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## Defence ministry lists out 23 projects for private industry

New Delhi: In a first, the defence ministry has listed out 23 major projects from the three armed forces— from UAVs, glide bombs to underwater systems and tank engines — it will earmark for the Indian companies under the Make in India category.

The list, which has recently been drawn up by the ministry in consultation with the three armed forces, for the first time shares details of the requirements in the coming years as well the schedule for acquisition, things that were shrouded in secrecy in the past. The new-found openness is being driven by defence minister Manohar Parrikar who has stepped up outreach and is in regular touch with industry bodies and major companies indulged in military manufacturing.



**Bringing Clarity**  
Changing practice of secrecy, Ministry shares details of upcoming requirements and acquisition schedule

The new-found openness is driven by def minister Parrikar who remains in regular touch with industry bodies and major cos

But experts warn that the ministry may need to help industry further in terms of assistance in technology acquisitions

**Major Projects**

125mm smooth bore gun barrel for battle tanks	Targets for torpedo firing	Mine layers and diesel engines for naval boats
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Advance pilotless target aircraft

Among the projects that have been listed out are 125mm smooth bore gun barrel for battle tanks, targets for torpedo firing, advance pilotless target aircraft, mine layers and diesel engines for naval boats. Besides technical specifications of the equipment, the ministry has also specified quantities to make it easier for the industry to plan investments into technology. For example, the IAF has listed its requirement of long-range glide bombs thousand per year and it wants to acquire them at the earliest. Similarly, the Army wants to annually acquire 5 pilotless target aircraft starting next 2-3 years.

"Interested Indian companies are requested to carry out preliminary assessment regarding their technical capability to undertake these projects and economic viability of the project," a ministry of defence concept note reads.

The department of defence production, which is leading the project to attract companies under the Make in India initiative has also said it plans to hold an "interaction seminar shortly with interested companies so as to finalize the list and progress the proposals further".

While the release of specifics by the ministry has brought some clarity to companies planning to invest in new technologies and research and development, experts warn that the ministry may need to help the industry further in terms of assistance in technology acquisitions.

The authorities should offer the requisite technology or else at least help the potential bidders in getting the same, without which these programs will be challenging to execute for the domestic private industry," says Ankur Gupta, Vice President Defence at EY India.

## **‘Make in India’ defence projects no more than 1% of sector’s budget**

*By Nayanima Basu*

*40% of the 23 identified projects worth ₹20 cr or less*

The total value of the 23 Make In India projects identified by the Ministry of Defence for domestic players is said to be less than 1 per cent of the entire Defence Budget.

While 40 per cent of the projects are valued at ₹20 crore or less, only three projects have an annual outlay of ₹300 crore, government sources told *BusinessLine*.

In the current Union Budget ₹2,58,589 crore has been allocated for Defence, excluding pensions. Of this, ₹78,586 crore has been allocated for capital expenditure.

This compares with ₹2,46,727 crore allocated in the last budget, of which ₹2,33,341 crore was spent.

Of the 23 projects, 13 have been identified for the Indian Army, six for the Navy and four for the Air Force. “This is just the first step towards implementing the new Defence Procurement Procedure (DPP) in which the focus is on Make in India. This is not a confirmed list yet. More such projects are in the pipeline,” a top official said.

The official also said that the projects have been identified in such a way that all players, be they big, small or medium enterprises can take part.

### **Two categories**

The Make in India category in the new DPP has been divided into two categories — ‘Buy (Indian)’, with 40 per cent indigenous content, and ‘Buy and Make (Indian)’ having an overall indigenous content of 50 per cent.

The 23 projects fall under both these categories.

According to the official, some of the items mentioned in the 23 projects have a constant demand, such as 125mm smooth bore gun barrels, 1,000HP engines, supersonic aerial targets, diesel engines, ground rockets and glider bombs.

### **Off the shelf**

“These products have steady demand in all the three services. Now, these will be available off the shelf, which is extremely important,” the official added.

Earlier, the government mostly used to import these items, with some manufactured by defence public sectors units and ordinance factories.

In the new DPP, which came into effect from April 2, the Ministry of Defence has introduced a new category of acquisition — Indigenous Design Development and Manufacturing (IDDM). Under this category, indigenously designed equipment with 40 per cent domestic content or equipment with 60 per cent indigenous content will be considered for acquisition. This category will be the most preferred acquisition category.

