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Pakistan Thunder versus Indian Tejas

By Sushant Singh

This will be the first appearance of Tejas at a foreign air show, and is bound to be compared with Pakistan's JF-17 Thunder fighter produced with Chinese help.

LCA Tejas Mk-1

India's indigenous Light Combat Aircraft (LCA) Tejas reached Sakhir Air Base last week to participate in the Bahrain International Air Show 2016, which will be held from January 21. This will be the first appearance of Tejas at a foreign air show, and is bound to be compared with Pakistan's JF-17 Thunder fighter produced with Chinese help.

Thunder

JF-17 Thunder is a third-generation fighter co-produced by Pakistan Aeronautical Complex (PAC), Kamra, and China's Chengdu Aircraft Industry Corporation. It has been in service since 2010, with the PAC rolling out the 16th of its 50 Block-2 aircraft to complete the PAF's fourth JF-17 squadron last month.

Head to head



COUNTRY	PAKISTAN/CHINA	INDIA
Engine type	Single Klimov RD93 or WS-13 turbofan	Single GE-F404-IN20 low-bypass turbofan
Technology	Quadruplex redundant digital fly-by-wire; Glass cockpit and Open system Architecture Avionics	Quadruplex redundant digital fly-by-wire; Glass cockpit and Open system Architecture Avionics
Structure	Primary structure conventional aluminium and steel alloy semi-monocoque	Carbon fibre composites 42% by weight, 43% aluminium alloy, remainder titanium alloy
Radar	KJ7 (MSA) and Thales RC 400; mechanically steered fire control radar	ELTA EM302 co-developed by Indian agencies and ELTA; Will be replaced with indigenous AESA radar
Manoeuvrability	-3g/+8g	-3g/+8g
Empty Weight	6,411 kg	7,070 kg
Maximum Take-off Weight	Normal 9,072 kg; with external stores 12,474 kg	Operational Clean 9,850 kg; maximum take-off mass 14,735 kg
Minimum Take-Off Distance	609 m	460 m
Minimum Landing Distance	823 m	750m
Thrust with Afterburner	84.4KN	84KN
Internal Fuel Capacity	2,268 kg	2,458 kg
External Fuel Capacity	800 l in fuselage-mounted drop tanks; underwing-mounted two 1,100/800 l drop tanks	725 l in fuselage-mounted drop tanks; 1,200 l and 800 l in under wing inboard and mid-board stations respectively

DELHI POLICE EYES 2 NETRA UAVS

Priyanka Pandey

Delhi police will soon be using Netra UAV (QuadCopter), an unmanned aerial vehicle (UAV) worth Rs35 lakh, which has been manufactured by Defence, Research and Development Organisation (DRDO) in collaboration with ideaforge. Netra UAV will be used for the surveillance during VVIP functions, law and order situations and for traffic watch. Special Commissioner (Law and Order) Deepak Mishra has forwarded a letter to purchase two such Netra UAVs for the use of Delhi Police. "The necessary process be initiated for obtaining two number of Netra UAV for use in Delhi Police. The process may be initiated by Joint CP/GA through DCP/OPL as per regular procedures," stated the letter. From the same letter it had emerged out that Delhi Police will soon use the UAVs as Special CP has asked for its early approval as stated, "May please be approved so that we may procure ASAP." Netra UAVs were used by Delhi Police in a pilot activity and was tested by them on different occasions including 15 August 2015, Chhath Puja and Muharram. Delhi police have further stated that these Netra UAVs will prove extremely effective in riot-hit areas as they have tried it in North-East district. "Netra UAV has a Line-of-Sight (LOS) range of about four kilometres and one-time flight duration of 40 minutes," underlined the letter. It was also stated that these UAVs will have a facility of mounting normal as well as night vision cameras. Furthermore, they have another facility of locking on to a particular vehicle/target on flight and "back-to-home" feature in the event of loss of connection. "As curtailed, the company manufacturing the instrument on behalf of DRDO will be able to give a Proprietary Certificate. The rough cost estimate of one instrument is about Rs35 lakh," revealed the letter. "The process for the purchase of the UAV can be initiated by making a correspondence to DRDO," asserted the letter.

The Economic Times

16 January 2016

Defence Min's Warship Order to be a Windfall for Private Sector

Manu Pubby

The defence ministry is set to clear a 13,500 crore warship acquisition that will throw up a major opportunity for private shipyards to bag the contract, given that most government owned yards are currently running at full capacity. The Navy's proposal to acquire next generation missile vessels (NGMV) six of the missile boats are needed for the fleet is likely to get a go ahead from the high powered defence acquisition council (DAC) shortly, with private shipyards L&T and Pipavav in the fray, besides defence ministry owned yards. The Navy is looking for a power packed new ship that has surface warfare capabilities, a low radar signature, high endurance at sea and a strong air defence system on board. While tenders are expected to be issued shortly after the defence ministry clearance, the Navy had earlier put a condition that only those yards that have experience in building ships of this size in the past and have a license to construct warships will be eligible. In case the Navy sticks to this stand under the 'Buy Indian' purchase, several major private yards, including those that have recently obtained warship building licenses will not be able to take part in the competition. Sources have told ET that an initial request for information sent by the Navy generated strong response. While the procurement meets the . 10,000 crore threshold that qualifies ` projects for the new `strategic partner ship' model, it may not be processed as such given that the defence ministry is months away from finalizing details. Under the strategic partnership model that the defence ministry is finalising a single private sector company will be selected for a particular manufacturing capability be it warships, submarines or land systems. Defence Minister Manohar Parrikar had told ET that ongoing projects like the NGMV would be processed under older rules that did not include a Strategic Partner and that only new contracts on a case by case basis will follow the new model. For the NCMV, the Navy has not specified displacement but has said that it wants a single Hull Form warship that can travel at over 35 knots and has an endurance of 10 days at sea. The ship should also carry a minimum of 8 surface to surface missiles, be fitted with a Point Defence Missile System (PDMS) and possess a medium range gun with `stealth features' having range a range of over 15 km.

Govt gives ordnance factories free pass in combat vehicle project

Ajai Shukla

The decision came just a day before the ten contestants were to submit their responses to the EOI. In an undisguised favour to the Ordnance Factory Board (OFB), the defence ministry announced on Thursday that while nine private sector companies would compete to develop the future infantry combat vehicle (FICV), the OFB would be nominated without competing as a third development agency. The FICV project is worth an estimated Rs 50,000 crore. The ministry's Expression of Interest (EOI), which invited ten companies on July 16, 2015 to submit proposals to develop the FICV under the "Make" procedure, specified that two development agencies would be chosen. Now, even as that competitive selection continues, the OFB has been given a free pass. "Competent authority has approved the deviation to DPP-2008 for 'nomination of OFB and two Indian private sector industries to undertake design and development of FICV prototypes (sic)", said a defence ministry circular on Thursday. Business Standard has reviewed the circular. Ministry insiders say the last-minute decision was taken because it was evident the OFB would not be selected in a fair competitive process. To ensure the OFB participates, the rules of the game have been unprecedentedly changed in the middle of the game. The decision came just a day before the ten contestants were to submit their responses to the EOI. The ministry circular stated: "In view of the above decision, the date of submission of response to the EOI has been extended and now the EOI response may be submitted by (noon) on 15 Feb 2016". Private company executives who have priced their FICV bids say each company will spend about Rs 1,000 crore in developing the prototype FICV, of which 80 per cent will be reimbursed to them according to the "Make" procedure. By nominating the OFB as a third development agency, the defence ministry is increasing the cost of the project by about Rs 800 crore. This step is likely to evoke strong objections from the nine private companies in the race - Larsen & Toubro, Tata Power (strategic engineering division); Tata Motors, Mahindra & Mahindra, Bharat Forge, Pipavav Defence, Rolta India, Punj Lloyd and Titagarh Wagons. The last time the defence ministry attempted to grant similar favour; it was forced to step back. In 2009, it nominated defence public sector unit, Bharat Electronics Ltd (BEL), to build the Tactical Communications System (TCS) under the "Make" procedure. After strong objections from private defence companies, the TCS project was competitively tendered. Defence Minister Manohar Parrikar has repeatedly promised, most recently in an interview on November 25, that the private and public defence sectors would compete on a level playing field. Private sector executives point to decisions like this to underline the hollowness of this promise. Under the "Make" procedure, the defence ministry will choose the best two proposals. Those two companies, and the OFB, will design and develop separate FICV prototypes. The defence ministry would reimburse 80 per cent of their expenses. The best prototype will then be selected, and the vendor that built it will get a manufacturing contract. About 2,600 FICVs will be needed to replace the army's old Russian-origin BMP-2 infantry combat vehicles.



Tata Motors says it meets all norms for infantry combat vehicle project

Company says it would talk to the govt and the ministry about including consolidated revenues as its wholly-owned subsidiaries form an integral part of the parent Tata Motors has said that it continues to be a strong bidder for the defence ministry's future infantry combat vehicle (FICV) project and along with the Tata Group has the required credentials and track record. In a press statement, the company said it met all the requisite criteria for bidding for the FICV project and its confidence stems from its robust technical strength, the size of its Indian assets, a strong balance sheet and the backing of the Tata Group, with other group companies joining hands in the consortium. It said the evaluation of the bid would be based on technical and financial parameters, the latter accounting for about 26 per cent weightage. The remaining assessment criteria parameters were all technical: technical capability assessment (32 per cent), critical technology assessment (34 per cent) and technical specification assessment (eight per cent). Tata Motors said it was confident of fulfilling all criteria, even with the defence ministry's clarification that bidding companies must have capital assets in India, and the turnover in India will be taken into account for the threshold limit. However, the statement said Tata Motors would discuss with the government and the ministry about including consolidated revenues as its wholly-owned subsidiaries form an integral part of the parent company, including in stock exchange listings, and its consolidated revenues offer strong financial support to the project. FICV, it said, was one of the projects that would bring the group companies together to work collaboratively.



