

फरवरी

February
2023

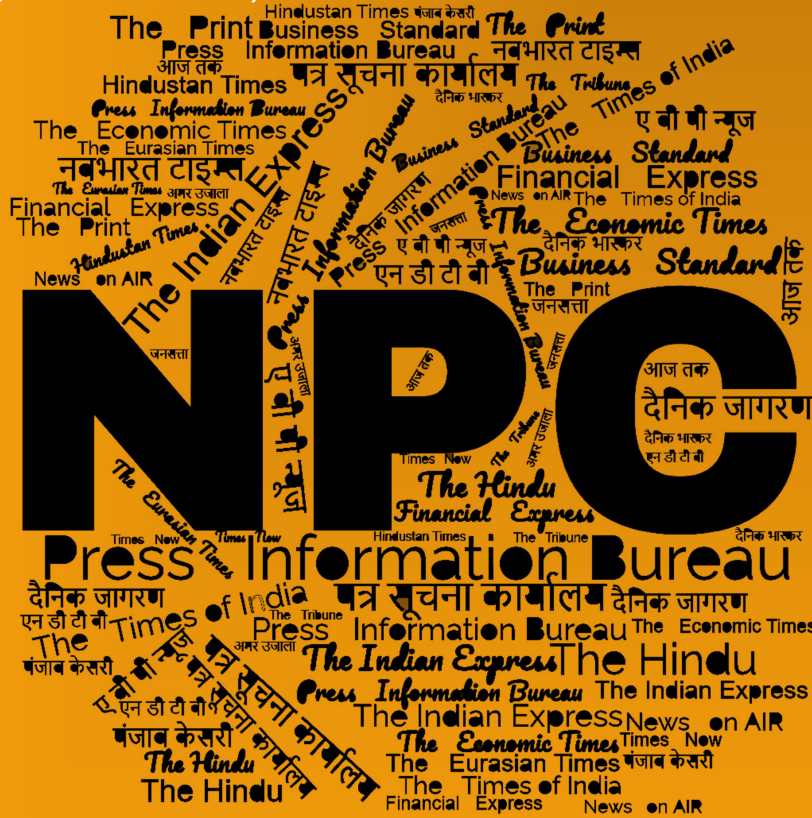
खंड/Vol. : 48 अंक/Issue : 38

23/02/2023

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय

Defence Science Library

रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र

Defence Scientific Information & Documentation Centre

मेटकॉफ हाउस, दिल्ली - 110 054

Metcalfe House, Delhi - 110 054

CONTENTS

S. No.	TITLE		Page No.
	DRDO News		1-3
	DRDO Technology News		1-3
1.	IAF to Arm Sukhoi Su-30MKI, MiG-29 and Tejas Mk1A with DRDO's Astra BVR Missile	<i>RepublicWorld.com</i>	1
2.	LCA Tejas Mk2 can Carry 8 BVR Missiles, Integrate French, Russian Weapons: Official	<i>The Indian Express</i>	2
	Defence News		3-19
	Defence Strategic: National/International		3-19
3.	Maritime Security: Memorandum of Understanding (MoU) between the Information Fusion Centre - Indian Ocean Region (IFC-IOR) and Regional Coordination Operations Centre (RCOC)	<i>Press Information Bureau</i>	3
4.	Navy Extends Watch over the Indian Ocean Region: Ministry of Defence	<i>Business Standard</i>	4
5.	Abu Dhabi Defence Firm Signs MOU with India's HAL at UAE's Defence Expo	<i>Mint</i>	5
6.	IAF's MTA Aircraft Acquisition Attracts Lockheed Martin, Embraer	<i>Janes</i>	6
7.	Indo-Israeli Joint Venture Firm to Provide Service Support for India's MRSAM Missiles	<i>WION</i>	7
8.	US F-35s, Bombers at Aero India an Outcome of iCET Talk between Doval and Sullivan	<i>ABP News</i>	8
9.	Defence Ties with Australia are Strong	<i>The Pioneer</i>	9
10.	UK Leads Western Europe's Largest Cyber Warfare Exercise	<i>GOV.UK</i>	11
11.	Russia Exits the START Treaty. International Security is on a Slippery Slope: Expert	<i>Financial Express</i>	12
12.	Joe Biden to Meet Eastern NATO Allies after Putin's Suspension of Landmark Nuclear Treaty	<i>The Print</i>	14
13.	'Give us Ammunition': Wagner Chief Challenges Russian Army	<i>The Economic Times</i>	15
14.	Spain to Send Six Leopard Tanks to Ukraine: Defence Minister Margarita Robles	<i>The Economic Times</i>	17
15.	Britain 'Warming up' Weapon Output to Help Ukraine, says Defence Minister	<i>Reuters</i>	17
	Science & Technology News		19-22
16.	FABA Awards for Science and Technology to be Presented Today	<i>The Hindu</i>	19
17.	Trends that will Shape the Life Sciences Industry in 2023 and Beyond	<i>Hindustan Times</i>	20

IAF to Arm Sukhoi Su-30MKI, MiG-29 and Tejas Mk1A with DRDO's Astra BVR Missile

The Defence Research and Development Organisation (DRDO) will equip Astra air-to-air missile system on Indian Air Force's Sukhoi Su-30MKIs, Light Combat Aircraft Tejas Mk 1A and MiG-29 UPG. Astra is a beyond visual range (BVR) air-to-air missile system which has been indigenously designed and developed to take down enemy aircraft and drones.

About The Astra Missiles

The Astra missile is an air-to-air state of the art missile system developed by the DRDO. This missile is designed in a manner to engage and destroy aerial targets at various ranges and altitudes. The Astra missile has a range of upto 110 km and it can engage targets at altitudes of upto 20 km.

The missile is capable of engaging both agile and non-maneuvering targets, making it highly versatile in air to air combat situation. It uses a solid-fuel rocket motor and an advance guidance system to achieve its exceptional performance. The missile's guidance system includes inertial navigation, mid-course guidance and active radar homing for terminal guidance.

This allows the missile system to track and engage targets even in adverse weather conditions and electronic countermeasures environments. The Astra missile can be launched from many aircrafts including the Sukhoi Su-30 MKI, Mirage-2000 and Tejas. The missile is equipped with an onboard radio proximity fuse that enables it to detonate when close to target providing maximum impact and damage. The Astra was first time tested in 2003 and underwent several successful trials before being inducted.

This missile is crucial for India's air defence capabilities providing the country indigenous and highly advance air-to-air defence capabilities. The LCA Tejas on which these missiles will be equipped is an indigenous fighter aircraft developed by India's Hindustan Aeronautics Limited (HAL). The aircraft was designed to replace the ageing MiG-21.

The Tejas is a lightweight, single-engine multirole fighter aircraft which is capable of air superiority, ground attack and reconnaissance mission. Its maximum speed is of Mach 1.8 and a range of over 3000 km making it a highly versatile aircraft. The Tejas is equipped with state of the art weapon system, advance radar, electronic warfare suite and a wide range of air-to-air and air-to-ground missiles. The aircrafts cockpit is also designed as a pilot friendly cockpit with

excellent situational awareness with modern glass cockpit and heads up display. The Tejas has undergone several upgrades including new technologies and weapons system. It is at par with the modern aircrafts with latest technological features.

