johannesburg on Thursday.

The meeting was held in the presence of envoys from both countries. The visuals from the meeting showed both leaders exchanging a handshake and having a brief conversation at the meeting.

India and Senegal enjoy warm and friendly bilateral relations sharing common values of democracy, development and secularism.

Following the bilateral meeting with Senegal, PM Modi held bilateral talks with Mozambique President Filipe Nyusi on the sidelines of the 15th BRICS Summit in South Africa on Thursday.

In the meeting, the Indian PM and Mozambique president shook hands and had a brief conversation in the presence of envoys from both countries.

Prior to this, PM Modi held bilateral meetings with the President of Ethiopia PM Abiy Ahmed and Iran President Ebrahim Raisi on Thursday.

In the bilateral meeting between Iran and India, PM Modi felicitated Iran on joining the BRICS family. President Raisi thanked PM Modi for India's support in achieving this outcome. President Raisi also congratulated the PM on the success of the Chandrayaan mission.

Meanwhile, the Summit announced that Argentina, Egypt, Ethiopia, Iran, Saudi Arabia and the United Arab Emirates will join the BRICS in January 2024. PM Modi arrived in South Africa for the 15th BRICS Summit on Tuesday. The opening day of the summit in Johannesburg saw the BRICS Business Forum Leaders' Dialogue which PM Modi addressed but Xi Jinping skipped the event, sending his commerce minister Wang Wentao to represent him.

<https://www.aninews.in/news/world/others/brics-summit-pm-modi-senegal-president-discuss-strengthening-defence-ties-infrastructure-development20230824200123/>



Thu, 24 Aug 2023

BRICS to Admit Six New Members Next Year; Iran, Saudi and Egypt among New Entrants

BRICS leaders announced on Thursday the admission of six new countries from next year as the club of large and populous emerging economies seeks to reshape the global order.

The BRICS -- Brazil, Russia, India, China and South Africa -- agreed at their annual summit to make Argentina, Ethiopia, Iran, Saudi Arabia, Egypt and the UAE full members from January 1.

"This membership expansion is historic," said Chinese President Xi Jinping, whose nation is the most powerful in the group of non-Western states that represents a quarter of the world's economy.

"The expansion is also a new starting point for BRICS cooperation. It will bring new vigour to the BRICS cooperation mechanism and further strengthen the force for world peace and development."

Ethiopian Prime Minister Abiy Ahmed hailed what he called "a great moment" for his country.

"Ethiopia stands ready to cooperate with all for an inclusive and prosperous global order," he said on X, formerly known as Twitter.

In Iran, senior presidential advisor Mohammad Jamshidi described the move as a "historic development and a strategic success" for Tehran's foreign policy.

Calls to enlarge the BRICS had dominated the agenda at its three-day summit in Johannesburg and exposed divisions among the bloc over the pace and criteria for admitting new members.

But the group, which makes decisions by consensus, had agreed on "the guiding principles, standards, criteria and procedures of the BRICS expansion process", said South African President Cyril Ramaphosa.

Nearly two dozen countries had formally applied to join the club from across the "Global South", a broad term referring to non-Western nations.

Some 50 other heads of state and government attended the summit, underscoring what BRICS leaders say is the attractiveness of its message.

Rising clout

US officials have played down the likelihood of BRICS emerging as a geopolitical rival, describing the bloc as a highly diverse collection of countries containing both friends and rivals.

The BRICS are a disparate mix of big and small economies, democratic and authoritarian states, and the candidates seeking membership and those admitted to the club also reflect this variety.

But despite differences, BRICS leaders expressed a common belief that the international system was dominated by Western states and institutions and was not serving the interests of developing nations. Brazilian President Luiz Inacio Lula da Silva said with the admission of six new members, the bloc now represented 46 per cent of the world's population and an even greater share of its economic output.

The summit underlined divisions with the West over the war in Ukraine, and the support Russia enjoys from its BRICS partners at a time of global isolation.