Rajnath, Parrikar, Doval decide to go for security audit of defence sites

At a high-level meeting on Friday, the government decided to conduct a time-bound security audit of all vulnerable installations of paramilitary and police forces as well as military establishments. Earlier, the government had ordered a security audit of all military installations, as first reported by TOI. The meeting was attended by home minister Rajnath Singh, defence minister Manohar Parrikar, and NSA Ajit Doval, among other senior officers. The ministers and intelligence officials discussed the takeaways from the recent Pathankot attack. During the hour-long meeting, the home ministry said in a statement, it was felt that in the case of Pathankot, once the intelligence input had been confirmed, the response time was quick enough. It was also felt that strengths displayed by all the concerned agencies, especially their synergised response, shouldn't only be commended, but also built upon, it added. "In view of the continuing threats from hostile elements from across the border, the need to further upgrade both intelligence and preventive abilities, specially in terms of technology, was stressed," the MHA said. The need to have a better media communication strategy was also discussed. It was decided that when such incidents occur, the media is best briefed by authorised persons on the spot and arrangements for this, including training, should be put in place, the statement added. For the full report, log on to <http://www.toi.in>

Are sensitive installations on Google Maps, HC asks Centre The Delhi HC on Friday asked the Centre to examine allegations that Google Maps and Earth display maps and high-resolution images of Indian defence installations, among other sensitive locations. A bench of chief justice G Rohini and justice Jayant Nath asked additional solicitor general Sanjay Jain inform the court about the procedure being followed. The HC refused to restrain Google from making such data public, as sought by petitioner Lokesh Kumar Sharma. Citing Pathankot, Sharma alleged that the Centre seemed to be "absolutely negligent" in preventing Google from displaying such maps". TNN For the full report, log on to <http://www.toi.in>

Frequent visits to defence websites can spell trouble Don't check websites of armed forces too often as military intelligence sleuths might mark you as trouble. The move, sources said, has come in the wake of the discovery that the Pathankot attackers also collected information about the IAF base from its website. People browsing these sites too frequently may be taken into custody and questioned by Military Intelligence units. Arrested Pakistani spy Mohd Aijaz had also allegedly gathered sensitive military information through websites. Sources said the number of visitors on defence-related websites had increased in the last few months.

Defence sector unit likely

"A manufacturing unit in defence sector is likely to be set up in Rajasthan which would be located between Jaipur and Delhi, Defence Minister Manohar Parrikar said on Saturday, reports PTI from Jaipur. "There is no manufacturing unit in defence sector in Rajasthan and at least one such unit should be set up in the state," he said. The minister added: "We are considering setting up of a unit to manufacture helicopter or fighter plane's parts or something like that." He said that since Rajasthan shares border with Pakistan, the unit would be set up far from the border and close to Delhi even though the location has not been finalised yet.

'Make in India' challenge for Kamov helicopter 18

Ajai Shukla

After Prime Minister Narendra Modi's visit to Moscow last month yielded an Inter-Governmental Agreement (IGA) on supplying the Kamov-226T light helicopter to India's military, both sides are struggling to meet the challenging 'Make in India' requirement of building 50 per cent of the helicopter in India. Neither side is willing to speak on the record, but Russian sources tell Business Standard that Moscow has accepted responsibility only for indigenising Russian components, which would fall short of the indigenisation level required. These sources say the IGA requires New Delhi to negotiate separately with third country vendors for indigenising their components and systems, which make up about two-third of the Kamov-226T. Russian Helicopters, which has developed the Kamov-226T, has sourced its twin engines - which constitute one-third of the chopper's cost - from French company, Turbomeca. Other key systems and avionics have been sourced from the global market. HAL sources confirm: "We will have to work with third-country suppliers and co-opt them into the indigenization effort to meet the "Make in India" goals. Adding to the difficulty, the IGA permits Russian Helicopters to deliver the first 60 helicopters in flyaway condition. These would be assembled entirely in Russia, with little scope for indigenisation. That would also be the case with the next 40 or so helicopters, shipped as kits from Russia to be assembled in India. That leaves just 100 helicopters for meeting the 50 per cent 'Make in India' goals over the entire fleet of 200. HAL, along with other Indian manufacturers, is negotiating with third-party suppliers outside Russia to build Kamov-226T components and systems in India. Bharat Forge is understood to be in talks with Turbomeca to part-build the Kamov-226T's engines in India. Russian sources say the Kamov-226T indigenisation has been complicated by an unusually detailed IGA. Traditionally, IGAs consist only of broad statements of intent. This IGA, unprecedentedly, mandates an Indo-Russian joint venture for building the helicopter, with a 50.5 per cent stake for HAL, and a 49.5 per cent stake for Russian Helicopters. HAL is permitted to co-opt an Indian vendor with part of its stake. According to Russian sources closely involved in negotiating this IGA, "It forms a new model of cooperation between India and Russia, developed specifically for the Kamov-226T. The IGA specifies a nine-year period for delivering 200 Kamov-226T helicopters, which begins from the signature of the contract. That amounts to an unambitious 22 helicopters a year. The defence ministry believes that India's military, and civilian users like ONGC, Pawan Hans and corporates, will require about 600 new light helicopters when the venerable Chetak/Cheetah fleet is phased out. But the Kamov-226T will have to compete for this market with HAL's new Light Utility Helicopter (LUH), which is ready to make its first flight. Business Standard found, during a recent visit to HAL, that the LUH is on track to make its first flight by February. According to HAL projections, the LUH would complete flight certification by mid-2017 and enter production by the year-end. The defence ministry has assured HAL it will buy about 200 LUH. With the IGA assuring Russian Helicopters that India would buy 200 choppers, the bulk of the order for the remaining 200 would fall to whichever manufacturer delivers 200 helicopters first. With HAL's helicopter close to its first flight, planning has begun for production. On January 3, the prime minister laid the foundation stone for HAL's new facility in Tumkur, where the LUH would be built. Modi declared that the first helicopter built there would take flight by 2018.



Rafale, Smart City, solar fund on agenda during Hollande visit

Simran Sodhi

French President François Hollande will be travelling to India at the end of this week for a three-day visit during which some major agreements are likely to be signed between the two countries. The biggest agreement which everyone is watching closely is that of the Rafale fighter jets. During his visit to France in April last year, Modi announced that India would buy 36 Rafale jets in a 'fly-away' condition and also announced that the deal would be on a government-to-government basis. The PM's decision followed a rather long-drawn process in which a tender for acquisition of 126 medium multi-role combat aircraft (MMRCA) for the IAF was issued, followed by a decade-long wait as India took time to decide on the Rafale, among other competitors like the Eurofighter. However, India and France were unable to agree on pricing issues and transfer of technology. Negotiations are likely to continue till the last minute as India would like the final agreement to be inked during the visit of the French President here. The 'Smart City' project is another area which would be under focus as France has already committed investing over 2 billion euros for the scheme. France is keen to work on Chandigarh, Nagpur and Puducherry. India is facing a crisis with the urban population booming and by 2050 it is expected that 50 per cent of the country's population would be residing in urban areas. France has also expressed interest in developing heritage sites and tourism spots for the smart cities. Solar power generation has been a pet energy policy initiative of Prime Minister Modi. The government is targeting 100 gigawatt of solar power generation by 2022, up from around 4 gigawatt at the moment. To this effect, India and France joined hands in Paris on the first day of the Climate Change conference in November last and together launched the 'International Solar Alliance'. Both Modi and Hollande have put their faith and vision behind this alliance and the idea is to mobilise \$1 tn worth of investment towards this project and to focus on tropical countries that are sun-rich but cash-poor.

The Tribune

16 January 2016

Rafale deal unlikely during Hollande visit

Ajay Banerjee

India and France are not likely to ink the much-awaited deal for the Rafale fighter jets when French President Francois Hollande arrives in India on a three-day visit as chief guest at the Republic Day function. As some issues still remain, India will go for a better price than take a hasty step at this stage, top sources said, indicating the deal may not be inked during Hollande's visit. In April last year, Prime Minister Narendra Modi announced a decision to buy 36 Rafale fighter jets from France in a "fly-away" condition. After that, the cost negotiation committee met to fix a price for the jets and also the arsenal. Initially, the IAF had projected the need for 126 such fighter jets and a global tender was floated, which is now in cold storage after the decision to buy Rafale was announced. Already faced with a dwindling fleet of fighter jets, the Indian Air Force (IAF) has formally told the Ministry of Defence (MoD) that it needs at least 80 Rafale-type multi-role combat fighter jets to be battle ready in the next few years. These need not be the Rafale, but should be jets of similar capability. The IAF has conveyed the need for five squadrons and estimated a squadron at 16 jets each, instead of the normal number of 18 jets, as the Rafale with its high-end technology is available to fly at short notice and has a shorter maintenance "turn-around". This works out to be 80 jets of Rafale or planes of such type. The number is more in tune with creating minimum facilities for servicing and training of pilots and on-ground technicians. A "mere" 36 jets - presently on order - would not meet the shortfall due to the phasing out of fleet of MiG-21 and MiG-27 jets by 2022. There are some 260 obsolete MiG-21s and MiG-27s (Soviet Union-era single-engine fighter jets) in the fleet. The IAF needs 400 jets over the next 10 years. As of now, the IAF has 35 fighter jet squadrons (having 16-18 planes each) against its projected requirement of 42 squadrons to tackle any simultaneous war with China and Pakistan.

Focus on Rafale, Talks for More Projects Likely

Manu Pubby

Navy looking at 2 more advanced submarines; missile defence system also under consideration While much attention has been on the mega Rafale fighter aircraft contract, India and France are likely to focus on several defence projects during French President François Hollande's visit for the Republic Day celebrations, including the possibility of extending the Scorpene submarine line with additional orders. The first of the six Scorpene submarines, under construction at the Mazgaon Dock Ltd (MDL) in Mumbai in partnership with French group DCNS, is set to enter service in October and the navy is seriously considering a plan to enhance the order by another two. Besides, discussions on a point defence missile system to be developed jointly are also likely to progress. Officials from India and France have told ET that a proposal to keep the MDL line running beyond 2020 - when the last of the current six on order is delivered - is a distinct possibility given the underwater fleet requirements of the Indian Navy. "We may look at an addition of two more submarines, but with an enhanced capability of staying under water for longer. This would also help retain the skilled manpower that MDL has raised over the years by working on the Scorpene submarines," a senior Navy officer told ET. The Indian Navy is looking at an Air Independent Propulsion (AIP) system, which would increase underwater endurance, for the additional submarines. Work on an Indian AIP is underway with the system being developed by the Defence Research and Development Organisation (DRDO). A land prototype of the AIP is currently being constructed by L&T and if successful, would be considered for an enhanced Scorpene order. "The land-based AIP is being built on the specifications of the Scorpene submarine. It may however not be ready on time for the initial six boats, but can be fitted to additional boats if ordered," an official familiar with the AIP project said.



The Economic Times

18 January 2016

PATHANKOT ATTACK - Govt Checking Why Robot Was Not Used

About a month before the chief of the National Security Guards' (NSG) bomb disposal squad Lt Colonel EK Niranjana died in a grenade explosion while handling a terrorist's body at the Pathankot Air Force base, the Centre has finalised fresh quality standards for surveillance robots for bomb squads. This comes after sources say that few such robots with the NSG are not functional even as questions are being raised at the Home Ministry on why such two-wheeled and four-wheeled robots were not pressed into service in Pathankot. They were displayed before Home Minister Rajnath Singh at NSG Raising Day last year - these robots are meant to detect bombs and explosives to eliminate the risk to human life during such operations. The home ministry did not respond to a query sent by ET on whether these robots were taken to Pathankot or used. "NSG does have the robot. I cannot comment on any specific case but at NSG, we have laid down procedures at how bomb detection and disposal should be done," former NSG Chief Arvind Ranjan told ET. A senior government official said the Centre is looking into why the NSG did not use the equipment available with its bomb disposal squad and whether the "safe procedure drill", in the agency's parlance, was followed in Pathankot. "NSG has nearly two dozen world-class bomb protection suits but they were apparently not used. The bombs once detected are defused using a telescopic manipulator and a total containment vehicle it is being seen if the same was employed in Pathankot or not," the official said on condition of anonymity. A sub-group of technical experts on bomb disposal equipment had on November 15 and 19 finalised qualitative requirements for buying two-wheeled and four-wheeled surveillance robots. These are basically mini robots which can be manoeuvred through a remote.