The Tejas Mk 1 -A features advanced weapons and avionics. It includes the Israeli Derby Beyond Visual range missile. The tejas is a significant achievement for India in the aerospace industry as it is the first aircraft to completely designed and manufactured in the country.

<https://www.republicworld.com/india-news/general-news/iaf-to-arm-sukhoi-su-30mki-mig-29-and-tejas-mk1a-with-drdo-astra-bvr-missile-articleshow.html>



Thu, 23 Feb 2023

LCA Tejas Mk2 can Carry 8 BVR Missiles, Integrate French, Russian Weapons: Official

Indigenous Light Combat Aircraft (LCA) Tejas Mk2 is not only capable of carrying eight Beyond-Visual-Range (BVR) missiles together but can also integrate all native weapons, as well as a variety of advanced weapons from other countries, a senior official from the Aeronautical Development Agency (ADA), which comes under the Defence Research Development Organisation (DRDO), has said.

“No other single-engine aircraft of this class in the world can carry eight BVR missiles simultaneously. These unique features will make it stand out among aircraft manufactured by global firms, upping its export potential,” V Madhusudana Rao, the LCA Mk2 project director, told The Indian Express on the sidelines of Aero India 2023, the country’s biggest aviation exhibition that ended on February 17, in Bengaluru.

Stating that “the future is BVR combat and we are ready for that”, the official said the aircraft will be integrated with heavy standoff weapons, such as SCALP, an air-to-ground, long-range deep strike missile. “We considered the integration of advanced French and Russian weapons, weapons from other Western countries and indigenous weapons like ASTRA [a BVR air-to-air missile] while designing this aircraft [LCA Mk 2]. Unlike other aircraft, LCA Mk2 will be able to integrate unique weapons from various countries,” he explained.

He said the LCA Mk2 has seen a quantum jump in technology from LCA Tejas Mk1, including improved range. “The mission endurance for fighting a war was 57 minutes for LCA Tejas Mk1, but it is 120 minutes for LCA Tejas Mk2. The Mk2 will have 11 hardpoints [a weapon station on the airframe designed to carry external load]. LCA Mk2 will have a weapon carrying capacity of 6.5 tonnes,” he said. The General Electric GE-414 engine will power the LCA Mk2.

The senior official’s statement comes at a time when Hindustan Aeronautics Limited (HAL), the public sector aircraft manufacturing company, is in talks with several countries, including Malaysia, Argentina, Egypt and Botswana, to sell LCA Tejas Mk-1A.

HAL chairperson and managing director C B Ananthkrishnan had told the media last week that the bid to sell 16 lighter fighter jets to Malaysia had suffered a “slight setback” after the country

had shortlisted the Korean KAI FA-50 over the LCA. Last September, the Cabinet Committee on Security (CCS) had sanctioned Rs 9,000 crore to develop the LCA Mk2, a 4.5-generation fighter aircraft. Stating that the critical design review of the aircraft is ready and the manufacturing initiated, Rao said there has been some delay in the release of government funds. The aircraft should be rolled out by next year, he added.

To fill the gap in the Indian Air Force's depleting fighter squadrons, LCA Mk2 and the indigenous Advanced Medium Combat Aircraft (AMCA) will be pitched as a replacement for the Jaguars, MiG-29s and Mirage 2000s when they start retiring in a decade.

"Our first priority is to meet the requirement of the [defence] services, after which we will honour requests from foreign countries," he said, adding that 16 countries have so far shown interest in the fighter jet.

There is a push from the government to increase the aircraft's production rate and efforts are on to narrow down the list of private production agencies that can help do that.

<https://indianexpress.com/article/india/lca-tejas-mk2-can-carry-8-bvr-missiles-integrate-french-russian-weapons-official-8461499/>

Defence News

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Wed, 22 Feb 2023

Maritime Security: Memorandum of Understanding (MoU) between the Information Fusion Centre - Indian Ocean Region (IFC-IOR) and Regional Coordination Operations Centre (RCOC)

In order to further the existing cooperation in the realm of maritime safety and security, IFC-IOR signed an MoU on 21 Feb 2023 with Regional Coordination Operations Centre (RCOC), Seychelles. The MoU signed by Captain Rohit Bajpai, Director, IFC-IOR and Capt Sam Gontier, Director, RCOC aims to promote collaboration between the two Centres towards enhancing maritime domain awareness, information sharing and expertise development.

IFC-IOR, hosted by the Indian Navy, was established by the Government of India at Gurugram on 22 Dec 2018 to enhance collaborative maritime safety and security in the Indian Ocean

Region in line with India's vision of Security and Growth for All in the Region (SAGAR). To enable better correlation, compressed information cycles and timely inputs, IFC-IOR also hosts International Liaison Officers (ILOs) from partner nations. To date the Centre has hosted ILOs from 12 partner nations - Australia, France, Italy, Japan, Maldives, Mauritius, Myanmar, Sri Lanka, Seychelles, Singapore, United Kingdom, and the United States of America. The Maritime Security Architecture in the Western Indian Ocean, implemented by the Indian Ocean Commission (IOC) is supported by the Regional Maritime Information Fusion Centre (RMIFC), the Regional Operations Coordination Centre (RCOC) and the national centres of the seven signatory countries (Comoros, Djibouti, France, Kenya, Madagascar, Mauritius, and Seychelles).

Since inception, IFC-IOR has established linkages with several multinational maritime security centres and the current initiative will enable deeper collaboration between the IFC-IOR and RCOC. This approach will allow the Centres to effectively develop a common maritime understanding to counter non-traditional maritime security threats such as piracy and armed robbery, human and contraband trafficking, Illegal Unregulated and Unreported (IUU) fishing, arms running, poaching, maritime terrorism, etc with a special focus on the Western Indian Ocean.

During the MoU signing both the Directors of RCOC and IFC-IOR were unanimous on the need to enhance information sharing and analysis to cue actions at sea. They also highlighted that this MoU will enhance trust and improving synergy between the Centres towards furthering collaborative maritime safety and security in the Indian Ocean Region. The event was attended by the Secretary General and delegates from IOC, High Commissioner of India to Seychelles and senior officers of the Indian Navy.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1901371>

Business Standard

Thu, 23 Feb 2023

Navy Extends Watch over the Indian Ocean Region: Ministry of Defence

To enhance cooperation in the realm of maritime security, India's high-tech control centre for monitoring traffic through the Indian Ocean Region agreed on Tuesday to cooperate with a similar body in Seychelles, in the southern Indian Ocean.

Set up by the Indian Navy in 2019 in Gurugram, the Information Fusion Centre for the Indian Ocean Region (IFC-IOR) signed a memorandum of understanding with the Regional Coordination Operations Centre (RCOC), Seychelles.

“(This) aims to promote collaboration between the two centres towards enhancing maritime domain awareness, information sharing and expertise development,” the Ministry of Defence (MoD) stated on Wednesday.