## **Reliance Defence Gets 15 More Permits across Spectrum**

With 25 industrial licences in its bag, Reliance Defence has emerged as the private sector firm that has the highest number of permits across the spectrum.

A subsidiary of Reliance Infrastructure Limited, the company last week received 15 industrial licences for making a wide array of high technology equipment ranging from heavy weapons, armoured vehicles, ammunition, electronic warfare systems, UAVs and directed energy weapon systems.

Reliance had already got 10 licences before.

Of the 15 new licences given to it, 10 pertain to land systems, three for the naval systems and remaining two covering niche technologies across the defence spectrum, industry sources said.

The key programmes in these segment have budgetary allocation in excess of Rs 50,000 crore, though an order is still far away.

Reliance, a new player in the defence sector, will be competing with a host of established companies like the TATA, L&T, Baba Kalyani Group, Mahindras among others, to get orders.

Reliance Group Chairman Anil Ambani had during the recently held DefExpo claimed that an attempt is being made to deny opportunity to new players on grounds of lack of experience, which he described as a "booby-trap" laid by vested interest to kill competition.

Reliance is eyeing a host of defence deals including Army's plans to spend an additional Rs 50,000 crore over next ten to fifteen years on different combat vehicles, air defence missile systems among others.

Reliance Defence also intends to address a large potential international market for combat vehicles in the Middle East, Africa and South America.

Reliance is aiming at developing an Infantry Combat Vehicle which will not only address the domestic requirement but can also addresses the Global requirements estimated at Rs 350,000 crore (\$50 billion), the sources said.

*Deccan Herald*  
03 May, 2016

## **House panel irked at delay in defence purchase**

*By Dalip Singh*

*Committee says no boost to 'Make in India' programme*

The Parliamentary standing committee on defence has expressed its dismay at defence PSUs inability to offer cutting edge solutions including protective gear for soldiers.

This is against the spirit of Prime Minister Narendra Modi's much publicised "Make in India" campaign to reduce forces reliance on military hardware.

The panel, in its report to be submitted to Parliament, identified grey areas – modernisation of the Army, shortage of ammunition and bullet-proof jackets – to paint a grim picture of perennial shortcomings in procurement policy hugely impacting war preparedness. Commenting on the state of affairs, the committee, headed by BJP MP Maj Gen(rtd) B C Khanduri, stated that equipment become obsolete by time they are purchased and handed over to the Army.

The members' frustration was evident in their concern expressed that more than six years time has lapsed since the defence acquisition council gave its nod for buying more than 1.86 lakh bullet-

proof jackets. Responding to the defence ministry explanation that request for proposal was retracted after three vendors who participated in the trial evaluation of jackets held a year back failed and that 50,000 of them are under procurement stage, the panel registered its disappointment “The committee is disappointed to note that while on one hand the “Make in India” programme envisages to transform India into a global design and manufacturing hub, on the other, no defence public sector undertaking is in a state to offer cutting-edge protective gear for our soldiers,” the yet-to-be-made public report stated.

The committee rued that the “Make in India” concept has not been given a comprehensive shape, barring staggered steps including liberalisation of FDI in defence sector.

There is no “Make in India” project categorisation which would have allowed special allocations for it, due which the panel has suggested specific steps be taken to develop core and critical capabilities in the country.

Analysing import content in equipment produced and developed by indigenous platforms, The Hindustan Aeronautics Ltd depends on foreign supplies for its 44% to 60% of parts. Similarly, ships manufactured by Mazagoan Docks depend on 54% to 72% imports. BEL depends on 41% to 49% import of spares.

The committee has asked the government to fix accountability in case of “inordinate delays” in executing projects under taken by the Defence Research and Development Organisation (DRDO). There are 93 ongoing major projects in DRDO labs, including AWACS, Agni IV, Agni V, Arjun main battle tank and Tejas LCA. Terming regular delays as “deploring attitude”, the panel says there are 45 major projects of more than Rs 100 crore where cost and time revisions have taken place 11 and 16 times respectively.

### **Complaints**

- The members expressed concern over the fact that more than six years time has lapsed since the defence acquisition council gave its nod for buying more than 1.86 lakh bullet-proof jackets
- The committee rued that the “Make in India” concept has not been given a comprehensive shape, barring staggered steps including liberalisation of FDI in defence sector

*The Asian Age  
03 May, 2016*

## **India unlikely to enhance military presence**

India has taken a conscious decision to not enhance its military deployment along the international border with China.