Rajnath, Parrikar Review Pathankot Terror Attack

ALL PRAISE Both ministers appreciate the work of intel agencies, forces. Home minister Rajnath Singh and defence minister Manohar Parrikar on Friday discussed the takeaways from the Pathankot terror attack and agreed to conduct a timebound security audit for all "vulnerable" installations of armed forces, paramilitary and police. The government also stressed the need for improved intelligence inputs, and also praised the security forces for their bravery during the operations. Both the ministers appreciated the work put in by the intelligence agencies in alerting in advance about the attack, and lauded the security agencies for meeting the challenge and minimising the damage. They further discussed ways to further strengthen the prevention, detection and foiling of such attacks. It was felt that the strengths displayed by all the agencies, especially their synergized response, need to be built upon. It was felt that once the intelligence inputs had been confirmed, the response time taken was quick enough, both in terms of decisions taken, and in deployment of forces. However, in view of the continuing threats from hostile elements from across the border, the need to further upgrade both intelligence and preventive abilities, especially in terms of technology, was stressed upon.

The Hindu

17 January 2016

Steps being taken to prevent honey-traps, says Parrikar

Dinakar Peri

The Defence Minister's remarks comes against the backdrop of an IAF official falling prey to a honey trap. The government is taking all measures to prevent military personnel falling prey to foreign intelligence agencies, Defence Minister Manohar Parrikar said on Saturday. His comments come in the backdrop of a recent incident involving an Air Force personnel who became a victim of honey trap over the social media. "I do not think that such things [espionage] are at high level. Few things came to light but they were at lower level and we have taken all precautions [to prevent them]," Mr. Parrikar told the media after inaugurating an Army recruitment rally Jaipur. He noted that things like honey traps could be avoided by being alert. "We take care of it at the time of recruitment and training. There are also clear guidelines and code of conduct [for personnel] to deal with social networking sites," he said. Last month IAF official Ranjith KK was dismissed from service after it came to light that he was passing classified information to adversaries. According to the police, he fell prey to a honey trap by a suspected operative with the screen name, Damini McNought, who posed as a journalist on Facebook. The Army has recently made all recruitments online. Commenting on that Mr. Parrikar said they feared that the number of people who turn up might drop but on the contrary "the number of candidates has gone up instead."

The Hindu

18 January 2016

India may ease visa norms for China

Indian agencies say that the United Liberation Front of Asom leader, Paresh Baruah, shuttles between China and Myanmar to run his extortion and terror rackets. Even though India included China in the list of countries which have been extended the facility of electronic tourist visa on arrival, the neighbouring country has pressed for lifting restrictions on conference and research visas as well. However, China is yet to respond to India's demand to offer a similar arrangement for its citizens. Despite opposition from the intelligence agencies against extending e-visa facility for the Chinese, Prime Minister Narendra Modi, during his maiden visit to the country in May 2015, had announced it. "China has assured that they were working on a mechanism that would ease visa restrictions for Indians. This would include time-bound replies to the applicants," said the official. China is among the top five nations which have expressed interest in doing business in India. According to Ministry of Home Affairs data, eight Chinese companies were given the green signal to start business operations in India under the Make in India policy.

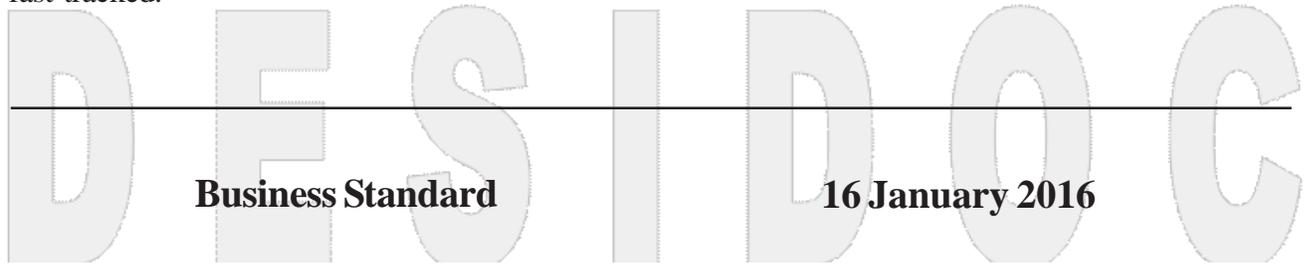
Naval exercises will strengthen ties: Australian Army chief

Dinakar Peri

Lt. Gen. Angus Campbell stresses importance of freedom of the seas, respect for the international law. Underscoring the importance of multilateral cooperation for stability and peace in the Indian Ocean region, Australian Army chief Lt. Gen. Angus Campbell says Malabar naval exercises are among a spate of opportunities in that regard. Australia, which held its first bilateral naval exercise with the Indian Navy last year, has been long keen on joining the Malabar exercises along with the U.S. and Japan. "Malabar is an example where there is opportunity to build but not in a directed or specific problematic part but one that is more comfortable for the two nations ... It is part of a spate of opportunities," Lt. Gen. Campbell said in an interview to The Hindu. The India-U.S. Malabar naval exercises, which began in 1992, have grown in scope and complexity, acquiring geopolitical significance in recent times. The bilateral format gave way to a trilateral one with inclusion of Japan as a permanent member in 2015. In 2007, Australia joined the other three in a quadrilateral format for the exercises, but based severe criticism from China which saw it as a containment strategy. Speaking separately to The Hindu, the outgoing Australian High Commissioner in India, Patrick Suckling, expressed interest in being part of Malabar, but said: "But that wouldn't be the same as resurrecting that idea of four democracies doing what they had planned in 2007." However, clarifying that it was not directed at anyone, Lt. Gen. Campbell reiterated that it was Australia's position that discussion, negotiations and in some circumstances where appropriate, "arbitration of what might be the interest of multiple parties should be considered and where that occurs that is the best pathway to reduce tensions and to build understanding". The statement is important in the backdrop of the Philippines taking China to the International Court of Arbitration over disputed islands in the South China Sea. China has, however, rejected it, saying the international tribunal has no jurisdiction over the matter. **Trading nations-** Emphasising that both India and Australia are "maritime trading nations", Lt. Gen. Campbell said that what that meant was the importance of the freedom of the seas and respect for the international law and the rule of law. "Those basic principles are important for both our countries and in that regard, we are both keen on working across with many partners to ensure that the security setting in this region does not deteriorate or present a challenge to the security, prosperity and stability of the people of the region." China, which claims the part of the South China Sea up to the nine dash line as its own, has been reclaiming reefs in the region at a rapid pace. Recently, it landed civilian planes on a 3,000-metre airstrip on the Fiery Cross reef raising concern that fighter jets could follow next. Lt. Gen. Campbell said that with growing prosperity, there was an increasing trend of military modernisation across Asia as was evident with India, China, Indonesia and others. "Where countries are growing and where peoples' prosperity is developing and that growth is engaged with partnership and dialogue that is very good," he said adding that concerns arose where action was taken unilaterally or in a non-cooperating way. "Both our nations seek to understand our security concerns by looking at the constructive security arrangements and the strategic settings across the India-Pacific oceans," Lt. Gen. Campbell added. Lt. Gen. Campbell is in India on the invitation of the Chief of the Army Staff, Dalbir Singh, and held discussions with the three services "to establish the right framework relationship" to deepen military cooperation. Earlier this month, on a visit to Delhi, Admiral Scott Swift, the U.S. Pacific Fleet Commander, expressed concern at the lack of transparency on the Chinese motives for military expansion. Welcoming India's greater role in the region, Lt. Gen. Campbell said it was for India to decide its role.

India wants constructive border engagement with China: Suhag

The Army Chief pitched for modernisation of weapons and equipment to counter different kinds of challenges facing the force. India wants to have constructive engagement with China along the northern borders, Army Chief Gen Dalbir Singh Suhag said today, holding that there has been significant improvement in understanding between the two countries on the boundary front. Even though intrusions have taken place in the disputed areas along the Line of Actual Control (LAC), there has been a significant improvement in understanding between the two countries, he said, addressing the Army Day parade here. "India wants to have constructive engagement with China along the northern borders," Suhag said. The Army Chief pitched for modernisation of weapons and equipment to counter different kinds of challenges facing the force. He complimented the soldiers for giving a befitting reply to the enemy at the Line of Control (LOC) which has been "active" due to cross-border firing and continuous infiltration attempts. Referring to modernisation, Suhag said that to counter different kinds of challenges and commitments, it is important to modernise weapons and equipment. He said that he was happy that the government has sanctioned a number of modern weapons and equipment in the last one year. The priority for the army was new artillery guns, upgradation of mechanised forces, enhancement of army aviation capabilities, he said, noting that better arms needed to be provided to the soldiers. Suhag said the army has already started induction of weaponised version of Advanced Light Helicopter. Earlier this week, Suhag had said acquisition of artillery guns, third generation missiles, upgrading armoured vehicles, augmenting army aviation and strengthening infantry were among "critical areas" for force modernisation which are being fast-tracked.



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National IPR policy to give fillip to economic growth: Paswan

India's role as a global economic powerhouse & status of an investment destination are increasingly linked to its ability to ensure IPRs. The government is drawing up the contours of a national Intellectual Property Rights (IPR) policy and its implementation will provide an impetus to growth, Union Minister Ram Vilas Paswan said today. The Department of Industrial Policy and Promotion (DIPP), under the aegis of the Ministry of Commerce and Industry, had in 2014 prepared and circulated the draft IPR policy and sought public comments. The final policy is being worked out. "The national IPR policy is in the offing and we hope that with the release of this policy, India will get the much-needed push in its economic growth and socio-economic developmental agenda," Paswan said at an event on 'Illicit Trade' organised by industry body Ficci here. India's role as a global economic powerhouse and status of an investment destination are increasingly linked to its ability to ensure IPRs are protected with strong IPR rules and enforcement of laws and regulations, the minister said. Paswan, who is in-charge of the Food and Consumer Affairs Ministry, also noted that on the one hand the value of 'Indian made' intellectual rights is on the rise while on the other rising counterfeit and fake products are posing as a key threat to the country's economic growth. Acknowledging that counterfeit products have a direct impact on consumers, Paswan said the priority of the government is to protect consumers and several measures have been taken to ensure consumer safety and check unfair trade practices. The minister, however, struck a note of caution, saying consumers have to be aware not just of commercial aspects of sale and purchase of goods, but of health and security considerations. He also suggested that the companies should set aside part of their corporate social responsibility (CSR) funds for awareness among consumers on such issues.