South Africa, China and India have not condemned Russia's invasion while Brazil has refused to join Western nations in sending arms to Ukraine or imposing sanctions on Moscow.

<https://www.newindianexpress.com/world/2023/aug/24/brics-to-admit-six-new-members-next-year-iran-saudi-and-egypt-among-new-entrants-2608346.html>

THE ECONOMIC TIMES

Thu, 24 Aug 2023

India, Japan Hold Deputy NSA Strategic Dialogue, Discuss Defence, Economic Security

India and Japan held the second Deputy NSA Strategic Dialogue on Thursday and discussed enhancing cooperation in defence and economic security. The meeting was co-chaired by India's Deputy National Security Advisor (NSA) Vikram Misri and Japan's Deputy Secretary General Keiichi Ichikawa. In the meeting, representatives of both countries embraced enhancing cooperation in defence, economic security and critical & emerging technology and exchanged views on regional and global developments.

Earlier on August 23, Vikram Misri, Deputy National Security Adviser visited South Korea from August 22 to 23 for the fourth India-RoK Deputy NSA level Strategic Dialogue.

The third edition of the Strategic Dialogue was held in India in December 2021.

Deputy NSA Misri met the first Deputy Director of National Security, Kim Tae-hyo. They discussed enhancing cooperation in a wide range of bilateral areas including defence industry and technology, economic security and supply chain resilience, enhancing Korean investments in India, and science and technology issues. They highlighted the importance of closer cooperation on critical and emerging technologies and agreed to step up engagements in these areas. Views on regional and global security environments were also exchanged.

<https://economictimes.indiatimes.com/news/defence/india-japan-hold-deputy-nsa-strategic-dialogue-discuss-defence-economic-security/articleshow/103028764.cms>

The Tribune

Fri, 25 Aug 2023

Standalone Legislation Required for Theatre Commands to Take Shape

By Maj Gen Ashok K Mehta (retd)

Earlier this month, an Army Commander told me that he expected Prime Minister Narendra Modi to announce from the ramparts of the Red Fort the creation of the Western Integrated Theatre Command (ITC) at Jaipur as part of the theatrisation plan. This did not happen, indicating that there are last-minute problems for the long-awaited defence reform. Last month, the Chief of Defence Staff (CDS), Gen Anil Chauhan, speaking at a function of the Defence Research and Development Organisation in New Delhi, emphasised that jointness and integration were a prelude to theatrisation. At an earlier event in Delhi, he said that 99 per cent of the work on theatrisation was over. So, what is this 1 per cent that is holding up the train? Is it separate legislation for theatrisation and the role and functions of the CDS?

After the bad blood between the Indian Air Force (IAF) — the habitual but conscientious objector — and other services during late Gen Bipin Rawat's term as CDS, haste is no longer the choice for implementing theatrisation. When I had met Gen Rawat a week before his tragic death, he showed me the file enunciating his mission. He believed that he was required to inculcate jointness and introduce ITCs within three years. Being in a hurry, Gen Rawat rubbed IAF the wrong way by comparing it with a supporting arm, an extension of the artillery. The IAF was never going to agree to a division of its limited assets and raising of the Air Defence Command (ADC).

On December 24, 2019, the Union Cabinet had approved the creation of the post of CDS, who was tasked "to bring about jointness in operations, logistics and training... of the three services within three years". The new Department of Military Affairs was mandated with "restructuring military commands for optimum utilisation of resources through jointness in operations, including establishment of joint theatre commands". Gen Rawat gave a peek into his version of the ITC in September 2021 in New Delhi. His model of theatrisation consisted of country- and domain-specific ITCs — the Western ITC for Pakistan, Northern ITC for China, a maritime command for Indian Ocean and an islands command (already existing) — the Andaman and Nicobar ITC. He spoke about a fifth command for Indian airspace to be followed by cyberspace command. Also included were ADC and the existing Northern Army Command, which is responsible for Ladakh and Pakistan-occupied Kashmir (PoK), as an interim measure. A former Deputy Chief of Army Staff, Lt Gen Harwant Singh (retd), who had made the first presentation on theatrisation to then MoS for Defence Arun Singh in 2001, had suggested three sea-based integrated commands — one

each for Bay of Bengal, Arabian Sea and Andaman and Nicobar Islands (which came up in 2002). Singh recognised the salience of sea power, which has not been suitably acknowledged.