Informing that focus would be laid on improving the connectivity between the two countries through land routes, authoritative security sources dealing with the security scenario of Northeast told this newspaper that China is also willing to invest more on bilateral trade instead of engaging itself in boarder disputes with India.

Asserting that efforts to build cordial ties between the two neighbours has started yielding positive response, security sources said that Armies of both India and China have started meeting frequently to sort out disputes creating tension between the two neighbours.

Pointing out that incidents of border intrusion have come down significantly, security sources said that the Indian government has planned out schemes to increase connectivity through Arunachal Pradesh and Ladakh.

Reeling under the impact of global recession, China has also started investment in India, security sources said, adding that except the defence sector, Chinese companies are turning towards most of the sectors in India.

Both the Armies have also agreed to uphold the treaties and agreements signed between the two nations.

*The Indian Express*  
03 May, 2016

## **Govt defers Agusta-Tata joint venture; FIPB took decision on April 8, day after Milan verdict**

*Last week, The Indian Express reported that Agusta Westland had FIPB approval to start a joint venture facility with Tata Sons, called Indian Rotorcraft Ltd (IRL), for assembly of AW-199Kx helicopters in Hyderabad Aviation SEZ.*

On the day the CBI questioned former IAF chief S P Tyagi over his alleged links to middlemen in the Rs 3,600-crore AgustaWestland chopper deal, the government announced it had deferred a decision on increase in FDI in AgustaWestland's joint venture with Tata Sons to assemble helicopters in India.

It was one of the five proposals deferred on the recommendations of the Foreign Investment Promotion Board (FIPB) which met on April 8 — no other reason was cited by the government. The Milan court verdict, handing prison terms to former chiefs of Finmeccanica and AgustaWestland, came on April 7.

Last week, The Indian Express reported that AgustaWestland had FIPB approval to start a joint venture facility with Tata Sons, called Indian Rotorcraft Ltd (IRL), for assembly of AW-199Kx helicopters in Hyderabad Aviation SEZ.

While the JV is yet to begin operations, the assembled helicopters were to be exported to the Italian company for sale to customers. The IRL had also told The Indian Express that this venture had no connection to the IAF purchase of AW101 helicopters, now at the centre of a political row with the deal being probed by Indian agencies following allegations of payoffs.

### **Also read: Defence Ministry says all AgustaWestland shops shut, but Tata JV got its ok**

A Finance Ministry statement Monday said the joint venture had sought post facto approval of the FIPB for increased FDI inflow of Rs 19.64 crore as against Rs 17.6 crore approved in September 2011.

According to the statement, the IRL proposal of “post facto approval for the increased FDI inflow of Rs 19.64 crore as against the approved FDI inflow of Rs 17.6 crore, vide approval letter dated 21.09.2011, and change of the foreign investor from AgustaWestland S.p.A, Italy to Finmeccanica S.p.A by way of merger of M/s AgustaWestland S.p.A, Italy into Finmeccanica S.p.A” had been deferred.

Until late Monday night, the IRL did not respond to a queries sent by email on the FIPB recommendation.

Last week, the IRL told The Indian Express that the proposal approved in September 2011 was for AW-119Ke helicopters, but the model was upgraded to AW-199Kx and fresh approval was granted by FIPB on September 19, 2013. The approval for the assembly unit of AW-199Kx at IRL was granted by FIPB in October 2015. The industrial licence for production, which was issued by Department of Industrial Policy & Promotion (DIPP) in 2012 for two years, has expired and the company had already applied for it again.



## **RAJAN IS NEW COMMANDER OF COAST GUARD REGION**

**INSPECTOR** General Rajan Bargorta, TM took over as the new Commander Coast Guard Region (East) from Inspector General SP Sharma PTM & BAR, TM who retired on April 30 after completing more than three and a half decades of Coast Guard Service. The handing over ceremony was held at the Coast Guard Air Station with full military honours in a befitting manner.

*The Indian Express*  
02 May, 2016

## **Scorpene takes to water but India needs more submarines quickly**

*By Pranav Kulkarni*

*The sea trials of the first Scorpene, which mark a movement on the development cycle of the submarine, needs to be followed by an accelerated implementation of the plan already in place.*

‘Kalvari’, the first of the Scorpene class submarines, built at the Mazagon Dock Shipbuilders Ltd Mumbai (MDL), went to sea for the first time on Sunday. According to the details given out by MDL, the submarine sailed out at about 1000 hours under her own propulsion for the first sea trial, off the Mumbai coast and during the sortie, completed a number of preliminary tests on the propulsion system, Auxiliary Equipment and Systems, Navigation Aids, Communication Equipment and Steering gear. The submarine then returned to harbor in the evening after having undergone the standard operating procedures.