Govt orders time-bound security audit of vulnerable installations

According to official sources, the brass of security apparatus also took stock of various aspects of internal security. A time-bound security audit will be conducted for all "vulnerable" installations of armed forces, para-military and police, the central government announced on Friday. This was after a hour's review meeting on the January 2 terrorist attack on the Pathankot air base. Home Minister Rajnath Singh chaired it. It was attended by Defence Minister Manohar Parrikar, national security advisor Ajit Doval and other top officials of security and intelligence agencies. "In view of the continuing threats from hostile elements from across the border, the need to further upgrade both intelligence and preventive abilities, especially in terms of technology, was stressed," said the home ministry. The meet was a day after the Indian and Pakistani governments deferred foreign secretary talks and India gave the go-ahead to the visit of a team from Pakistan on the Pathankot attack. At the meeting, ministers and officials felt once the intelligence input in the attack had been confirmed, the response time was quick enough, both in terms of the decisions taken and in deployment of forces. Also, that many pluses displayed by all the agencies concerned, especially in terms of combined response, needed to be commended and built on, the statement added. The ministers appreciated the work done by intelligence agencies in giving advance warning of the attack and of the security agencies in effectively meeting the challenge and minimising the possible damage. However, the meeting felt the need to have a better media communication strategy. It was decided that in such happenings, the media is best briefed by authorised persons on the spot. Arrangements for this, including training, should be put in place, the ministry said. Official sources said the brass of the security apparatus also took stock of various aspects of internal security. Instructions have been given to ensure security in all sensitive locations, border areas and major urban centres, including Delhi. Where the Republic Day's main function will have French President Francois Hollande as chief guest. Chiefs of the Intelligence Bureau and the Research & Analysis Wing shared various inputs. The head of the National Investigation Agency gave a briefing on the ongoing probe into Pathankot, sources said. Both domestic and international flights have already been asked to upgrade the scale of security, with some passengers being made to undergo 'secondary ladder checking' in some. This is conducted when a passenger is about to enter the aircraft, to ensure no weapon or chemical is being carried.

ET ANALYSIS - Follow Israel Tech Tricks to Seal India-Pak Border

TIME TO REVISIT Rajnath had visited border outpost in Gaza to understand the high-end tech that ensures near-zero infiltration from Palestine . Over a year ago, Rajnath Singh, during his trip to Israel, visited a border outpost in Gaza to look at how that country, through some top-notch technology , ensures nearzero infiltration from across its hot border with Palestine. But a close look at the Pathankot attack shows perhaps nothing was learnt. The flap was down on the BSFimprovised recording device that was supposed to keep a watch over the river bed so the camera was rolling but not recording. Another BSF-improvised technique to raise an alarm on such unfenced river stretches in case of an intrusion --a laser wall --was not installed here since the focus was first on the terror-prone Jammu border. There are no answers on why India has not bought top-of-the-line surveillance equipment off the shelf from abroad rather than depending on local improvisations to stop terror intrusions, at a time when the stakes are as high as the fate of Modi's peace outreach effort with Pakistan.This security lapse is even more ironic since it was BSF which had first issued an alert on December 25 the day PM Modi made his surprise pitstop in Lahore the border force had information that terrorists were do ing a reece across the Punjab border for a possible intrusion. It is also being argued that while BSF guards 553 kilometres of the Punjab border and may have failed to secure one small unfenced riverine stretch in Bamiyal, which terrorists seem to have crossed from Pakistan, the Indian Air Force had to secure only a 25-kilometre perimeter of its Pathankot air-base but failed to do the same despite subsequent specific information that the base will be the target. The PM is not impressed by both lapses and did read the riot act out to IAF on his trip last week to Pathankot, asking why the base was so porous and why modern electronic perimeter intrusion systems could not be installed. It's possible that we slipped in spotting this intrusion, BSF Chief DK Pathak told the PM last week. BSF is now insisting on more manpower to guard the Punjab border it cites the deployment level in Jammu vis-à-vis Punjab is to the tune of 2.5:1. But Israel, hailed to have the best border protection system in the world, depends more on technology than humans to protect its border -like high-quality long-range day cameras along with night observation systems, third generation thermal imagers, long-range detection radars, electronic touch and motion sensors on the fence as well as underground sensors to detect any tunneling attempts. Even US has roped in an Israel firm to build a modern fence on its Mexico border. The Home Ministry, which has a Secretary level officer in-charge of its border management division, needs to dust up the files from the Israel visit and make a quick move to get such technology

Global eye - Nuclear Blackmail

Both Pakistan and North Korea are adept practitioners of this art. North Korea and Pakistan have little in common, other than their use of nuclear weapons as diplomatic tools. While North Korea has repeatedly defied the United Nations and tested its weapons to dramatically attract international attention, Pakistan has used its nuclear arsenal more quietly, as an indirect instrument of coercion while using home-grown terrorist groups to attack its supposed nemesis, India. The January 2 attack on India's Pathankot airbase by the Pakistani terrorist group Jaish-e-Muhammed, and North Korea's claimed underground test of a miniature hydrogen bomb four days later, highlight the two countries' different strategies with regard to their nuclear weapons. Both have been fairly successful in making their political points even as their ultimate objectives remain out of reach. If this time Pakistan demonstrably dissociates itself from the terrorists by meting out a meaningful punishment that would signal a significant departure from its past policy of nuke-backed terrorism. North Korea's threatening nuclear tests, and its warning that its arsenal is "capable of wiping out the whole territory of the US all at once", has not succeeded in its goal. Although originally built to deter the US and other perceived hostile powers, North Korea has turned its nuclear armoury into bait to attract the US to negotiations ultimately resulting in diplomatic recognition. North Korea's tactics have alarmed its neighbours, including its sole ally China, but they have been studiously ignored by the US, where leaders are now jaded having been burnt by Pyongyang's duplicity in implementing earlier agreements like the 1994 Framework Agreement for the denuclearisation of the Korean Peninsula. Pakistan, a long-standing US partner, no longer seeks to showcase its nuclear weapons. The mere fact of having a nuclear umbrella has given Pakistan new freedom in its existentialist mission to wrest Kashmir from India. From the 2001 attacks on India's Parliament to the 26/11 siege of Mumbai and now the recent Pathankot attack, Pakistani terrorists fighting to "liberate" Kashmir have spilled a lot of blood in India. Despite loud declarations of forceful retaliation against the terrorists and their Pakistani sponsors, India has proved itself (to borrow a phrase from Richard Nixon) "a pitiful, helpless giant". The reason for this, simply, is Pakistan's nuclear arsenal. Indian leaders from Atal Bihari Vajpayee to Manmohan Singh have variously considered conventional military responses to terrorist outrages, but eventually shelved them all. The options available to India, their planners found, ultimately risked escalating to a nuclear confrontation with unimaginable consequences. Now Prime Minister Narendra Modi is seeking a diplomatic alternative to military retaliation. India knows from its Kargil experience in 1999 that Pakistan could be reckless enough to even consider using nuclear weapons. In July that year, the US intelligence had "disturbing evidence that the Pakistanis were preparing their nuclear arsenals for possible deployment". Former CIA officer Bruce Riedel recounts in a paper a dramatic confrontation between President Bill Clinton and then Prime Minister Nawaz Sharif. Clinton warned of severe consequences if Pakistan did not withdraw from the Indian side of the LoC. He asked a shaken Sharif if he knew that "his military was preparing their nuclear tipped missiles". According to Riedel, Sharif was worried about the escalation of the conflict and powerless to stop the military, and chose to arrive in Washington aboard a PIA flight that was diverted from its original destination of New York. Tellingly, he came with his whole family, unsure whether he would even be able to return home. Totally isolated and facing the threat of India opening a second front along the LoC, the Pakistani military agreed to withdraw. Since Pakistan's 1998 nuclear test, it has achieved parity with India in the atomic arena despite a massive disparity in conventional military capabilities. Under its nuclear umbrella Pakistan has resorted to employing different terrorist proxies to pressure India to cede Kashmir. Even after failing to occupy parts of Kashmir through its Kargil operation, Sharif still tried to bargain with Clinton to help on the Kashmir issue in exchange for withdrawal. It was rejected by Clinton. But that has not stopped Pakistan from using the weapons of terror to get what it could not by direct military assault. As of this writing it is not clear whether Pakistan will deliver on its promise to punish the perpetrators of the Pathankot attack. If it does, it would signal a welcome departure from a 15-year-old practice of nuclear-backed terrorism.

Iran: Nuclear deal economic turning point

Iranian President Hassan Rouhani said the nuclear deal, sealed with world powers last year and paving the way for Saturday's lifting of most US, European, and UN sanctions, could be a turning point for Iran's economy. While the deal brings Iran back into the international fold, Tehran finds itself embroiled in sectarian conflicts in West Asia and at odds with regional Sunni heavyweight Saudi Arabia, which views the US-Iran thaw with deep suspicion. "The nuclear deal can be used as a model for resolving regional problems... we want to have close ties with our neighbours. Saudi Arabia is the source of problems in our relations," Mr Rouhani told a press conference after earlier hailing the deal as a "golden page" in Iran's history. Despite those regional tensions, the lifting of sanctions and the prisoner deal considerably reduce the hostility between Tehran and Washington that has shaped West Asia since Iran's Islamic Revolution of 1979. Speaking to Parliament earlier on Sunday, Mr Rouhani, a pragmatist elected in 2013 on promises to end Iran's years of sanctions and isolation, said he looked forward to an economic future less dependent on oil exports. These are nevertheless likely to jump now that the United States, European Union and UN have scrapped the crippling sanctions in return for Tehran complying with the deal to curb its nuclear ambitions. But Mr Rouhani noted bitter opposition to the lifting of economic curbs from arch foe Israel, some members of the US Congress and what he called "warmongers" in the region - an apparent reference to some of Iran's Gulf Arab adversaries. Presenting the draft budget for the next Iranian fiscal year, which begins in March, Mr Rouhani told Parliament the deal was a "turning point" for the economy of Iran, a major oil producer which has been virtually shut out of international markets for the past five years. He later said he expected five per cent economic growth in the next Iranian fiscal year beginning in March and assured foreign investors of political and economic stability. "The nuclear negotiations which succeeded by the guidance of the Supreme Leader and support of our nation, were truly a golden page in Iran's history," he said. Tens of billions of dollars' worth of Iranian assets will now be unfrozen and global companies that have been barred from doing business there will be able to exploit a market hungry for everything from automobiles to airplane parts. In Tehran, ordinary Iranians were cautious about what the future holds after the lifting of sanctions. Many have lived under sanctions or wartime austerity for so long that they have no concrete expectations about what the future might hold. Iran's Gulf Arab adversaries were silent on news of the nuclear deal's implementation, in what is perhaps a sign of unease at the rapprochement. Mr Rouhani took a swipe at its critics. "Everybody is happy except the Zionists, the warmongers who are fuelling sectarian war among the Islamic nation, and the hardliners in the US Congress," he said. The International Atomic Energy Agency ruled on Saturday that Iran had abided by the 2015 agreement with six world powers to curtail its nuclear programme, triggering the end of sanctions. However, the United States on Sunday announced new sanctions linked to Iran's ballistic missile programme, just a day after sanctions targeting its nuclear programme were lifted. Five Iranian nationals and a network of companies based in the United Arab Emirates and China were added to an American blacklist, the US treasury department announced in a statement. The network "obfuscated the end user of sensitive goods for missile proliferation by using front companies in third countries to deceive foreign suppliers," the statement said, adding that the five individuals had "worked to procure ballistic missile components for Iran". Adam J. Szubin, under-secretary for terrorism and financial intelligence, said that "Iran's ballistic missile programme poses a significant threat to regional and global security, and it will continue to be subject to international sanctions."