The IFC-IOR is a diplomatic initiative that underlines India's status as the guardian of the Indian Ocean — a “net security provider” that brings together regional countries to safeguard global commons, freedom of navigation and to provide security against challenges such as piracy, terrorism, gun-running, narcotics, human migration and illegal fishing.

Towards this, it obtains feeds from a range of space-based and terrestrial sensors and sources, to track fishing boats and commercial vessels near India's coast and in the vast maritime domain beyond. "IFC-IOR, hosted by the Indian Navy, was established by the Government of India at Gurugram on December 22, 2018, to enhance collaborative maritime safety and security in the Indian Ocean Region in line with India's vision of Security and Growth for All in the Region (SAGAR)," said the MoD. The IFC-IOR primarily watches over the Northern Indian Ocean, through which run sea lines of communications (SLOCs) that carry 75 per cent of the world's maritime trade and half of daily oil consumption.

Now the IFC-IOR's partnership with the RCOG, Seychelles, allows the Indian Navy to focus its watch further south. To enable better cooperation, IFC-IOR also hosts International Liaison Officers (ILOs) from 12 partner nations: Australia, France, Italy, Japan, Maldives, Mauritius, Myanmar, Sri Lanka, Seychelles, Singapore, the UK and the US, said the MoD.

The maritime security architecture in the Western Indian Ocean is supported by the Regional Maritime Information Fusion Centre (RMIFC), the RCOG in Seychelles and the national centres of seven signatory countries: Comoros, Djibouti, France, Kenya, Madagascar, Mauritius, and Seychelles, said the MoD. The thrust of this initiative remains to track civil, commercial shipping. For tracking its own and hostile warships, the Navy maintains a separate "Operations Room." There is a deliberate firewall between the two.

The IFC-IOR obtains inputs from a range of sensors. Primary inputs come from India's coastal radar network that is manned by the Coast Guard.

Information is also generated from White Shipping Agreements that India has with 36 countries, and three multinational agencies. These feed in details of all commercial shipping passing through their ports. IMAC also incorporates inputs from LRIT (long range identification and tracking). This mechanism, which works under the International Maritime Organisation, paves the way for 174 countries to provide real-time information on their commercial shipping.

Custom-designed software feeds this diverse data, obtained from multiple sources, into a "common operating picture."

https://www.business-standard.com/article/economy-policy/navy-extends-its-watch-over-indian-ocean-region-ministry-of-defence-123022201016_1.html



Thu, 23 Feb 2023

Abu Dhabi Defence Firm Signs MOU with India's HAL at UAE's Defence Expo

EDGE, UAE's leading defence group signed a Memorandum of Understanding with India's aerospace firm Hindustan Aeronautics (HAL) on Wednesday at the International Defence Exhibition and Conference (IDEX). The MOU is signed to explore the areas of cooperation that include joint design and development of missile systems and Unmanned aerial vehicles (drones). Additionally, both companies will explore the utilisation of HAL's small gas turbine engines on

EDGE's guided weapons, the utilisation of EDGE's GPS jamming and spoofing equipment on HAL's platforms, and opportunities for further knowledge sharing.

The two companies will also explore cooperation on mission computers, training programmes, and utilisation of additive manufacturing of metallic parts will also take place at EDGE's and HAL's world-class facilities in the UAE and India.

Dubai's EDGE and India's HAL signed the MOU at INDEX, touted to be one of the world's largest tri-service defence exhibitions.

IDEX-2023 exhibition will be held in Abu Dhabi, UAE from 20- 24 February.

Indian envoy to UAE Sunjay Sudhir visited IDEX-the the flagship defence expo of the UAE yesterday. Other companies have also signed agreements in the ongoing defence exhibition. For instance, ICOMM, a group company of Megha Engineering and Infrastructures Ltd (MEIL) signed an agreement with UAE-based EDGE entity CARACAL for the first-ever Transfer of Technology (ToT) in defence articles.

ICOMM will locally manufacture CARACAL's complete line of small arms for the Indian market under the 'Make in India' and Aatmanirbhar Bharat initiatives.

This week Reuters reported that UAE signed defence deals worth 8.14 billion dirhams (\$2.22 billion) on 21 February at IDEX.

EDGE, whose book value last year was roughly \$5 billion, won the biggest deal, a 4.7 billion-dirham contract for its subsidiary Halcon to supply Desert Sting P5 systems, Tawazun Council.

Another EDGE subsidiary, ADASI, clinched a 1.33 billion-dirham deal for its Shadow system.

EDGE has clients in Africa, Asia, the Middle East, and Europe.

<https://www.livemint.com/news/india/abu-dhabi-defence-firm-signs-mou-with-india-s-hal-at-uae-s-defence-expo-11677109205445.html>



Wed, 22 Feb 2023

IAF's MTA Aircraft Acquisition Attracts Lockheed Martin, Embraer

Embraer and Lockheed Martin have expressed interest in participating in the Indian Air Force's (IAF's) new Medium Transport Aircraft (MTA) acquisition programme.

The IAF is seeking an option of acquiring a batch of 40, 60, or 80 transport aircraft. In its request for information (RFI) released on 3 February, the IAF said that the aircraft are required to have a cargo-carrying capacity of between 18 and 30 tons. The document adds that the winning bidder is to commence “deliveries of [the] platform within 36 months of signing of contract”. Speaking to Janes, João Bosco da Costa Junior, president and CEO of Embraer Defense & Security, confirmed the company's interest in the MTA programme. “We are eager to engage with the relevant stakeholders to explore how Embraer can contribute to this project,” he said.

Embraer's interest in the project also prompted the company to display a Brazilian Air Force KC-390 Millennium twin-engined transport aircraft at the Aero India 2023 show. The biennial airshow was held in Bangalore from 13 to 17 February. The company told Janes that this is the first appearance of the aircraft in India.

“The C-390 Millennium's presence at [the] Aero India [2023 show], India's biggest defence show, reflects that we are convinced that the aircraft will bring benefits to the Indian Air Force,” da Costa Junior said. Lockheed Martin said that it will bid for the project. Speaking to Janes during the Aero India 2023 show, Timothy J German, director of Global Pursuits at Lockheed Martin, said that the company will be submitting the baseline C-130J for the bid.

<https://www.janes.com/defence-news/defence/latest/iafs-mta-aircraft-acquisition-attracts-lockheed-martin-embraer>



Wed, 22 Feb 2023

Indo-Israeli Joint Venture Firm to Provide Service Support for India's MRSAM Missiles

Israeli Aerospace Industries (IAI) and India's Bharat Electronics Limited (BEL), firms owned by their respective Governments, have entered into a Memorandum of Agreement (MoA) to form a joint venture firm for extending long-term product support services for Indian Armed Forces.

Aimed at providing life-cycle support for the Indo-Israeli Medium-Range Surface to Air Missile (MRSAM), this joint venture furthers the long-standing cooperation between India and Israel in the field of Defence. The venture is to have its headquarters in India's capital New Delhi and will provide technical and maintenance support for MRSAM and its related systems.