Gen Chauhan, who is from the 11 Gorkha Rifles, like Gen Rawat, has ticked the right boxes — patience, perseverance and persuasion. He has not gone public with the framework of the ITC. His model is apparently more or less identical to other models and includes two land-based country-specific ITCs and two sea-based domain-specific ITCs, including the existing Andaman and Nicobar Command. Additional joint commands in the pipeline relate to logistics, training, cyber and space, missiles and intelligence. It is proposed that the three new ITCs will be commanded by four-star officers who will retire at the age of 61. Other additional joint commands will be led by three-star officers. Land commands will be followed or accompanied by the merger of Eastern and Naval Commands into the Maritime Command, to also include the existing Andaman and Nicobar Command. The ADC has been dropped to accommodate the IAF on comprehensive utility of its assets. The clincher, it seems, is that one of the two land-based commands will go to the IAF.

It is believed that some IAF resources will be dedicated to ITCs, while the majority will be maintained as strategic reserve. Four-star Generals/ Admirals/Air Chief Marshals will lead ITCs and report to the CDS, who will be responsible for decision-making. It is being said that the Chiefs of Staff Committee will assist the CDS in fulfilling this role. The Service Chiefs, who will remain four-star officers, will be left with the responsibility to raise, train and sustain. Altogether, there will now be seven four-star officers, including the CDS. This will not please the civilian bureaucracy, especially the Defence Secretary, as these officers will be miles ahead of him in the Warrant of Precedence.

Congress MP and advocate Manish Tewari has written that the Inter Services Organisation (Command, Control and Discipline) Bill, 2023, was passed this month in the Lok Sabha and Rajya Sabha without any meaningful debate in Parliament — though a discussion did take place in the Rajya Sabha. The Bill was needed for bringing uniformity in disciplinary matters, cross-posting and promotions in tri-service organisations as each service has its own Act. The Bill will standardise the framework for administrative authority. The Bill is also the legal basis for the government to create theatre commands by restructuring the armed forces. According to Tewari, this will be ultra vires of constitutional jurisprudence if it is used as the legal basis for the CDS. Further, while Clause 3(1) (b) of the Bill defines the CDS, no role is ascribed to him.

I heard the debate in the Rajya Sabha, which was quite pedestrian. Rounding off the debate, Defence Minister Rajnath Singh said the Bill that was passed should not be confused with theatrisation. It is clear that a standalone legislation is required for theatrisation and a separate law to define the institution of the CDS, his role and responsibility. Still, there is no doubt that the government will announce theatrisation plans before the General Election.

<https://www.tribuneindia.com/news/comment/standalone-legislation-required-for-theatre-commands-to-take-shape-538025>



Thu, 24 Aug 2023

Engaging Artificial Intelligence: From Sci-Fi to the Battlefield

By Pooja Arora and Mukesh Kumar

At the first ever debate on Artificial Intelligence (AI) at the United Nations Security Council, the Secretary-General António Guterres called for an international body to regulate AI. It was

reminiscent of the Baruch Plan brought by the USA to regulate nuclear weapons internationally at the UN in 1945. It aimed to establish an international control system to regulate nuclear weapons and atomic energy to prevent further proliferation. It failed due to geostrategic fault lines of the time.