U.S. imposes ballistic missile sanctions on Iran after prisoner release

By Joel Schectman

WASHINGTON, Jan 17 (Reuters) - The United States imposed sanctions on 11 companies and individuals for supplying Iran's ballistic missile program in a move delayed by over two weeks so as not to endanger this weekend's release of U.S. prisoners, sources familiar with the matter said. The U.S. Treasury Department said it had blacklisted the UAE-based Mabrooka Trading, and its owner Hossein Pournaghshband for helping Iran's produce carbon fiber for the program. Financial institutions and companies are barred from dealing with those on the U.S. blacklist. U.S. official and congressional sources said President Barack Obama's administration had held back from taking action for more than two weeks during the tense negotiations that ultimately freed five Americans under a prisoner swap. Iran conducted a precision-guided ballistic missile test capable of delivering a nuclear warhead violating a United Nations ban last October. U.S. President Barack Obama said the test was a violation of Iran's "international obligations." "As a result, the United States is imposing sanctions on individuals and companies working to advance Iran's ballistic missile program. And we are going to remain vigilant about it. We're not going to waver in the defense of our security or that of our allies and partners," Obama said in a televised statement on Sunday morning from the White House. The announcement of the new sanctions came hours after three Americans detained by Iran - including the Washington Post's Jason Rezaian -- boarded a Swiss plane departing Tehran. At the same time, the U.S. State Department announced it had agreed to release \$400 million and \$1.3 billion in interest for funds that had been frozen by the United State. The settlement, reached through arbitration at the Hague Claims Tribunal, related to funds once earmarked for Iran to buy U.S. military equipment before Iran's revolution in 1979. But the sanctions announced today almost scuttled the prisoner deal weeks earlier, people involved said. The action had originally been planned for Dec. 30, as Secretary of State John Kerry was negotiating the prisoner trade that secured the release of five Americans from Iran this weekend. But the day before the sanctions were to be imposed, Iranian Foreign Minister Javad Zarif warned Kerry that if Washington went ahead, the deal could be endangered, according to a U.S. official and congressional sources. Obama administration officials decided to delay the sanctions announcement until after the deal was completed, the sources said. Speaking to reporters on Sunday, a senior administration official said the United States "did not want to complicate what was a very sensitive and delicate effort to bring Americans home" by imposing the sanctions. Adam Szubin, Treasury's acting undersecretary for terrorism and financial intelligence, said today's sanctions show authorities will continue to punish Iran if it steps out of what is allowed by the nuclear deal. The prisoner exchange, which also dropped charges or obtained early release for at least nine Iranians, came as the U.S. lifted many sanctions on Iran as part of the nuclear deal. For example, Most non-American companies will now be able to do business with Iran's energy sector. (Reporting by Joel Schectman; additional reporting by Julia Edwards, David Lawder, Lesley Wroughton, Patricia Zengerle and Matt Spetalnick; editing by Richard Balmforth). **(By Reuters)**

The Statesman

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N. Korea demands peace treaty to end nuke tests

North Korea said it could stop its nuclear tests in exchange for signing a peace treaty with the US and put a stop to the annual military exercises between US and South Korea. The North's statement, carried out by the state media late on Jan 17, was a repeat of past offers that have been rejected by the US, which wants Pyongyang to commit to a complete abandonment of nuclear weapons. An unnamed spokesman of the North's Foreign Ministry called the purported hydrogen bomb test on Jan 6 a justifiable move to ensure its survival against external threats. "In response to the US continuously invading our sovereignty and making threatening provocations, we will acquire ourselves with all possible nuclear attack and nuclear retaliation abilities, but will not thoughtlessly use our nuclear weapons," the official Korean Central News Agency quoted the spokesman as saying. The spokesman also called the South's decision to restart anti-Pyongyang propaganda broadcasts along their tense border an "odd" provocation. The North is extremely sensitive to outside criticism of the authoritarian leadership of Kim Jong Un and has been retaliating to Seoul's loud-speaker campaigns by flying thousands of propaganda leaflets across the border. Earlier in the week, South Korean troops fired 20 machine gun warning shots after a North Korean drone briefly crossed the border. The North's H-bomb claims have been met with widespread condemnation and suspicion as well as questions on how to stop the country's growing nuclear threat. The Korean Peninsula remains technically at war because the 1950-53 conflict ended in an armistice, not a peace treaty. Pyongyang has called the annual US-South Korean military drills a rehearsal for an invasion, though the allies have repeatedly said that the war games are defensive in nature.

Isro's next PSLV to carry indigenous navigation satellite

Chennai, dhns: After successful launch of six Singapore satellites recently, Indian space scientists will launch PSLV rocket carrying the country's indigenous IRNSS-1E navigation satellite from the spaceport of Sriharikota on January 20. Indian Space Research Organisation (Isro) said the Mission Readiness Review Committee (MRRC) meeting was held on Sunday and decided the countdown activities of the rocket. "MRCC meeting was held today. The countdown is expected to start at 9:30 am on Monday," Isro's spokesperson Devi Prasad Karnik told Deccan Herald on Sunday. Stating that the rocket was moved from vehicle assembly building to the second launch pad, the official pointed out that this is the first satellite launch for Isro in 2016. According to him, as in the previous four launches of Indian Regional Navigation Satellite System (IRNSS) satellites, PSLV-C31 will use "XL" version of PSLV. The 44.4 metre tall PSLV-C31, Isro's most trusted rocket and workhorse launch flight, weighing 320 tonne, will carry IRNSS-1E, from the Satish Dhawan Space Centre (SDSC). The satellite, which is the fifth navigation device of the seven of its kind constituting the IRNSS space segment, is designed to provide accurate position information service to users in India as well as the region extending up to 1,500 km from its boundary. IRNSS-1E carries two types of payloads - navigation payload and ranging payload. The latest IRNSS, which will provide Standard Positioning Service (SPS), is responsible for navigation parameter generation and transmission, satellite control, ranging and integrity monitoring as well as time keeping.



Second largest black hole detected

Tokyo, PTI: Astronomers have detected signs of an invisible black hole with a mass 100 thousand times that of the Sun around the centre of the Milky Way. The team assumes that this possible "intermediate mass" black hole is a key to understanding the birth of the supermassive black holes located in the centres of galaxies. A team of astronomers led by Tomoharu Oka, a professor at Keio University in Japan, found an enigmatic gas cloud, called CO-0.40-0.22, only 200 light years away from the centre of the Milky Way. The CO-0.40-0.22 unusual has a surprisingly wide velocity dispersion - the cloud contains gas with a very wide range of speeds. The team found this mysterious feature with two radio telescopes, the Nobeyama 45m Radio Telescope in Japan and the ASTRON Telescope in Chile, both operated by the National Astronomical Observatory of Japan. The team observed CO-0.40-0.22 to obtain 21 emission lines from 18 molecules. The results show that the cloud has an elliptical shape and consists of two components - a compact but low density component with a very wide velocity dispersion of 100 km per second, and a dense component extending 10 light years with a narrow velocity dispersion. There are no holes inside of the cloud. Also, X-ray and infrared observations did not find any compact objects. These features indicate that the velocity dispersion is not caused by a local energy input, such as supernova explosions. The team performed a simple simulation of gas clouds flung by a strong gravity source. In the simulation, the gas clouds are first attracted by the source and their speeds increase as they approach it, reaching maximum at the closest point to the object. After that the clouds continue past the object and their speeds decrease. The team found that a model using a gravity source with 100 thousand times the mass of the Sun inside an area with a radius of 0.3 light years provided the best fit to the observed data. "Considering the fact that no compact objects are seen in X-ray or infrared observations, the best candidate for the compact massive object is a black hole," said Oka. This is the first detection of an intermediate mass black hole. Astronomers already know about two sizes of black holes - stellar-mass black holes, formed after the gigantic explosions of very massive stars; and supermassive black holes (SMBH) often found at the centres of galaxies. No one knows how the SMBHs are formed. One idea is that they are formed from mergers of many intermediate mass black holes. However, so far no firm observational evidence for intermediate mass black holes has been found. If the cloud CO-0.40-0.22, located only 200 light years away from Sagittarius A-star - the 400 million solar mass SMBH at the centre of the Milky Way - contains an intermediate mass black hole, it might support the intermediate mass black hole merger scenario of SMBH evolution. The research was published in the *Astrophysical Journal Letters*.

NASA ASTRONAUTS GROW FIRST FLOWER IN SPACE

NASA astronaut Scott Kelly unveiled a photo of the first flower (in photo) ever grown in space on Twitter on January 16. The plant is the zinnia, a flower native in the Southwestern United States. In 2014, The Veggie plant growth facility was installed on the orbiting laboratory. The zinnia flower was specifically chosen so scientists can understand the Veggie project will be beneficial to gain important information in preparation for a Mars mission. "Plants can indeed enhance long duration missions in isolated, confined and extreme environments - environments that are artificial and deprived of nature," said Alexandra Whitmire, deputy element scientist for the Behavioral Health and Performance (BHP) element in the NASA Human Research Program (HRP). Adding, "In future missions, the importance of plants will likely increase given the crews' limited connection to Earth," Whitmire said. "Studies from other isolated and confined environments, such as Antarctic stations, demonstrate the importance of plants in confinement, and how much more salient fresh food becomes psychologically, when there is little stimuli around." "Growing zinnia plants will help advance our knowledge of how plants flower in the Veggie growth system, and will enable fruiting plants like tomatoes to be grown and eaten in space using Veggie as the in-orbit garden," Trent Smith, Veggie project manager at NASA's Kennedy Space Center in Florida stated in a press release. Smith added the zinnia flower "is more sensitive to environmental parameters and light characteristics. It has a longer growth duration between 60 and 80 days. Thus, it is a more difficult plant to grow, and allowing it to flower, along with the longer growth duration, makes it a good precursor to a tomato plant. The implications of the plant life for future spaceflight, Whitmire said, is very significant.