Bhanu Prakash Srivastava, CMD, BEL, said, “BEL considers IAI, Israel, as a very important strategic partner. This Joint Venture between the two companies is expected to play a pivotal role in ensuring timely Product Support services for MRSAM Systems and enable substantial indigenous workshare with the active participation of the Indian supply chain.”

MRSAM is an advanced air and missile defence system that provides protection against a variety of aerial platforms. The MRSAM is used by the Indian Air Force, Indian Army, Indian Navy and Israeli Defence Forces.

The system includes an Advanced Phased Array Radar, command and control shelter, mobile launchers and interceptors with an advanced RF seeker. MRSAM is jointly developed by IAI and India's Defence Research Development Organization(DRDO) in collaboration with India and Israel for India's Armed Forces.

The MRSAM missile is capable of taking down multiple aerial targets such as jets, drones, helicopters, and incoming missiles, within a 70km range.

Boaz Levy, IAI's President and CEO, had said earlier, “Our joint venture with BEL will leverage the best technology, innovation and talent to provide services matching the needs of our customers in India. It follows our announcement in 2022 about the opening of Aerospace

Services India (ASI), an IAI subsidiary in New Delhi, both of which illustrate our support of the Indian Government's 'Atmanirbhar Bharat'(self-reliant India) initiative and investment in India.”

<https://www.wionews.com/india-news/indo-israeli-joint-venture-firm-to-provide-service-support-for-indias-mrsam-missiles-564810>



Thu, 23 Feb 2023

US F-35s, Bombers at Aero India an Outcome of iCET Talk between Doval and Sullivan

The defence partnership between the US and India is poised to reach “newer heights” after both sides gave wings to the US-India Initiative on Critical and Emerging Technology (iCET). American airpower dominated Indian skies with their fighter jets and bombers at last week's Aero India 2023. The massive show of airpower by the US overshadowing others is a “testimony of deepening of defence ties” between Washington and New Delhi at a time when the US is keen on “weaning away” India from the Russian platforms, a top-ranking official told ABP Live.

The official, who did not want to be named, said the arrival of two F-35 fighter jets and two bombers from the US to India is “hugely significant” and the move was finalised when both sides successfully launched the iCET during the visit of National Security Advisor (NSA) Ajit Doval to Washington. He spoke to his US counterpart Jake Sullivan then.

Under the iCET, both sides have decided to develop a new bilateral Defense Industrial Cooperation Roadmap to accelerate technological cooperation between both countries for the joint development and production, with an initial focus on exploring projects related to jet engines, munition-related technologies, and other systems. “The coming in of these hi-tech assets from the US is an outcome of that understanding which was reached during iCET when both NSAs met ... It is paving the way for greater defence industrial collaboration,” the official said.

According to another official source, the US showcased its F-35 and F-16 fighter planes and supersonic heavy bombers B-1B Lancer at Bengaluru not to make a “sales pitch” to the Indian Air Force but to “send signals” to China and Russia that India is now its security partner.

While the US is keen to participate in the \$12 billion IAF programme to procure fighter aircraft to address the issue of depleting squadrons, the manifestation of US' might last week was not aimed at that, sources said. The sources underscored that the US' show of strength on Indian soil was not to mollycoddle the Ministry of Defence or the IAF to buy its products but it was more targeted asserting the fact the India, which has been a 'Major Defence Partner' of the US since 2016, is Washington's foremost security partner in the Indo-Pacific region. Besides, the sources said, India has already bought several strategic aircraft signing billion dollar deals with the US in the past. According to the sources quoted above, as tensions with Russia and China heighten, the Joe Biden administration will now be focussing on the “manifestation” of India-US defence ties in the coming years by way of greater show of military might in India's defence and homeland security exhibitions.

Some of the mega defence deals between India and the US took place in 2010-11 and in 2021. In 2010 and 2011, India procured from the US 10 C-17 Globemaster strategic military aircraft and six C-130 J Super Hercules jets for a total cost of \$6.5 billion. Following that, in 2021, the US cleared the sale of P-8I patrol aircraft to India for \$2.42 billion.

'CHINA IS WATCHING'

Arun K. Singh, former Indian Ambassador to the US, believes that India has effectively worked out a strategy in which it has been able to signal to the world that it will “take its own decision based on its own national security”.

“The US is basically attaching importance to the US-India relationship and showcasing the fact that since 2016 India has been their ‘Major Defense Partner’. The iCET has surely provided an added dimension to the deepening of India-US defence partnership,” Singh said.

He added: “US sending its fighter jets to India has other meanings too. Armed forces of both these countries are doing joint military exercises both bilaterally and multilaterally so this is targeted at that. They are not sending the jets only to lure the government to buy them. For that, there is a process and that lobbying is happening elsewhere.”

Singh also said that the US is also signalling the fact by sending its high-tech military assets to India that Russia’s “capacity and ability are diminished” and so India should opt for American platforms.

Derek J Grossman, Senior Defence Analyst at the US-based RAND Corporation, however, believes that the US showcased its latest fighter planes in the “anticipation” that the IAF will procure those in the future in “furtherance of the burgeoning US-India security partnership”.

He believes that the US will “never” be able to sell the F-35s to India because of the Russian S-400 air defence missile system bought by New Delhi.

Jedidiah P Royal, Principal Deputy Assistant Secretary of Defense for Indo-Pacific Security Affairs, who was on a trip to India mainly due to the show, said at a press conference last week: “India is one of our premier security partners in the Indo-Pacific ... What we are trying to do is to create a relationship that is layered at multiple levels that allows us to think together to transfer information, to transfer capability, knowledge, to exercise and train together in a manner that allows us to meet the current security environment.”

<https://news.abplive.com/india-at-2047/us-f35s-bombers-at-aero-india-icet-talk-between-ajit-doval-and-jake-sullivan-1583950>



Wed, 22 Feb 2023

Defence Ties with Australia are Strong

By Ashok K Mehta

Wandering through Australia, I’m discovering that our own great Sikhs came in shiploads during the 19th century to fight under Australian officers in World War I. The Brits brought camels

from India with Sikh cameleers whom the Australians mistook as Afghans. More Sikhs arrived to set up a base between Brisbane and Sydney establishing banana plantations. Surprisingly they haven't reached the moon yet.

Fast forward to 1998 to India's nuclear tests. Australia then was so paranoid about nuclear proliferation that the Sikh Defence Attaché was asked to leave Australia within 24 hours. In a surprising turn of policy two years ago Canberra decided to export uranium to India. On 15 February Defence Secretary, Greg Moriarty announced its 'don't ask don't tell' nuclear policy. Australia no longer asks strategic bombers whether they are carrying nuclear weapons. US B52 stealth B2 bombers operate from Australian bases to maintain 'Operation Unpredictability' dispersing the nuclear triad. The stationing of nuclear weapons in Australia is prohibited under its South Pacific Nuclear Free Zone Treaty but the US has traditionally neither confirmed nor denied carriage of nuclear weapons, a policy endorsed by Foreign Minister Penny Wong at a Senate hearing last week where the Greens Senator objected to breach of SPNFZT. Under the highly controversial Australia UK and US (AUKUS) arrangement, Canberra's nuclear-powered submarine fleet — which canceled the agreement with France to buy its Barracuda design — two already built UK Astute class submarines will be fitted with American subsystems. Australia could have 12 such submarines by 2050. It will become the only non-nuclear state to get US nuclear technology for its submarine fleet. This has generated a big debate on 'do we need AUKUS' or whether Australia is rubber-stamping US policy. Australia is already part of the US India Japan QUAD and its Navy has already been part of the Malabar Naval exercises. With the new Albanese government calling up to China and India sitting on the fence, QUAD and Malabar as serious deterrents to China are questionable.