In September 2017, Russian President Vladimir Putin said, “The one who becomes a leader in this sphere (i.e., AI) will be the ruler of the world.” The statement ignites unhindered excitement. One imagines killer robots in combat, powerful computers/humanoids assisting high ranking Generals in making strategic decisions in war rooms, autonomous machinery identifying targets, navigating difficult and inaccessible terrains while conducting ISR (intelligence, surveillance, and reconnaissance) operations. Artificial intelligence is the buzzword of the twenty-first century. Its applications in defence or militarization thereof have multidimensional ramifications for the fields of ethics, law, and international relations.

AI does not have a single definition. AI falls on a spectrum differentiated according to its endowment of decision-making, analytical ability, and functional utility. For example, a drone may be operated and directed by a human or act autonomously. AI also stands at the cusp of hardware-software interface. For example, existing machinery may be augmented by software to work under human direction or function completely autonomously making decisions without any human interface. It would need to be trained extensively for the latter.

The difference in various forms of AI can simply be understood as the differences between Cybermen (machine augmented humans from the show Doctor Who), C-3PO (a polite assistant android from Star Wars), Commander Data (sentient android from Star Trek), Vision and Ultron (antagonistic AI personalities/overlords from the Marvel Universe) and Borg (humanoids operating under a single command and control system from Star Trek). Interestingly, besides C-3PO, all the stated fictional AI characters have participated in or initiated wars based upon their exclusive visions of life in the universe. The twenty-first century version of combat is a case of imagination in science fiction coming to life.

The applications of the technologies popularly associated with the fourth industrial revolution were observed first hand in Ukraine. Extensive use of drones, GPS augmented Excalibur shells, increased efficiency of the ‘kill chain’ due to the use of Kropyva (an app that provides the location of Russian assets to Ukrainian artillery batteries) combined with the satellite internet provided by Starlink has shown a glimpse of future wars to military establishments across the world. The Russian military is waging electronic warfare using jammers to thwart Ukrainian advances. Large amounts of data being generated by intelligence assets (satellite, cyber, drones, humans etc.) are being analysed using AI assets by both sides.

The impact of AI is not limited to the tactical level affecting where, how, and if war is waged (i.e., the theatre and strategic levels). It affects acquisition of technology, personnel training, military-industrial complex, and strategic cultures of nations across the world. AI increases the likelihood of hybrid warfare and grey zone operations. Hitherto conventional theatres of war i.e., land, sea, air are supplemented with cyber, space, intelligence, psychological, and informational warfare. The key to winning any data driven, networked warfare lies in incapacitating communication and intelligence assets of the enemy. Because AI is a democratised technology being developed in the private sector with military applications, the cast of actors in a war may increase bringing civilians to the tactical level and being utilized as combatants in hybrid grey zone operations.

AI can process large amounts of intelligence data to make predictive analysis, adapt to enemy strategy quickly using pattern recognition, and provide information on logistical loopholes with accuracy. This transforms the command-and-control hierarchy, changes the speed at which wars can be fought and makes waging wars easier while sitting thousands of miles away using human

operated robots or drones. As a thought experiment, a country may use predictive AI modelling to decide if waging war on an enemy would lead to a victory.

AI adapts quickly to enemy strategy. Conventional methods of analysis are slower and utilize previously known vulnerabilities which is inadequate when responding to an enemy that is using AI to design war strategy. It raises the question of responsibility of decision making. Cyber wars via AI can be fought with little human interface but who gives the 'kill' signal on the battlefield becomes a crucial question. With lethal autonomous weapon systems under development across the world, it is an urgent issue for international law and the discipline of ethics to take note of.

All domains of warfare from ISR to combat are being transformed by AI. Human intelligence is augmented by machine generated intelligence that combines data from satellites, social media, and the deep web. AI can replicate the personality of a human being using their digital footprint. The intelligence so generated could be made available to troops in the battlefield or other agencies, increasing efficiency of the kill chain. This can also be used to wage psychological and informational warfare against the enemy even before the actual combat commences. Increasingly sophisticated deepfakes are helpful to state and non-state actors in this endeavour. The impact of disinformation/misinformation on political stability of a country is well-known.