New NASA programme to protect Earth from asteroids, comets

NASA has started a new programme for detecting and tracking near-Earth objects (NEOs) - comets and asteroids that pass by the Earth's orbit - to ward off any potential impact threats to our planet. More than 13,500 near-Earth objects of all sizes have been discovered to date - over 95 per cent of them since NASA-funded surveys began in 1998. About 1,500 NEOs are now detected each year. The Planetary Defence Coordination Office will take a leading role in coordinating inter-agency and intergovernmental efforts in response to any potential impact threats. "Asteroid detection, tracking and defence of our planet is something that NASA, its inter-agency partners, and the global community take very seriously," said John Grunsfeld, associate administrator for NASA's Science Mission Directorate in Washington. "While there are no known impact threats at this time, the 2013 Chelyabinsk super-fireball and the recent 'Halloween Asteroid' close approach remind us of why we need to remain vigilant and keep our eyes to the sky," Grunsfeld said. In addition to detecting and tracking potentially hazardous objects, the office will issue notices of close passes and warnings of any detected potential impacts, based on credible science data. "The formal establishment of the Planetary Defence Coordination Office makes it evident that the agency is committed to perform a leadership role in national and international efforts for detection of these natural impact hazards, and to be engaged in planning if there is a need for planetary defence," said Lindley Johnson, lead programme executive for the office. Astronomers detect near-Earth objects using ground-based telescopes around the world as well as NASA's space-based NEOWISE infrared telescope. Tracking data are provided to a global database maintained by the Minor Planet Centre. Once detected, orbits are precisely predicted and monitored by the Centre for NEO Studies (CNEOS) at NASA's Jet Propulsion Laboratory in California. Select NEOs are further characterised by assets such as NASA's InfraRed Telescope Facility, Spitzer Space Telescope and interplanetary radars operated by NASA and the National Science Foundation. With more than 90 per cent of NEOs larger than one kilometre already discovered, NASA is now focused on finding objects that are slightly bigger than a football field - 140 metres or larger.

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Nasa closer than ever to sending US astronauts to Mars

Washington, Agencies: NASA is closer than ever to sending American astronauts to Mars in the 2030s and is empowering US entrepreneurs and innovators to expand the nascent commercial market in low-earth orbit, the US space agency administrator Charlie Bolden has said. "Nasa is on a journey to Mars and a new consensus is emerging around our plan, vision and timetable for sending American astronauts to the Red Planet in the 2030s," Bolden said in a statement on Thursday. "Our strategy calls for working with commercial partners to get our astronauts and cargo to the International Space Station (ISS) while Nasa also focuses - simultaneously - on getting our astronauts to deep space," he added. In 2010, US President Barack Obama pledged that Nasa would work "with a growing array of private companies competing to make getting to space easier and more affordable". According to Bolden, less than six years later, commercial carriers have transported 35,000 pounds of space cargo to the ISS. "We would be so firmly on track to return launches of American astronauts to the ISS from American soil on American commercial carriers," he wrote. Since the first SpaceX Dragon commercial resupply mission to deliver cargo to the ISS in October 2012 and Orbital ATK's first Cygnus mission in January 2014, American companies have delivered cargo to the ISS that enables astronauts to work on scientific research and technology demonstrations aboard the ISS. Across the board, about 80 per cent of Nasa's activities are carried out by its partners in industry and at America's academic institutions. The US space agency is developing more than 1,600 new technologies a year and works with business partners to transfer thousands of products, services and processes into the market for job creation and economic growth.

Westinghouse eyes India reactor deal by March-end

The contract would give a big boost to India's \$150-billion nuclear power programme, and a broader push to curb greenhouse gas emissions. Reuters: Toshiba Corporation's Westinghouse Electric hopes to clinch a deal to build six nuclear reactors in India by end-March, Chief Executive Officer Daniel Roderick said, in time for a possible visit by Prime Minister Narendra Modi to Washington to attend a global nuclear summit. Roderick said a Westinghouse team was already in India to negotiate the deal, but talks were likely to go down to the wire, as the crucial issue of nuclear liability insurance for suppliers remains unresolved. The aim, however, was to make a "commercially significant announcement" during Modi's expected US visit in March and sign a final contract later in the year, Roderick said, narrowing the timeline on a deal that an Indian official had said would be disclosed by June. The contract would give a big boost to India's \$150-billion nuclear power programme, and a broader push to curb greenhouse gas emissions. "We need to see the details of the insurance company and how the insurance will work at a level beyond what we have seen so far," Roderick said in an interview. "And that needs to happen in the next 30 to 45 days." India has launched an insurance pool with a liability cap of Rs 1,500 crore (about \$222 million) to assuage suppliers' concerns, after a 2010 law gave the state-run operator Nuclear Power Corporation of India Ltd the right to seek damages from them in the event of an accident. Roderick said while the concept gave Westinghouse confidence to go ahead with a potential deal, the company still needed details of how the liability scheme would work before it can agree on commercial terms. The NPCIL did not respond to requests for comment on the deal, which was put on the fast-track when President Barack Obama visited India in January last year. The Westinghouse deal would be the first nuclear commercial power project since the US and India first struck an agreement to cooperate in the civil nuclear arena a decade ago, and would underscore a growing strategic partnership between the world's two largest democracies. A foreign ministry spokesman declined to comment on Modi's travel plans. A US diplomat, however, said the US had invited Modi to the March 31-April 1 Nuclear Security Summit and that Washington was thinking of turning the trip into a full-fledged official visit, which would give the Indian leader a similar reception as Chinese President Xi Jinping. India has given two sites to US companies - Westinghouse and a nuclear venture between General Electric (GE) and Hitachi - to build six reactors each. In December, an Indian official told Reuters that GE had yet to decide on whether it would move ahead with the plan. Spokesman Christopher White said GE was still interested, but added that the March timeframe was "totally dependent on the finalisation of the insurance plan". Roderick said that if the GE-Hitachi deal did not eventually go through, Westinghouse would rather the Indian government gave it the site than "Russia or somebody else". He said that while Modi's office was driving the deal, other government authorities also had to hasten the process. "It is just going to take everyone deciding to have this done by March," Roderick added.

Engineering life, one gene at a time

Anjali Thomas

Synthetic biology offers possibilities of writing new DNA sequences and building biological components that are drawing even artists and designers to it. The field, however, is riven with ethical questions. The White Queen's reply to Alice's "one can't believe impossible things" is one of the more popular quotes from the 19th century classic, *Through the Looking-Glass*. With imperious hauteur, she tells Alice, "I daresay you haven't had much practice... Why, sometimes I've believed as many as six impossible things before breakfast." Today, it's easy to imagine 10 impossible things before breakfast, and chances are that the impossible is well on its way to becoming possible by supper. Imagine microbes engineered to glow like a string of fairy lights, or reprogrammed to destroy malignant tumours. It's almost as if the limits of what is possible and probable have become a function of our imagination. And a large part of this can be attributed to synthetic biology or the application of the principles of engineering in biology where scientists not only read or decode DNA, but also write new sequences from scratch and build biological components to either imitate nature or create something totally new. Think of bacteria as hard discs with storage capacities that can be programmed to do things. Bio-engineering at play. The term synthetic biology has been around for more than a decade, and is a mix of multiple facets of science. As Dr. Mukund Thattai from the National Centre for Biological Sciences (NCBS), Bengaluru, points out, chemical engineers existed before synthetic biology. So did genetic engineers and metabolic engineers. Now these communities come together and they see themselves as making large-scale manipulations of existing organisms in different ways rather than manipulating one gene at a time," says Dr. Thattai, who got involved with synthetic biology during his Ph.D. at the Massachusetts Institute of Technology (MIT). His lab at NCBS uses ideas from engineering to study how complex cells are put together from simple parts. In recent years, synthetic biology has attracted artists and designers. While she was a research student at MIT Media Lab, Julie Legault, who has a background in design, built a "playful" bio-engineering kit called Amino biolab, which allows anyone to experiment with synthetic biology at home. The first iteration of the desktop laboratory, which Ms. Legault describes as an "easy-bake oven for the 21st century", has all the necessary hardware to engineer and grow cells. "It works with refillable DNA programmes that contain transformation liquids, a strain of safe E. coli bacteria and the food it needs to grow," she says. Detailed instructions show a user how to put the DNA programme into the bacteria, cultivate it [there are sensors to monitor how fast the E. coli is growing], and make it glow like a firefly, for example. It creates a growing living nightlight," says Ms. Legault, who is not a scientist, but was drawn to bio-engineering and felt the need to "demystify" it. She plans to launch different DNA programmes or 'apps' that will let buyers tinker with bacteria to create new smells, perhaps brew beer and so on. At \$499-699, the kit is far too expensive for most Indians; through economies of scale, she hopes to bring the price down to a few hundreds. But for science to have an impact, it has to be more egalitarian. And Bengaluru artist Yashas Shetty is trying to do just that. Back to the future. Far away from Boston, his studio at the Srishti Institute of Art, Design and Technology in Bengaluru is the antithesis of the pristine chaos of the MIT Media Lab where Ms. Legault built the prototype of her biolab. The best way for a non-scientist to understand science is to get to deconstruct it, says Mr. Shetty, an artist-in-residence and faculty member at (Art)ScienceBLR, Srishti's public laboratory. A rudimentary PCR DNA amplification machine with green tubes, bulbs and fans lies on his workbench next to a transparent box filled with what appears to be bits and pieces of wire and circuits. It's a microscope made from an inverted webcam. He's also assembled a centrifuge from a blender and incubators from a bulb and two discarded computer fans. In 2009, Mr. Shetty started experimenting with synthetic biology and something called BioBricks, standardised DNA sequences that can be used to design synthetic biology circuits where the biological parts of a cell are designed to perform functions akin to electronic circuits. At the time, he was an artist-in-residence at NCBS. "I was an artist in a science institute. Synthetic biology allowed me to be Frankenstein. I felt I could build things, create life," he says, the excitement of his recollection tinged with regret.