Australia's new Defence Security Review, authored by former Defence Minister Stephen Smith and former CDS Air Marshal Angus Houston was released last week. Previously defence policy focused on defence of Australia and later, forward defence to the present when the China challenge of uncertainties and ambiguities has covered Australia. A defence expert told me in Sydney that the Chinese tried to strangle Australia and its economic coercion failed miserably. Distance and sea frontiers have made Australia safe and secure. There's not been a single terrorist attack that makes Australia an attractive destination for trade and investment. However, fears of illegal immigrants have magnified. Last Saturday Foreign Minister S Jaishankar was in Sydney transiting from a visit to Fiji. India-Australia relations are on a high. Canberra considers New Delhi one of its most important partners in the Indo-Pacific. Prime Ministers Morrison and Modi signed the Comprehensive Strategic Partnership in 2020, the Economic Strategy Update in 2022, and Australia India Economic Cooperation Agreement in 2022. The Australian government is setting up the Centre for Australia-India Relations like the Australia India Council set up 30 years ago.

Today 50,000 Indian students are helping the Australian higher education sector rebound after the pandemic. India-Australia defence cooperation traces its origins in the trenches of Gallipoli in World War I. Two agreements underpin defence ties – the 2006 Memorandum of Defence Cooperation; and the 2009 Joint Declaration in Security Cooperation. A joint working group on joint research and military cooperation has been set up. Joint exercises are regularly held between the three services. In 2015, the first formal bilateral naval exercise was held off the coast of Visakhapatnam and these are held every two years. In addition, the Milan fleet review has the Australian Navy participating. A maritime partnership exercise off Perth last year involved several ships and helicopters. IAF Su30 and C17 aircraft participated in Exercise Pitch

Black. This was followed by another international Exercise Kakadu 2022. The Australian Navy participated in RIMPAC, an Indo-Pacific Endeavour 2022 Exercise.

The focus of India-Australia military cooperation is in the maritime domain in support of an open, inclusive, and resilient Indo-Pacific as stated by Defence Minister Richard Marles. Australian High Commissioner in India, Barry O'Farrell has said that joint defence activities had experienced a nearly fourfold increase since 2014. The upgrade of ties was reflected in the recent 2+2 dialogue between Finance and Defence Ministers. The Australia-India Economic Cooperation and Trade Agreement entered into force on 29 December 2022 will allow tariff-free trade of 85 to 90 percent of the goods. India-Australia defence ties have come a long way since the expulsion of the Defence Advisor.

<https://www.dailypioneer.com/2023/columnists/defence-ties-with-australia-are-strong.html>



Wed, 22 Feb 2023

UK Leads Western Europe's Largest Cyber Warfare Exercise

- **Cyber defences tested at largest Cyber Warfare exercise in Western Europe last week.**
- **11 countries put through their paces in cyber warfare, including India, Italy, Ghana, Japan, US, Ukraine, Kenya, and Oman.**
- **Testing responses to both common and complex cyber threats.**

Organised by a team of cyber specialists from the British Army, Defence Cyber Marvel 2 (DCM2) was the culmination of more than 12 months of training for more than 750 cyber specialists, including Defence personnel, government agencies, industry partners, and other nations.

Hosted in Tallinn, Estonia, the exercise saw teams from across the world respond to common and complex simulated cyber threats including attacks to networks, industry control systems and unmanned robotic systems - simulating some of the tactics Russia used to disrupt Ukrainian cyberspace in the early days of the invasion one year ago.

Nearly 900 personnel from the British Army, Royal Navy and RAF took part along with teams from the armed forces of several other countries.

Ran as a seven-day competition, participants were judged on the effectiveness and speed of their response and how quickly they identify and adapt to new threats - vital for developing war fighters for the digital age.

Defence Secretary Ben Wallace said:

The modern battlefield is evolving at an unprecedented pace, it is therefore vital that our personnel are trained to adapt quickly in this crucial domain and can recognise cyber threats with capability and speed. Many teams were based in their home countries but were virtually connected to a cyber range controlled in Tallinn, Estonia, enabling more countries to take part.

Allowing personnel from across the Armed Forces to build their skills within the cyber and electromagnetic domain, the event also offered the opportunity to share learning and best practice across the Armed Forces and with other nations taking part including Italy, Japan, Kenya and Oman.

Colonel Ian Hargreaves Chair of the Army Cyber Association said:

The Army Cyber Association was set up by Royal Signals officers, prior to the formation of 13 Signal Regiment, as a cyber operations professional development network. It is volunteer run and entirely inclusive for any Service person who wants to develop their cyberspace knowledge and skills.

Our focus has always been talent identification, recognition and development with a big wraparound of innovation. We must innovate to stay ahead of those that would wish us harm and Defence Cyber Marvel 2 is the next evolution of our pioneering collective education.

The exercise has ensured that all those taking part understand the potential and risks that cyberspace provides and gave them the opportunity to experiment and develop their cyber skills. It was designed to stretch the most experienced, battle-hardened, cyber specialists in UK Defence.

Lieutenant General Tom Copinger-Symes Deputy Commander Strategic Command said:

Events like Defence Cyber Marvel showcase the talent we already have in Defence. They get to exercise and learn with folk from a vast array of different nations, backgrounds and specialisations - all united by a common purpose – to hone their skills to a fine edge, in order to protect our people, our prosperity and our principles.

At UK Strategic Command we're committed to finding and nurturing individuals with those skills, especially those who are about to finish their studies and are eager for a unique challenge on the front-line of UK's defence.

Defence is committed to providing its personnel with the skills needed to respond to non-traditional threats with the establishment of the Defence Cyber Academy and launch of the Cyber Aptitude Assessment being designed to identify and foster talent.

<https://www.gov.uk/government/news/uk-leads-western-europes-largest-cyber-warfare-exercise>



Wed, 22 Feb 2023

Russia Exits the START Treaty. International Security is on a Slippery Slope: Expert

Russia on Tuesday (Feb 21, 2023) announced its decision to suspend its participation in the New START Treaty (Strategic Arms Reduction Treaty) which is expected to have global consequences. The announcement was made by Russian President Vladimir Putin in his speech to the Federal Assembly.

It will destabilise the nuclear balance that existed in the last few decades. “At this point, it is not easy to ascertain the causes that pushed Russia to take the decision. Moscow accuses Washington, while the latter blames the former for this act. Each side will stick to its narrative,” opine experts.