The maiden sea trial of the first Scorpene submarine certainly marks a milestone in the development phase of this conventional submarine. And while the trials will be followed by a number of other sea trials such as surface trials, diving trials, weapon trials, noise trials besides others which would test the submarine to the extremes of its intended operating level, the phase paves way for five other subs which will follow the lead of Kalari.

India joined the exclusive group of submarine constructing nations on February 7, 1992, with the commissioning of the first Indian built submarine INS Shalki. Mazagon Dock then went on to commission another submarine, INS Shankul, on May 28, 1994. And while these submarines are still in service even two decades after they were commissioned, the worrying fact is the dwindling number of submarines in India’s sub-surface arm.

In 1999, the Indian Navy drew a Submarine Acquisition Plan, a 30 year roadmap that had envisaged 12 submarines by 2012 and the number was expected to double by 2029. Thanks to the delays in acquisition, the plan is nowhere near completion. In fact, the number of operational submarines in the Indian Navy are down to a handful, owing to the mishaps that marred the operational capability of the existing platforms. While its only nuclear submarine INS Chakra was leased from Russia, leasing of the second submarine and the actual induction of India’s own under- development submarine is yet to be a reality.

The sea trials of the first Scorpene, which mark a movement on the development cycle of the submarine, needs to be followed by an accelerated implementation of the plan already in place. The most immediate being project 75 i, a follow up of the Scorpene class which is derailed due to the delay in announcing Make in India guidelines in the Defence Procurement Procedure. Whether the government follows up with the pace it promised, thus remains to be seen.

Timeline and details:

- The ongoing project for the construction of six Scorpene class submarines, has M/s DCNS of France, as Collaborator and includes 'Transfer of Technology', with M/s MDL as the 'Builder'.
- Kalvari would be commissioned into the Indian Navy as INS Kalvari later this year.
- The state-of-art features of the Scorpene include superior stealth and the ability to launch a crippling attack on the enemy using precision guided weapons. The attack can be launched with torpedoes, as well as tube launched anti-ship missiles, whilst underwater or on surface. The Stealth features give it invulnerability, unmatched by many submarines.
- The Scorpene Submarine is designed to operate in all theatres including the Tropics. All means and communications are provided to ensure interoperability with other components of a Naval Task Force. It can undertake multifarious types of missions typically undertaken by any modern submarine i.e Anti-Surface warfare, Anti-Submarine warfare, Intelligence gathering, Mine Laying, Area Surveillance etc.
- The Scorpene is equipped with Weapons Launching Tubes (WLT), and can carry weapons on board which can be easily reloaded at sea, through special handling and loading equipment. The array of weapons and complex sensors fitted on board the Scorpene are managed by a high technology Combat Management System, which integrates various diverse systems fitted onboard into One Formidable Whole.

### **'Kalvari': The Tiger Shark**

Kalvari is the dreaded Tiger Shark, a deadly deep sea predator. As is the tradition, ships and submarines of the Navy, are brought alive after decommissioning. The first Kalvari, which was also the first Indian submarine, was commissioned into the Indian Navy on December 8, 1967. She was decommissioned on May 31, 1996 after almost 30 years of yeoman service to the nation. In true nautical traditions, she will now be re-incarnated, by Mazagon Dock, once again a powerful predator of the deep, guarding the vast maritime interests and areas of our nation.

*The Hindu*  
*03 May, 2016*

## **Submarine lacks key weapon systems**

*Kalvari, the first of Project-75 Scorpene submarines weighing about 1,600 tonnes, sailed out of Mumbai harbour on Sunday for sea trials.*

Sixteen years after the Navy last inducted a submarine, it is set to commission a new line of conventional submarines by year end but for some time they will operate without their crucial weapon systems, torpedoes, procurement of which are yet again caught up in allegations of wrongdoings.

Kalvari, the first of Project-75 Scorpene submarines weighing about 1,600 tonnes, sailed out of Mumbai harbour on Sunday for sea trials and is scheduled to be commissioned into the Navy in September. However, the procurement of heavy weight torpedoes from Whitehead Alenia Sistemi Subacquel of Italy, a subsidiary of defence major Finmeccanica has been stuck due to the VVIP chopper scam and ongoing ban on the company and its subsidiaries. The Navy last inducted a conventional diesel-electric submarine, INS Sindhushastra, procured from Russia in July 2000.