The ascendancy of technological innovations within the military sphere of Artificial Intelligence (AI) is poised to usher in a transformative paradigm shift. Nonetheless, it is imperative to acknowledge the attendant perils intrinsic to data-centric warfare. Furthermore, it is important to underscore that the genesis of technology, be it nuclear or AI, emanates from the human intellect. A harmonious synergy between human ingenuity and AI has the potential to harness the optimal capabilities while concurrently assuaging the burgeoning risks.

In retrospect, a poignant illustration of this interplay between human judgment and machine intelligence is discernible in the historical episode of 1983. During this pivotal juncture, the Soviet Union's early warning satellite system erroneously identified the presence of five armed nuclear Intercontinental Ballistic Missiles (ICBMs) purportedly approaching its territorial boundaries, ostensibly from the United States. This critical misidentification had the ominous potential to precipitate a catastrophic nuclear conflict, either between the United States and the USSR or even culminate in a global conflagration, commonly referred to as the Third World War.

This momentous incident underscores the intrinsic superiority of human discernment over its machine counterpart. It was the astute judgment of Lieutenant Colonel Stanislav Petrov, an erudite engineer serving in the Soviet Union's Air Defence Forces, that decisively averted the impending catastrophe.

An optimist would hail AI as the holy grail of war strategy and dream about ruling the world. An idealist would promote international regulation of AI. With nuclear weapons, the logic of deterrence was simple. But with the militarization of AI, there is an increased risk of miscalculation and miscommunication due to faulty data. The idea of collaboration between nations on AI is fraught with the fault lines of geostrategic competitions. The civilian applications of AI are simpler to regulate. It remains to be seen if regulation of its military applications will meet the fate of the Baruch plan.

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<https://www.financialexpress.com/business/defence-engaging-artificial-intelligence-from-sci-fi-to-the-battlefield-3221924/>

Taiwan Proposes \$3 Billion Spending on New Weapons, Gets F-16 Boost

Taiwan will spend an extra T\$94.3 billion (\$2.97 billion) to buy weapons next year including fighter jets to bolster its defences against China, the government said on Thursday, and will get a further boost from new F-16 fighter jet tracking systems.

China, which views democratically governed Taiwan as its own territory, has ramped up military and political pressure over the past three years to assert those claims, which Taipei strongly rejects.

Taiwan President Tsai Ing-wen already announced on Monday that overall proposed defence spending for 2024 would be set at T\$606.8 billion, a 3.5% increase from the previous year.

About half of the T\$94.3 billion additional spend would be used to purchase fighter jets, and the remainder will go into bolstering naval defences, the government's statistics department said after a cabinet meeting to discuss the budget.

The United States on Wednesday approved a possible \$500 million sale to Taiwan of infrared search and track systems for F-16 fighter jets, as well as other equipment.

Taiwan deputy defence minister Po Horng-huei told reporters the search and tracking systems were the same as those used by F-35 and F-22 fighters, among the most advanced the United States operates.

"These will help to target the J-20 stealth fighter over the Taiwan Strait in the future," Po said, referring to the new generation of Chinese jets.

It will allow Taiwan to more effectively deter Chinese air activity, he added.

The budget will have to be approved by parliament, where Tsai's Democratic Progressive Party has a majority. Defence spending for next year will amount to 2.5% of Taiwan's GDP.

Tsai has overseen a military modernisation programme to make Taiwan's armed forces better able to face China, including upgrading its fleet of F-16 fighter jets and developing its own submarines.

Tsai said on Monday the first prototype indigenous submarine was expected to be unveiled next month as scheduled.

Taiwan has been converting 141 F-16A/B jets into the F-16V type and has ordered 66 new F-16Vs, which have advanced avionics, weapons and radar systems to better face down the Chinese air force, including its J-20 stealth fighters.