Nevertheless, if we scratch beyond the surface, the following factors pushed Moscow to take the decision: “Moscow believes that Washington is no longer interested in maintaining nuclear parity with Russia. From Washington’s perspective, Russia is a regional power, and its interests cannot be compared to that of the US. The US views itself as a global power. Its dominance requires her to test new weapons and deploy more warheads globally. Some elites in Washington have long argued for the withdrawal of the US from this treaty which constrains her from deploying weapons globally. China’s rise has also added a new dimension to the global order, and many argue that China should be a part of such a treaty,” explains Prof Rajan Kumar, School of International Studies, JNU.

According to Prof Rajan, “Secondly, Moscow believes that Russia’s withdrawal from the treaty will put pressure on Washington and the international community. The West is extremely cautious about the proliferation of nuclear weapons. The nuclear regime has always been skewed where the nuclear states maintain the right to test and exchange, but non-nuclear states cannot engage in such acts. Moscow believes that its decision to suspend participation, and not yet withdraw, will alarm non-nuclear states and western citizens. The US has withdrawn from all other arms agreements with Russia. Only this treaty survived. However, now the fate of the New START Treaty has also come under question.”

Adding, “The third point is that Moscow also fears that the US might try to test weapons and provide nuclear weapons to Ukraine. There is no clear evidence to suggest that Washington has any such plans, but at times perceptions matter more than reality.”

In any case, Russia’s decision to suspend participation will have dangerous consequences. The world moves one step closer to Armageddon. “The new development will ensue a new arms race between Russia and the US. Russia may not compete with the US, but new players are already there in the game. China will try to catch up with the US, which India, Pakistan and others would follow,” he states.

Existing regimes of the CTBT (Comprehensive Nuclear-Test-Ban Treaty) and Treaty on the Non-Proliferation of Nuclear Weapons (NPT) will come under question. Other states will likely follow suit if Russia and the US test or deploy new nuclear warheads. International security is on a slippery slope.

What is the New START Treaty?

It is related to Measures for the Further Reduction and Limitation of Strategic Offensive Arms, START III, or simply New START between Russia and the US. Both countries in 2021 had negotiated the extension of the Treaty until February 2026.

Importance of the Treaty for International Security

On April 8, 2010 in Prague President of Russia Dmitry Medvedev and the US President Barack Obama, signed the Comprehensive Arms Reduction Treaty (START III, START).

In March 1997 the proposal to develop START III was first discussed and during consultations between the presidents of the Russian Federation and the US – Boris Yeltsin and Bill Clinton in Helsinki.

Though the negotiations were inconclusive, however, as per the 1997 version START III was planned to set “ceilings” at the level of 2,000-2,500 strategic nuclear warheads. And also give the treaty an indefinite character.

In June 2006 President Putin suggested to start a new negotiation process and experts soon started working on the document following a meeting of Presidents Dmitry Medvedev and Barack Obama in London on April 1, 2009. This was within the framework of the G20 Summit. At the end 11 months of negotiations the two signed the document. And the two sides submitted the document for ratification in May 2010. It was approved by the US Senate on December 22, 2010, and Russia’s state Duma and Federation Council ratified in January 2011. And, Russia has reserved the right to withdraw from the treaty if the US Missile Defence System reaches a level of development and becomes a threat to Russia. As per the provisions of the preamble the relationship between START and missile defence is spelled out clearly and must be taken into account by the parties. On February 5, 2011, an exchange of instruments of ratification took place in Munich.

<https://www.financialexpress.com/defence/russia-exits-the-start-treaty-international-security-is-on-a-slippery-slope-expert/2989234/>

ThePrint

Wed, 22 Feb 2023

Joe Biden to Meet Eastern NATO Allies after Putin’s Suspension of Landmark Nuclear Treaty

US President Joe Biden will meet leaders of NATO’s eastern flank on Wednesday to show support for their security after Moscow suspended a landmark nuclear arms control treaty.

Biden arrived in Warsaw late on Monday after a surprise visit to Kyiv just days ahead of the anniversary of Russia’s invasion of Ukraine on 24 February, 2022.

During the period of highest tension between Russia and the West in the decades since the Cold War, Biden addressed thousands in downtown Warsaw on Tuesday and said “autocrats” like Russian President Vladimir Putin must be opposed.

Hours earlier, Putin delivered lengthy remarks laden with criticism of the Western powers, blaming them for the war in Ukraine. Putin also backed away from the New START arms control treaty and warned that Moscow could resume nuclear tests.

On Wednesday, Biden will meet staff from the U.S. embassy in Warsaw before gathering leaders of the Bucharest Nine, the countries on NATO’s eastern flank who joined the Western military alliance after being dominated by Moscow during the Cold War. Most are among the strongest supporters of military aid to Ukraine, and officials from countries in the group have called for additional resources such as air defence systems.

At the meeting, Biden plans to reaffirm commitments over their security and discuss support for Ukraine before he returns to Washington.

Russia regards NATO, which could soon expand to include Sweden and Finland, as an existential threat.

Lithuanian President Gitanas Nauseda's message to Biden will be that it wants "greater involvement of the U.S. in Europe, NATO's eastern flank and, of course, more aid to Ukraine," his chief foreign policy adviser told Lithuanian radio on Tuesday.

"Lithuania and other like-minded countries have several requests, which concern air defence, forward defence presence, air defence systems, and greater investments in the defence industry," Asta Skaisgiryte said.

The former Soviet republic on Russia's doorstep joined NATO in 2004 and plans to host Biden in July for the security alliance's leaders' summit.

<https://theprint.in/world/joe-biden-to-meet-eastern-nato-allies-after-putins-suspension-of-landmark-nuclear-treaty/1390048/>

THE ECONOMIC TIMES

Wed, 22 Feb 2023

'Give us Ammunition': Wagner Chief Challenges Russian Army

The head of the Wagner mercenary outfit on Wednesday urged Russians to pressure the country's regular army into sharing ammunition with his fighters in Ukraine in a major challenge to the Kremlin. Yevgeny Prigozhin's unprecedented call on Russians to take his side in a high-profile conflict with the defence ministry came ahead of the first anniversary of Moscow's military campaign in Ukraine. The 61-year-old ally of President Vladimir Putin has been involved in a bitter power struggle with the defence ministry for months as his ragtag forces spearhead the assault for towns in eastern Ukraine.

He has accused the Russian military of attempting to "steal" victories from Wagner and slammed Moscow's "monstrous bureaucracy" for slowing military gains.

Raging tensions have in recent days burst into the open as the Wagner chief accused Moscow of refusing to arm his forces. On Wednesday, Prigozhin stopped short of calling on Russians to protest in the streets but urged everyone from drivers to flight attendants to help him and spread the word.

"I think we will break them," he said, referring to the defence ministry.

He had already made headlines on Tuesday when he accused Russian Defence Minister Sergei Shoigu and Valery Gerasimov, chief of the general staff, of essentially committing "treason".

Prigozhin has said Wagner is losing scores of men every day due to a lack of ammunition and on Wednesday released a picture of dozens of dead mercenaries lying in the snow.

He said the fighters had died on Tuesday due to lack of ammunition.

"Mothers, wives and children will receive their bodies," he said.