“During the next few months, the submarine will undergo a barrage of sea trials, including surface trials, diving trials, weapon trials, noise trials etc. which would test the submarine to the extremes of its intended operating envelop,” a senior officer said, terming the development a significant moment for the Navy.

### **Vigorous tests**

As this is the first submarine in the series, the tests will be very rigorous and based on the observations the trials of the remaining submarines can be streamlined and accelerated, he added.

The remaining five submarines, being manufactured by Mazagaon Dock Limited are to be launched at nine-month intervals.

However all is not gloom for the submarines. In addition to torpedoes, they also carry charges and Exocet anti-ship cruise missiles launched from torpedo tubes. The Navy is critically short of submarines, the most potent Naval platforms.

There are 13 operational submarines and with regular maintenance and turnaround times the actual availability will be much less. In addition six of them are set to undergo an extensive midlife upgrade, which takes about 2-3 years per boat, further cutting down the numbers.

*International Business Times*  
*02 May, 2016*

## **India, US to focus on anti-submarine warfare with eye on China**

India and the United States are reportedly set to hold talks on anti-submarine warfare (ASW) with an eye on China, in a sign of growing defence cooperation between the two nations. India and the U.S. had agreed "in principle" last month to share military logistics.

Anti-submarine warfare will be the focus of the next joint exercises between the two countries in June in the northern Philippine Sea, a source from the Indian Navy told Reuters. The cooperation comes in the face of growing Chinese naval dominance in the Indian Ocean, with Chinese submarines being frequently tracked as close as the Andamans and Nicobar islands.

"These types of basic engagements will be the building blocks for an enduring Navy-to-Navy relationship that we hope will grow over time into a shared ASW capability," a U.S. official told the news agency.

Cooperation on as sensitive military technology as anti-submarine warfare points to growing military relations between India and the U.S. American Defence Secretary Ashton Carter, who visited India last month, had announced that the two countries had agreed "in principle" to conclude the Logistics Exchange Memorandum of Agreement, which would entail the use of each other's land, air and naval bases for refuelling and repairs.

Carter and Indian Defence Minister Manohar Parrikar had also discussed the setting up of a new bilateral Maritime Security Dialogue.

Cooperation on anti-submarine warfare comes in the light of India's indigenous development of submarines, and concerns that China may use attack submarines to monitor Indian submarines' movement.

India is currently in the process of inducting its first indigenous nuclear submarine, INS Arihant, into the Indian Navy's fleet. On Sunday, the Indian Navy carried out sea trials of its first indigenous Scorpene-class stealth submarine INS Kalvari.

## **With Chinese Submarines Spotted Near Andamans, India Turns to US**

India and the United States are in talks to help each other track submarines in the Indian Ocean, military officials say, a move that could further tighten defense ties between New Delhi and Washington as China steps up its undersea activities.

Both the United States and India are growing concerned at the reach and ambition of the Chinese navy, which is taking an increasingly assertive stance in the South China Sea and is challenging India's domination in the Indian Ocean.

Indian naval officials say Chinese submarines have been sighted on an average four times every three months. Some are seen near India's Andamans and Nicobar islands that lie near the Malacca Straits, the entry to the South China Sea through which more than 80 percent of China's fuel supplies pass.

New Delhi, shedding its decades-old reluctance to be drawn into America's embrace, agreed last month to open up its military bases to the United States in exchange for access to weapons technology to help it narrow the gap with China.

The two sides also said their navies will hold talks on anti submarine warfare (ASW), an area of sensitive military technology and closely held tactics that only allies share.

An Indian naval spokesman declined to comment on the proposed anti-submarine warfare cooperation with the United States.

But an Indian naval source, briefed on the discussions, said the focus of the next set of joint exercises to take place in the northern Philippine Sea in June will be on anti-submarine warfare.

Japan, a close US ally whose submarines are believed to track Chinese submarines in the western Pacific, will also be a participant in the exercises.

India is also preparing to launch its first locally-built submarine armed with nuclear tipped missiles.

So just as US attack submarines are seeking to track the Chinese nuclear armed submarines in the Pacific, the Chinese are expected to send their own attack submarines to the Indian Ocean in greater numbers to scrutinize the Indian patrols.

Collin Koh, a submarine expert at Singapore's S. Rajaratnam School of International Studies, said increased US submarine and surveillance activity was being seen across the region.