part-2

Engineering life, one gene at a time

Continue

BioBricks, created by synthetic biologists including Drew Endy and Tom Knight, are like Lego blocks that can be assembled or taken apart to manipulate existing or create new biological systems. Some of the standardised parts include a promoter (that initiates the transcription of a particular gene), coding sequences (it's the part of the gene's DNA or RNA that codes for protein), terminator sequences, and so on. "BioBricks were always meant to be sort of a thought experiment. A conceptual exercise, where we are imagining a world which isn't here yet. It was never meant to be the actual way synthetic biology was done. And the genius of Drew and Tom Knight and others was that they ran the iGEM (International Genetically Engineered Machine) competition," says Dr. Thattai, who has, over the years, taken many teams to iGEM. It's open to undergraduates, high school students... and in Mr. Shetty's case, students of design. When we first approached MIT and iGEM, they were gobsmacked," says Mr. Shetty. Here was a bunch of design students asking to be a part of genetically engineered competition. "They got in touch with Mukund who assured them that we knew what we were doing." A set of standard biological parts or BioBricks were promptly shipped to them, and they had to use these parts or create new parts to build biological systems in living cells. The ethical dimension. For the 2009 iGEM, under the guidance of Mr. Shetty and Dr. Thattai, a team of undergraduate art and design students got a bacterium to emit the smell of rain hitting fresh earth. They won a bronze medal for the project. But Mr. Shetty was disturbed by the experience. He felt that the ethics of synthetic biology were not being discussed with as much vigour as the applications themselves. To prove his point, the next year his team submitted a thought-provoking experiment: they successfully fed transparent worms called *C. elegans* bacteria that were engineered to disable some of their neurological functions. He has since moved away from synthetic biology, but in many ways the experiment with BioBricks has made the ethical debate all the more real for people who are not scientists. It allows society to have conversations that would otherwise have been in the realm of the abstract. "So now, let's start talking about the ethics, regulation, the crazy possibilities. If I had started that conversation before, you would have plugged it with any other kind of fanciful extrapolation. That's another great social role of having this community built up," says Dr. Thattai. It's bringing artists and scientists out in the same arena, and perhaps it's a tenuous bridge linking two cultures: science and art.

The Hindu

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Remote cardiac monitor wins Google tech contest

Cardiac Design Labs, a startup that has come up with an innovation to help cardiac patients in rural India access critical care through a wearable device, came out triumphant at a live contest hosted by tech firm Google at the Startup India event. The Bengaluru-based firm combines communications and heart monitoring technology and is designed for use in rugged rural conditions. The patient can be monitored from home. The cardiologist will be able to remotely interact and diagnose the patient using his cell phone. "Some of the devices that do diagnosis for cardiac (problems) are expensive. We are solving this problem by making it affordable," said Anand Madanagopal, founder of Cardiac Design. The firm has built MIRCAM, comprehensive suite that comprises of wearable sensors, doctor's terminal, patient's bedside and a mobile app. Rapid heart rate. The company said the system provides real time analysis and generate instant alarms on episode detection or abnormally rapid heart rate among the patients. This enhances patient care and safety. Five innovative startups which were shortlisted through a robust selection process, pitched their ideas to an audience of venture capitalists, angel investors and government representatives and industry experts. Some of these experts included Rajan Anandan, managing director of Google South East Asia and India and Sandeep Singhal co-founder of Nexus Venture Partners. Google earlier said that the final winner will win \$100,000 (Rs 67 lakh) in Google cloud credits. The top three startups will receive an invite to join the next Google Launchpad Week, a boot camp for early-startups. They will also be eligible for consideration to the Launchpad Accelerator Program in July. At the startup India contest, people's choice award was bagged by Bengaluru-based Guru-G which converts existing content into adaptive teaching packs. These packs provide in-class guidance to teachers on different ways in which they can teach a topic. The guidance adapts to the teacher's past behavior, student moods and the practices that have resulted in best learning outcomes for their students.

Tall claim is not science

A. S. Panneerselvan

Given the reach of the digital platforms, the Internet desk needs to retain its sense of scepticism when it comes to stories that make claims of a breakthrough in science. If Archimedes, Newton or Einstein were to be proven wrong by an Indian scientist, it would be a front-page story not just for the Indian media but also for the global media. The stature of the scientist would surpass the exalted positions of Nobel Laureates C.V. Raman, Subramanyan Chandrasekhar and Venkatraman Ramakrishnan. This week, the Web platform of this newspaper carried a fantastic story from a news agency, IANS, which stated that a government official in Himachal Pradesh had established the inadequacies of Einstein's mass-energy equation, generating an avalanche of protest from the scientific community. The agency report, "Einstein's mass energy equation inadequate, claims Indian researcher", was a single-sourced, self-promoting interview. It failed to recognise that journalism is a discipline of verification. Bill Kovach and Tom Rosenstiel in their excellent handbook, *The Elements of Journalism*, explain: "In the end, the discipline of verification is what separates journalism from entertainment, propaganda, fiction, or art. Entertainment - and its cousin 'infotainment' - focus on what is most diverting. Propaganda selects facts or invents them to serve the real purpose - persuasion and manipulation. Fiction invents scenarios to get a more personal impression of what it calls truth. Journalism alone is focussed first on getting what happened down right." It is beyond my means to find out why the agency put out this story that failed all journalistic yardsticks. Editorial judgment. The editors of the print editions were cautious and refrained from publishing the story. However, the Internet desk suspended its editorial judgment and carried the story. The Internet desk must realise that there are specific norms and gatekeeping processes that govern medical and scientific stories. What applies to the print applies to the Web too, and there cannot be any leeway in terms of quality or in the rigour of the editorial processes. One of the earliest tricky questions I had to deal with was about reports that dealt with miracle medicines. Dr. Ashwin Motha, Assistant Professor, Family Medicine, Christian Medical College, Vellore, drew my attention to two medical stories in which the reporters were uncritical of certain claims and did not qualify them properly. The reports looked like an endorsement of the claims. When this issue was taken up with the Editor, an internal circular on reporting medical news was issued. The operative part of that circular said: "Medical stories should be complete and carefully verified; cutting corners for whatever reason, including competitive pressures, is impermissible. Please run such stories by the Science Editor or senior health writers before pitching them to the editorial desk. Do not mail these stories to the Net. If you are not a designated health reporter in a bureau, all stories on press releases on medical claims must be routed through one of our senior editorial experts and not filed directly by general reporters. If such a process takes time, so be it: a story could be held over to check the claims made." These directives for medical stories are good signposts for the Internet desk in dealing with science stories. Many reputed science journalists have addressed the question of how journalists can verify if a scientist's claim is true. William J. Sutherland, David Spiegelhalter and Mark A. Burgman, in their publication in *Nature* titled *Policy: Twenty tips for interesting scientific claims*, have given important tips for interpreting scientific claims. Julie Clayton, science journalist and a consultant for SciDev.Net, has a set of guidelines to check the quality of claims and spot the fraudsters. Her suggestions are for reporters, but they are eminently applicable to the desk team handling science stories. Some of her suggestions are: check the quality of peer review, as different journals have different criteria and practices, and the quality of their peer review varies accordingly. Try to find out the limitations of the study: was it too preliminary or too small a sample size to be accepted in a higher quality journal? Be critical if the claim is made in a public statement. How credible is the scientist among his/her scientific peers? Is the scientist based at a recognised scientific institution? How is the study funded? Finding an independent expert to comment is the most reliable way to judge the validity of a study. Be sure of the facts. Science demands evidence. Boyce Rensberger, former director of the Knight Science Journalism Fellowship programme at the Massachusetts Institute of Technology and a veteran science reporter for *The New York Times* and *Washington Post*, while reflecting on science journalism said that science demands evidence. In the absence of evidence, belief cannot be a substitute. He repeatedly stressed that uncertainty is a sign of honest science and reveals a need for further research before reaching a conclusion. "Balanced coverage of science does not mean giving equal weight to both sides of an argument. It means apportioning weight according to the balance of evidence," said Rensberger. By the time the IANS story was removed from The Hindu portal, it had been shared more than 3,500 times on social media, had triggered a non-debate on India's intelligence and the West, and had the scientific community seething in anger. Given the reach of the digital platforms, the Internet desk needs to retain its sense of scepticism when it comes to stories that make claims of a breakthrough or a leap forward in science. Mostly, these claims turn out to be a hoax.

Cannabis can prevent migraines

Medical marijuana reduces the frequency of migraine headaches, scientists revealed. A new study treated 121 migraine patients with cannabis - with 103 reporting a decrease in the number of migraines they suffered each month. The participants' average frequency dropped from 10.4 to 4.6 migraines each month. The study is the first to link medical marijuana to a drop in migraine frequency, according to University of Colorado scientists. Study author Dr Laura Borgelt said: 'There was a substantial improvement for patients in their ability to function and feel better. 'Like any drug, marijuana has potential benefits and potential risks. 'It's important for people to be aware that using medical marijuana can also have adverse effects.' The study examined patients diagnosed with migraines and treated with medical marijuana between January 2010 and September 2014. The patients were being treated at Gedde Whole Health, a private medical practice that specializes in recommending marijuana for a variety of conditions. Nearly two-thirds of the participants had a history of marijuana use at the time of their initial visit. Several forms of cannabis were utilized in the study. The scientists noted inhaled marijuana seemed to be the favorite for treating acute migraines. Meanwhile, edible cannabis - which takes longer to impact the body - was found to prevent headaches. The majority of the patients reported a significant drop in their monthly migraines. There was a substantial improvement for patients in their ability to function and feel better. Like any drug, marijuana has potential benefits and potential risks. Dr Laura Borgelt, of University of Colorado. However, 15 reported the same number and three saw an increase. It is not yet known how exactly marijuana relieves migraines. But, the scientists said cannabinoid receptors are found throughout the body - including the brain, connective tissues and immune system. Those receptors seem to have anti-inflammatory and pain-relieving properties. Furthermore, cannabinoids may also affect critical neurotransmitters - such as serotonin and dopamine. Dr Borgelt said: 'We believe serotonin plays a role in migraine headaches, but we are still working to discover the exact role of cannabinoids in this condition.' While Dr Borgelt called the results 'quite remarkable,' she also stressed the need for more studies in the future. The scientist recommends a study be conducted that is a randomized, placebo-controlled clinical trial - with a marijuana washout period to start. The ideal study would require providing subjects with specific quantities and potency of medical cannabis - while tracking the migraines just like in prescription drug studies. However, Dr Borgelt said such studies cannot currently be conducted because of federal anti-drug laws. Dr Borgelt added: 'If patients are considering medical marijuana they should speak to their health care provider and then follow up so we can track the impact of their overall treatment. 'Open communication is necessary because we need to know how all of these treatments work together.' The study was published in the journal *Pharmacotherapy*.