He said Shoigu and Gerasimov were to blame for his fighters' deaths because they refused to sign off on papers on the provision of ammunition.

Sanctioned by Washington and Brussels, Prigozhin had for years operated in the shadows but has catapulted into the limelight since the start of the offensive in Ukraine.

- 'War breeds monsters' - He has recruited from prisons across Russia to bolster Wagner's ranks, telling inmates he himself had spent a decade in jail. Wagner has been accused of committing abuses on the battlefield.

The months-long battle for the city of Bakhmut in eastern Ukraine has exposed tensions between Wagner and the regular forces.

On Tuesday, Prigozhin said the military command even prohibited delivering Wagner fighters "shovels which allow them to dig trenches".

In a rare move the defence ministry responded to Prigozhin's claims on Tuesday, saying attempts to drive a wedge between regular forces and fighters were "counterproductive."

The top command is providing both regular forces and "volunteers" with the necessary ammunition, the defence ministry said in a statement.

"This is our priority," it added.

"All statements allegedly made on behalf of assault units regarding the lack of ammunition are completely untrue," the ministry said.

Authorities have cracked down hard on any criticism of the assault on Ukraine and Prigozhin's call on Russians to mobilise is a major challenge to the Kremlin.

On Wednesday, Kremlin spokesman Dmitry Peskov refused to comment on a growing conflict between Wagner and the defence ministry.

Before the start of the Ukraine assault, Prigozhin and the regular army already butted heads in Syria where the Kremlin supports the regime of Bashar al-Assad.

Wagner is also increasingly present in Africa, where Western countries say it has been deployed in Burkina Faso, the Central African Republic and Mali.

Earlier this month Prigozhin admitted he had created an infamous online troll farm accused by Western governments of interfering in elections.

Tatyana Stanovaya, founder of political analysis firm R.Politik, said Prigozhin is harbouring political ambitions but added that he had made many enemies including in the security services.

"For the security services, Prigozhin is a growing threat," said Stanovaya, who is also a senior fellow at the Carnegie Endowment for International Peace.

She warned however that Prigozhin could one day challenge Putin.

"War breeds monsters, whose recklessness and desperation can become a challenge to the state, if it were to show the slightest sign of weakness," she wrote.

<https://economictimes.indiatimes.com/news/defence/give-us-ammunition-wagner-chief-challenges-russian-army/articleshow/98159726.cms>

Spain to Send Six Leopard Tanks to Ukraine: Defence Minister Margarita Robles

Spain will send six of its German-made Leopard tanks to bolster Ukraine's fight against Russia, Defence Minister Margarita Robles said Wednesday.

The six tanks are currently being repaired and Madrid could send more Leopards to Ukraine "if it is necessary" and if "our allies ask for it", she added in parliament.

"We are working in full coordination with our allies," she said, without specifying when the tanks would be sent.

Robles had said last month that Spain was ready to send some of its Leopard tanks to Ukraine, without saying how many.

The announcement that Spain would send six of its tanks comes after German Chancellor Olaf Scholz said Friday that allies with available battle tanks should send them now.

Scholz's call marked a dramatic reversal of roles, having initially resisted pressure from allies to authorise the delivery of German-made Leopard tanks to Ukraine.

Germany relented in January, saying it would itself send a company of 14 Leopard 2 A6 tanks, with the aim of assembling along with allies two tank battalions for Ukraine.

But NATO partners are struggling to make up the numbers for a full battalion of the more modern tanks.

A recent analysis by the International Institute for Strategic Studies (IISS) concluded that if Kyiv was to receive about 100 such tanks, the effect could be "significant".

<https://economictimes.indiatimes.com/news/defence/spain-to-send-six-leopard-tanks-to-ukraine-defence-minister-margarita-robles/articleshow/98156213.cms?from=mdr>



Britain 'Warming up' Weapon Output to Help Ukraine, says Defence Minister

Britain has begun to "warm up" its production lines to replace weapons sent to Ukraine and increase production of artillery shells to try to help Kyiv push back Russian forces, defence minister Ben Wallace said on Wednesday.

In an interview with Reuters in southwest England where officers are training Ukrainian crews on Challenger-2 tanks, Wallace said he believed Britain was in a good place to help Ukraine but needed to sustain the provision of weapons.

Fighting remains fierce in eastern Ukraine, where Russia wants to establish control over the whole of the industrial Donbas area after seizing swathes of territory there but Kyiv said it needs more Western weapons to be able to push them back.

Asked about whether Britain had the commercial capacity to continue to provide Ukraine with weapons such as artillery shells, Wallace said: "We have laid contracts ... We've started to already now receive some deliveries of that for our own restocking and also some of it to Ukraine."

He said in the past, governments would have looked in their stockpiles and "blow the dust off" equipment to see what was there, but now the game had changed with "a much more aggressive and dangerous Russia on the edges of Europe".

He said shells could be made fairly quickly but "the key is to make sure that we place the orders, and we've started placing those orders over the last 10 months and that starts to sort of warm up those production lines". "Absolutely part of the effort this year is sustainability - how can we, the international community, stimulate supply chains, how can we stimulate our own supply chains for our own equipment and that's been one of the changes," he said.

'REASSURED'

Standing at a tank training ground surrounded by armoured fighting vehicles and tanks, Wallace spoke to Ukrainian soldiers who were training to use Britain's Challenger tanks which the defence minister said would arrive in Ukraine in "the spring".

Britain has already given more than 10,000 Ukrainian soldiers basic training in drone warfare and has been training tank crews since late January, part of what ministers say is proof of the country's leading role in supporting Ukraine.

Britain and other Western countries have scaled up their pledges of military aid for Ukraine this year, with promises of tanks and armoured vehicles as well as longer-range weapons. London has also offered to train Ukrainian soldiers on war planes rather than delivering fighter jets as yet. Wallace has frequently said any delivery of fighter jets would be a long-term project, possibly once the Russian war on Ukraine was over, and would not be drawn on Prime Minister Rishi Sunak's offer of longer-range weapons.

But the question opposition lawmakers have is how equipment does Britain have. Wallace said Britain could offer additional Challenger tanks to the 14 already promised, but that it would depend on the threat level and also the country's defence needs.

"The key is to make sure we can maintain them through this year. With Russia using the meat grinder tactic of its own where the Russian army doesn't care about its own people, ... we have to make sure that is not able to be successful," he said.

Wallace conceded that all this takes money but would not be drawn on how talks to secure more funds in this month's budget were going, saying only that negotiations were ongoing.

"For now I just need to see if there's any more money I can have ... to get me through inflation and get me through some of the other pressures," he said. When asked whether he felt Sunak understood what was needed, he added: "I am reassured."

<https://www.reuters.com/world/uk/britain-warming-up-weapon-output-help-ukraine-says-defence-minister-2023-02-22/>

Science & Technology News



Wed, 22 Feb 2023

FABA Awards for Science and Technology to be Presented Today

The Dr. BS Bajaj Memorial Federation of Asian Biotech Associations (FABA) Excellence Award - 2023 will be conferred on former secretary of the Department of Biotechnology, Ministry of Science and Technology, Renu Swarup for her outstanding contribution in promoting science and technology in the country.