<https://theprint.in/world/taiwan-proposes-3-billion-spending-on-new-weapons-gets-f-16-boost/1728322/>

Science & Technology News



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Ministry of Science & Technology

Thu, 24 Aug 2023

New Technology Developed to Transport of Radio Frequency (RF) through Optical Methods could Improve Digital & Satellite Communication

A newly designed prototypes in the Next-Generation Photonic Analog-to-Digital Converters (NG-PADC) project which can carry out instantaneous frequency measurement, generation and transport of Radio Frequency (RF) through optical methods could revolutionize various sectors, enabling faster digital communication, improved satellite communication, better medical imaging, and Photonic radars.

Analog-to-digital converters (ADCs) are critical components for developing the next generation of advanced digital receivers. The limitation of electronic ADCs (EADCs) is that their vertical resolution is compromised at high bandwidths. There are two possible approaches to solve this problem through Photonics.

RF, when modulated on a spectrally rich optical pulsed source, can be stretched in the optical domain through a dispersive medium, thus converting high-frequency RF signals into effectively low-frequency signals. This reduces the input bandwidth requirements of the back-end ADC as many times as the stretch factor of the optical pulse. The other Photonic approach is to use an optical clock whose fluctuations in timing (timing jitter) is much smaller an electronic clock; which is possible with a short pulsed laser. High bandwidth RF signals, when sampled with stable optical clocks, can provide a much higher effective number of bits (ENOB) compared to electronic clocks. It has time-stretched photonic ADC with effective bandwidth 12 times higher than EADC, which enables digitisation of signals with a much larger precision.

An NG-PADC developed by IIT Madras with support from the IMPRINT programme of Science, Engineering, Research Board (SERB), is equipped with a time-stretched photonic ADC whose effective bandwidth is 12 times higher than a corresponding EADC, which enables sampling of higher bandwidth signal with effectively lower bandwidth EADCs.

They have been working with high-bandwidth signals for digital coherent communication where the scaling spectral efficiency is challenging because of the limited ENOB of EADCs and trying to look for fundamental solutions for this problem.

“Our interactions with DRDO gave us confidence to build these solutions since we found that radar signal processing is also limited by the available electronics. We were also approached by our industry partner, with similar requirements. Thus, all these expertise came together for the development of NG-PADC,” said the scientists.

The scientists have tied up with Hyderabad based Lightmotif Automation, for reaching the technology to the people.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1951809>

Chandrayaan-3's Pragyan Rover has Begun Mobility Operations, Says ISRO

Hours after the Pragyan lunar rover rolled out from the Vikram lander and took its first “walk on the moon” in the early hours of Thursday, the Indian Space Research Organisation (ISRO) said that the historic Chandrayaan-3 Mission was running on schedule, with all systems working normally. Instruments aboard the lander and rover will now study the moon’s mineral composition and the seismic activities in its atmosphere, according to ISRO chairman S. Somanath. The indigenous rover’s exploration of the lunar surface began a day after India became the fourth country to successfully land on the moon, spurring euphoric celebrations at ISRO and around the country.

‘Walk on the moon’

“Chandrayaan-3 ROVER: Made in India Made for the MOON! The Ch-3 Rover ramped down from the Lander and India took a walk on the moon!” ISRO posted on social media platform X, on Thursday morning.

President Draupadi Murmu had made the first announcement of the rover’s successful deployment at 7 a.m. “Its rolling out a few hours after the landing of Vikram marked the success of yet another stage of Chandrayaan 3. I look forward with excitement, alongside my fellow citizens and scientists to the information and analyses that Pragyan will acquire and enrich our understanding of the moon,” she posted.

‘All systems are normal’

Later in the evening, ISRO added an update on mission operations and the payloads aboard the lander. “Chandrayaan-3 Mission: All activities are on schedule. All systems are normal. Lander Module payloads ILSA, RAMBHA and ChaSTE are turned ON today. Rover mobility operations have commenced. SHAPE payload on the Propulsion Module was turned ON on Sunday,” it posted.