India to get Asian bank funds, but not V-P post

The \$100 billion Asian Infrastructure Investment Bank (AIIB) backed by China, which formally launched operations in Beijing on Saturday, could start funding projects in India as soon as this year, when it begins to disburse loans. The \$100 billion Asian Infrastructure Investment Bank (AIIB) backed by China, which formally launched operations in Beijing on Saturday, could start funding projects in India as soon as this year, when it begins to disburse loans. The launch of the bank on Saturday in Beijing was attended by representatives from 57 member countries, including India, which will contribute \$8 billion, only second to China's \$ 29.7 billion. Out of the \$1.2 billion that the bank plans to disburse in funds for infrastructure projects in its first year of operations, around half may come to India, sources said, with Delhi putting forward proposals for three to four projects, including roads and power plants. India, like other countries, will, to begin with, put forward its paid-up capital of \$1.6 billion-the rest of the \$8 billion is callable by the bank as required-in five annual instalments, starting with \$334.7 million this year. . The Beijing-based bank will focus on infrastructure financing and will begin issuing loans later this year, starting with coordinating with the Asian Development Bank (ADB) on projects. China's Jin Liquan, a banker and former vice finance minister, was elected president. While India had asked for a vice-presidential post as second largest shareholder, it was ultimately decided that the post would be selected from candidates who apply, on merit. "This is one negotiation I can openly say though we argued for it, personally I was happy to lose that argument," said Additional Secretary in Ministry of Finance Dinesh Sharma, India's representative at the talks, pointing out that India had been a vocal critic of arrangements in the World Bank and IMF virtually guaranteeing posts to specific countries. "Merit is the accepted principle," he said. Asked about earlier concerns whether the bank would be dominated by China, Sharma said the voting structure and diverse membership had ensured this would not be China-dominated. China as largest shareholder under the arrangement has a 26 per cent voting share while India (7.51 per cent), Russia (5.93 per cent) and Germany (4.15 per cent) follow. A 75 per cent super majority would be required for major decisions. Sharma said in the negotiations India had also ensured that projects in disputed areas cannot go forward without the consent of all parties. Worries had been expressed in some quarters as the bank was expected to support some projects in China's 'Silk Road' initiative, which includes a corridor plan to Pakistan through PoK. "We have taken care if anything falls into areas where more than one country has claims, it should not be done without both countries agreeing," he said. Launching the bank, Chinese President Xi Jinping said it would "effectively boost investment for infrastructure in Asia, channel more resources, particularly private investment for infrastructure projects, and promote regional connectivity and economic integration."

Government all set to ease rules for startups to mushroom

Priority will be given to programmes like Start-Up Mission to generate more employment. In India entrepreneurship is no longer being looked down in the guise of a frugal or flexible innovation and the government will take steps to make capital easily available and ease rules to enable startups to flourish, Commerce and Industry Minister Nirmala Sitharaman, said. The government aims to bring a bankruptcy law to improve the ease of doing business in the country, Sitharaman said at the inaugural session of Start-up India programme. The Centre will give priority to programmes like Start Up Mission to generate more employment and engage with entrepreneurs to remove all the burdensome regulations. **Bankruptcy Bill** - The government had introduced the Bankruptcy Bill in Parliament in the recently concluded winter session but could not ensure its passage. A simple and effective corporate insolvency law is important for expediting the winding up of a company, selling its assets and also for revival of sick companies. Easier entry and exit norms are important from the point of view of a startup, too, as there is a likelihood of a good number of them failing. Investors have often criticised the delays involved in the insolvency proceedings in India and the consequent fall in the company's asset value. The number of people looking to start their own ventures have gone up while those seeking government employment have done down, Ms. Sitharaman said. The government has set up a 'fund-of-funds' to help startups and it will not impose any conditions for startups but only act as a facilitator, she said. The government had in August last year set up an India Aspiration Fund as a fund-of-funds to increase the capital availability for startups. **Employment** - Department of Industrial Policy and Promotion Secretary, Amitabh Kant, said employment generation was the government's top-most priority. He said the Start-Up Mission was an important step in this direction. Prime Minister Narendra Modi's visit to the Silicon Valley in the U.S. last year, to interact with the entrepreneurs there, had paid off as it had created several links between Indian and American entrepreneurs, he said. Pointing out that one million people enter the labour force in India every month, World Bank Country Director for India, Onno Ruhl, said the challenge was to create jobs for them. The World Bank was keen to work with the government in ensuring the Start-Up Mission was a success. However, it was important to make sure that the country grows through innovation in the area of frugal engineering using less energy, less water and keeping the air clean. Deep Kalra, founder of the online travel company MakeMyTrip, said with changing times, people now have respect for startups and entrepreneurs and the value they create.

The Hindustan Times

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Startup India: Matching policy regime needed to transform India

Finally, the much anticipated Startup India movement's launch is here. For me, and as much for other stakeholders in the ecosystem of young companies with big ambitions, the event promises to be an exciting. It brings together many dignitaries, media, investors, community leaders and students alike, with a strong international presence from successful entrepreneurs. For a considerable period of time, Nasscom has been pitching strongly for an easier set of rules for startups, with simpler registration and compliance and less burdensome taxation including easier exits for venture investors to ensure that young entrepreneurs are not hobbled by unnecessary regulations. While the proposals submitted have been comprehensive and minutely detailed, one can remain expectant and hopeful that many of these recommendations will finally see the light of day either in today's launch by Prime Minister Narendra Modi or subsequently in the budget due next month. The Indian startup experience has not been too long, and yet we are globally at the number three position, and that is testimony to the rich promise that this sector brings in. The challenges facing India are immense and bring an immense scope to transform the economy and the nation. Huge gaps persist in energy, agriculture, healthcare, financial inclusion and education, to name only a few. Interestingly, the brightest entrepreneurial minds view such "gaps" as opportunities that can be significantly addressed through innovative ideas and their execution. This kind of a positive mindset certainly warrants changes in policy to provide appropriate support for nation building. India's startup ecosystem and its players are maturing at an incredible pace. What the government needs to bring in are what at Nasscom we call the 4Cs - Catalysing, Coaching, Capital and Connect. Startups need to be coached, receive capital to fuel growth and need connections to reach the market. All this needs a catalytic touch. The 4Cs will ignite the spirit of innovation. As they focus on immense change, startups need to spend time on building value for customers, not on paperwork or regulatory compliance. We need policies in place that encourage funding, protect angel investors from unnecessary tax burdens, facilitate removal of bottlenecks and make way for seed capital. This is all about building the "connects". Young men and women on entrepreneurial journeys need to connect not only to customers and the society in general but also the government and policymakers. Many people look forward to the Prime Minister's address to galvanise the Startup India movement as an occasion to create a partnership with startups that represent the spirit of a new India that is innovative in thinking, unfettered in imagination and equipped with a "can-do" frame of mind.

Is Indian Science A Circus?

The irony is that ancient India did have real achievements in science and math. The 103rd Indian Science Congress met in Mysuru this month from the 3rd to 7th. Like last year, this session too was not without its controversies. In 2014, one of the presenters made the claim that there were planes in the Vedic age that could make trans-continental flights. This year, controversy was generated when one of the invited lecturers sought to project Lord Shiva as the 'greatest environmentalist in the world'. Another esteemed panelist, belonging to the IAS, began his presentation by blowing a conch for a full two minutes; he followed this up by claiming that the sound of the conch could eliminate key disorders afflicting humankind. Not surprisingly, 2009 Nobel laureate Venkat Ramakrishnan pithily dismissed the Congress as a 'circus' and vowed never to attend one again. Noted biologist P M Bhargava, founder of the Centre for Cellular and Molecular Biology in Hyderabad, also exasperatedly said that the event had deteriorated over the years and was now 'an absolute waste of money'. There is no doubt that an ancient tradition of excellence in science existed in India. Scholars believe that the Indus Valley Civilisation, that flourished 2,500 years before the Christian era, used a system of weights and measures based on an awareness of the decimal system. It is clear too that the cities of this civilisation could not have been built without knowledge of simple geometry. In later times mathematics emerged as the single largest contribution of India to the world of science. The term ganita, meaning the science of calculation, occurs with great frequency in Vedic literature. As far back as possibly 500 BC, the Jyotish Vedanga used sophisticated methods of calculation to fix the position of the new and full moon and other astronomical inferences. A group of 16 sutras or word formulae were used widely in Vedic times to solve arithmetic and algebraic problems, and attempts are now being made to resurrect this science under the rubric of 'Vedic math'. In later times Hindu astronomers and mathematicians, of whom the most famous were Aryabhata I (5th century), Brahmagupta (6th century), Mahavira (9th century) and Bhaskara (12th century), made groundbreaking contributions to the development and elaboration of mathematical concepts, unknown to the West until the Renaissance or even later. Aryabhata I, for instance, had calculated that the earth revolves around the sun about a thousand years before Galileo was persecuted for the same claim. It is well known that the concept of the zero, called the shunya, and the decimal system, originated in India, and reached the West through the Arabs, who for long called mathematics Hindsat, the 'science of India'. The Syrian astronomer-monk Severus Sebokht wrote with awe in the 7th century of the rational system of mathematics of the Hindus, 'and of their method of calculation which no words can praise strongly enough'. AL Basham, the worldrenowned historian of ancient India, writes that the 'unknown man' who devised the decimal system 'was from the world's point of view, after the Buddha, the most important son of India'. Given this lineage, why is it that today, self-styled evangelists of 'Hindu India' attempt to glorify our past in such jejune and puerile terms? Are outlandish claims, such as 'jumbo planes' fitted with 'ancient radar systems' that have no basis in either history or science and rely solely on mythology, the only way to pay tribute to our scientific heritage? Lord Shiva is the central pillar of Hindu philosophy's audacious leap into the realm of metaphysics. Must he be devalued by projecting him as the 'world's greatest environmentalist'? There could, perhaps, be a discussion on how even Vedic sacrificial altars were built to precise scientific specifications. But, is the blowing of a conch the only way to trumpet such and other path-breaking achievements? Under the section on Fundamental Duties, article 51A (h) of our Constitution enjoins every citizen of India 'to develop the scientific temper, humanism and the spirit of enquiry and reform'. Is this purpose served by Prime Minister Narendra Modi (who inaugurated this year's Congress) when he proclaimed in 2014 that Lord Ganesha's elephant head is proof that advanced cosmetic surgery existed in ancient India, and that the way Kunti conceived in the Mahabharata was evidence of the practice of invitro fertilisation millennia ago? The tragedy is that the evaluation of our remarkable scientific past has fallen prey to a double jeopardy. On the one hand we have right wing Hindutva evangelists who confuse mythology with science and make a mockery of our legitimate scientific achievements. And, on the other hand, we have 'reflex' secularists who see in any reference to our ancient refinements a communal conspiracy. Alas, such an attitude of disdainful dismissal is often rooted in ignorance, mistaken too long for 'modernity'. A random survey could well reveal that many in the metropolitan salons of India, who believe that any reference to ancient India is tantamount to communalism, are so culturally rootless that they cannot even render a line-by-line meaning of the national anthem! The Indian Science Congress, and much of modern India's cultural discourse, will need to find a sane middle ground between these two extremes, in order to do true justice to our civilisational heritage.