Director of research at LV Prasad Eye Institute Bala Subramanian has been selected for the FABA Lifetime Achievement Award for his contributions in the establishment of Genome Valley as the chairman of the State Biotechnology Advisory Committee and in popularising science and technology.

Announcing these awards, FABA executive president Reddanna said that these awards were being conferred to recognise and honour eminent personalities for their long-time contributions to biotechnology and life sciences since 2010.

University of Hyderabad (UoH) Vice-Chancellor B.J. Rao will present these awards during the Hyderabad Life Sciences Innovation Cluster meeting at the Indian Council of Medical Research - National Animal Resource Facility for Biomedical Research (ICMR-NARFBR) at Genome Valley on February 23.

FABA is a non-profit society that represents 20 Asian countries with a common interest in promoting human health through advances in biotechnology.

The innovation cluster meeting is being organised by it in collaboration with Rx Propollent and ICMR-NARFBR to bring city-based academia and industry players together to promote a dialogue for creating opportunities in terms of human resource development, translational research and technology transfer, said a press release on Wednesday.

<https://www.thehindu.com/news/national/telangana/faba-awards-for-science-and-technology-to-be-presented-today/article66540195.ece>

Trends that will Shape the Life Sciences Industry in 2023 and Beyond

By Dhananjay Singh

The global pandemic has forced the life sciences industry to innovate rapidly. While there is excitement about new tidings, there is also anxiety about the unknown future. The paradigm shift has brought together scientists, regulators, and commercial business teams on a common platform to solve everyday problems. Emphasis has been given to a data-centric approach, implemented through deploying new tools based on Artificial Intelligence (AI), Machine Learning, and cloud computing in all stages of work, from early R&D to post-market monitoring. Moreover, these new challenges have also triggered increased investments in R&D in the bid to be self-reliant and reduce risks due to global geopolitical issues.

An essential aspect of responding to the pandemic is increased collaboration between academia and the life science industry. This facilitates sharing of resources and knowledge in joint fields of interest. Whereas academic institutes can validate research queries, the corporate sector can help de-risk investment in core research and expand capabilities. Collaboration is crucial for driving scientific innovation and discovery, particularly with the involvement of young, aspiring scientists in the industry. Life science industries are keen to foster talents by giving first-hand experience with the state of art tools and techniques by setting up specialised hands-on training programmes coherent with the academic syllabus. One programme that can be leveraged in this direction is the Merck High Skill development initiative, an initiative in collaboration with CSIR-IMTech in which we have worked towards scientific skill development.

Biotechnology and health care are crucial components of the life sciences sector, and both have seen significant growth in recent years. For India, in particular, the success of the country's vaccine manufacturing capabilities during the Covid-19 pandemic has demonstrated the value of its entrepreneurial, innovative, and domestic talent-driven approach. The global market has also been positively impacted by the rise in opportunities and advancements in drug development and vaccine manufacturing. Furthermore, the success of mRNA vaccines and accelerated approval processes have led to a surge in vaccine-related revenues.

In addition to the growth in the vaccine market, both the consumption and exports of diagnostic and medical devices are expected to increase significantly in India. The expansion of biotech incubators and start-ups will also play a key role in driving the success of the Indian biotechnology industry. Similarly, the global biotechnology market is supported by vital government initiatives to modernise regulatory frameworks, improve approval processes and reimbursement policies, and standardise clinical studies. These efforts are helping to promote the biotechnology industry's growth and improve people's lives worldwide.

The approach of India's life science community towards self-reliance is two-fold: one, the indigenous development of technology, and two, the indigenisation of technology in alignment with national priorities. Although India is a crucial supplier of medicines and vaccines, India

needs to be self-reliant on certain raw materials and research reagents to ensure steady output and revenue.

Manufacturing costs across industries have increased significantly while productivity continues to decline. To address this concern, notable transformations such as organisational restructuring and operational overhauls are being made. Adapting the process improvement, like digitising the inventory process, can help in obtaining real-time updates about stock levels and location, planning experiments, and improving the efficiency of lab operations. Such breakthrough solutions would also help data traceability, regulatory compliance, and audit readiness. One can expect more companies to adopt this approach in the coming years as they seek to implement innovative and cross-functional transformations to achieve sustainable productivity improvements.

Adaptation of new technology is a significant factor in tackling future challenges. Artificial Intelligence (AI), aided by machine learning (ML) techniques such as Natural Language Processing (NLP), promises to enhance the capabilities of the life science industry manifold by extracting insights hidden in data rapidly and effectively. Big tech companies like Meta (the parent company of Facebook) and DeepMind (a subsidiary of Alphabet, the parent company of Google) can now solve millions of protein structures through AI quickly. This can help scientists better understand the functions of proteins, aiding in developing new drugs. Combined with a suite of computer-aided drug design (CADD), AI and ML will expedite lead identification in drug discovery projects. It will be a one-stop shop bringing together a bevy of tools for modelling the protein, docking the lead candidates, and scoring the molecules based on binding efficiency.

Genomics, 3-D bio-printing & disease modelling, robotics, and advanced communication solutions also have the potential to help clinicians rise to the challenges of 21st-century health care. Implementing Big Data in Life Sciences can look like next-generation sequencing (NGS), where vast amounts of data are produced quickly, and introducing technology evaluates this data.

The emerging technologies also bring chemists and computer scientists together – aiding medicinal chemists to identify the synthesis route. With the available resources and requirements, scientists quickly go from imagining what is possible to test what is probable. While low-code platforms, which require little to no coding experience, are indeed gaining popularity, Life Sciences will continue to be on the lookout for digital experts as reliance on technology continues to increase.

Technology can transform life sciences- but only if we develop and nurture links between medicine, technology, and business. As the life sciences and technology sectors continue to converge, greater cross-sector collaboration is the key to realising the potential of the life science revolution. Convergence in action like drug development and screening utilising knowledge of life sciences and the power of AI and ML, Genome mapping and utilisation of Big Data to predict the responsiveness of certain tumours to chemotherapy and personalised medicine are revolutionary examples driving the trust in collaboration and convergence across sectors. Given the visible positive impact of convergence in life sciences, re-imagining the architecture of the life science sector in which industry convergence is a focus is what we need to advance the standard of research and patient care in these changing times.

The future of the Life Sciences industry will be more digital and data-driven. As organisations and individuals contribute more resources to enable a higher level of personalisation and

automation in manufacturing, the trust of patients and consumers in new technologies and treatment methods will increase. By fostering more collaboration and partnerships between government, industry, and academia and focusing on industry convergence, we can unleash the full potential of the life sciences. From operational restructuring to increased deployment of digital solutions in diagnosing and treating diseases, we can pave the way for revolutionary advancements in human health and make a lasting impact on humanity, where success will not be measured by profits alone.

<https://www.hindustantimes.com/ht-insight/public-health/trends-that-will-shape-the-life-sciences-industry-in-2023-and-beyond-101677069930933.html>

© The news items are selected by Defence Science Library, DESIDOC from Print Newspapers and Authentic Online News Resources (mainly on DRDO, Defence and S&T)