Chandrayaan-3 Mission:

All activities are on schedule.

All systems are normal.

Lander Module payloads ILSA, RAMBHA and ChaSTE are turned ON today.

Rover mobility operations have commenced.

SHAPE payload on the Propulsion Module was turned ON on Sunday.

— ISRO (@isro) August 24, 2023

Dr. Somanath confirmed that the rover movement is happening and working very well. He told the Press Trust of India that there are two instruments in the rover and three instruments on board the lander, and all of them have been switched on sequentially. “They will study basically the mineral composition of the moon, as well as the atmosphere of the Moon and the seismic activities there,” he added.

‘Perfect landing’

Dr. Somanath also said that the Chandrayaan-3 spacecraft’s lander Vikram had touched down on the moon’s surface well within the area identified for the purpose.

“(The lander landed) perfectly in the intended site. The landing location was marked as 4.5 km x 2.5 km — I think on that space, and the exact centre of that was identified as the location of landing. It landed within 300 metres of that point. That means it is well within the area identified for landing,” he said.

<https://www.thehindu.com/sci-tech/science/india-takes-a-walk-on-the-moon-as-pragyan-rover-begins-operations/article67231556.ece>



Fri, 25 Aug 2023

With 7-MW Solar Power Plant, Pune’s CME is India’s First Carbon Negative Garrison

PUNE-based College of Military Engineering (CME) said on Thursday that with the commissioning of a 5-megawatt (MW) solar power plant — taking its solar power generation capacity to 7 MW — it has become India’s first carbon negative garrison or military formation.

The CME, which was established in 1948 as a premier institute of the armed forces, trains all ranks of Indian Army, Navy and Air force, including those from friendly foreign countries in various technical and tactical aspects with changing character of warfare.

A plethora of projects has been undertaken in the recent past at CME by the Military Engineering Services (MES) through the office of Garrison Engineer (CME), Khadki, in order to reduce the institute’s carbon footprint. The biggest project is implementation of the 7-MW solar power plant in CME in two phases, apart from multiple important pilot projects such as solar steam cooking plants for community cooking for troops at CME and installation of Retrofitting Emission Control Devices (RECDs) on diesel generator sets to curb emissions.

The first phase of the 7-MW solar power plant was undertaken with the commissioning of a 2-MW solar power plant in 2021 fulfilling the daytime energy requirements of the CME. The commissioning of the 5-MW plant in the second phase has been key in achieving the objective of ‘National Solar Mission under Government of India. Success of the project has paved the way for other formations and tri-services establishments to become carbon negative in the future, officials said. The CME said in a press statement on Thursday that apart from annual fiscal savings of Rs 6.5 crore to the national exchequer, the 5-MW plant connected to the Maharashtra State Electricity Grid makes it possible for the power generated at CME to be consumed at National Defence Academy at Khadakwasla, Command Hospital Pune, Military Hospital Khadki and Bombay Engineer Group and Centre, Khadki, spread across the city of Pune, thus further ensuring achieving of ‘National Clean Air Programme’ by reducing dependency on conventional thermal power plants.

“With commissioning of a 5-MW solar power plant, the CME has become a completely carbon negative garrison — a first in India which is an impressive feat,” the press statement said.

The carbon negative refers to an entity emitting less than zero carbon dioxide and carbon dioxide equivalent (CO₂e) greenhouse gasses, effectively. Emitting a negative amount of carbon being carbon negative refers to the net emissions of the entity by offsetting more carbon, through processes like carbon capture, sequestration and avoidance, than the entity contributes to the environment.

<https://indianexpress.com/article/cities/pune/with-7-mw-solar-power-plant-pune-cme-is-indias-first-carbon-negative-garrison-8908336/>