"We will see the Indian Ocean grow in importance, too, particularly around traditional chokeholds, such as the approaches to the Malacca Straits and the Nicobar islands, so an improved US relationship with the major submarine player in the area, India, is very significant," Mr Koh said.

China for its part is seeking to secure its energy and trade transportation links by building ports and other infrastructure for countries such as Sri Lanka that lie along the vital shipping route.

Asked about collaboration between India and the United States on submarine warfare, Hua Chunying, a spokeswoman for China's Foreign Ministry, said China had noted countries in the region engaging in military cooperation.

"We hope that the relevant cooperation is normal, and that it can be meaningful to the peace and stability of the region," she said.

## **Beijing unveils doctrine to counter U.S. ‘Pivot’**

*Formal invite to its neighbours in framing a security governance model with "Asian features".*

China has announced the failure of the “Rebalance” strategy of the United States, and has invited Asian countries to join Beijing in framing a security governance model with “Asian features”.

China’s formal invite to neighbours to pursue a regional security doctrine that is led by Beijing, and not the United States, came during last week’s foreign ministerial Conference on Interaction and Confidence Building Measures in Asia (CICA) in the Chinese capital.

### **Xi’s call to step up dialogue**

A commentary in the *People’s Daily*, China’s official newspaper, pointed out that at the welcome ceremony of the CICA conference, President Xi Jinping urged participants “to build consensus and step up dialogue” to foster “a security governance model with Asian features.” The write-up said that the “new model” is the latest contribution China has made to regional governance.

Details about what could emerge as China-centric collective security architecture in the Asia-Pacific is still a work-in-progress. *The People’s Daily* commentary, for instance, only mentioned that, “‘Asian features’ include openness and inclusiveness, and China strongly opposes exclusivity.”

### **“As ‘Pivot to Asia’ failed”**

The write-up grounded the rationale for its new initiative, on the failure of the “Pivot to Asia” or “rebalance” doctrine of the Obama administration. It asserted that “the launch of the Asia-Pacific Rebalance strategy by the U.S. in recent years did not bring Asia peace, but only uncertainty.” It added: “It proved that a U.S.-led alliance system is not the right option to safeguard the peace and stability of Asia. Instead, a system of security governance with Asian features, as suggested by China, will be best for Asian development.”

### **But stiffness in ties vis-à-vis SCS**

Yet, the stiffness in ties with some of its Asian neighbours, especially Vietnam and the Philippines over rival territorial claims in the South China Sea (SCS), suggests that the Chinese may have flagged a new initiative, but they must now be prepared for the long haul, in order to achieve tangible results.

Tensions between the U.S and China have spiked, after the Chinese responded to the “Pivot to Asia” with fresh activism in the SCS, including construction of artificial islands within waters claimed and controlled by Beijing. Washington has dubbed the growing Chinese assertion as a danger to “freedom of navigation” which could hamper the 5.3-trillion dollar trade that passes through the SCS — a charge that Beijing hotly denies.

### **‘Frank talk on SCS issue’**

Aware of the linkage between the SCS disputes and the acceptance of its doctrinal counter to the U.S. “Rebalance”, the commentary points out that Chinese leaders, during the CICA conference, had “a frank talk about the South China Sea issue and reiterated China’s ‘dual-track approach,’ calling for relevant countries to work together with China to safeguard peace and stability.”

The write-up also stressed that China’s regional security model, will continue to strive for the integration of the Chinese Dream — China’s aspirational goal for energising “national rejuvenation” — and the Asian Dream “to create a brighter future for Asia.”

## **Regional diplomatic offensive**

In the run-up to the espousal of its new doctrine, the Chinese have launched a regional diplomatic offensive to reinforce that an Asian homegrown solution was the best way to resolve SCS disputes, rather than interference by “outside” powers.

Last month Chinese Foreign Minister Wang Yi embarked on a whirlwind visit to Cambodia, Laos and Brunei, to cull out, what the Chinese Foreign Ministry described is “an important consensus” on the SCS

issue, which would be relevant to the 10-member Association of South East Asian Nations (ASEAN). The Ministry said that China has agreed with Brunei, Cambodia and Laos that the South China Sea territorial

dispute should not impact on Beijing’s ties with the ASEAN.

## **Russia too kept in the loop**

China’s diplomatic exertions have also paid off well with Russia, whose Foreign Minister, Sergey Lavrov stressed in Beijing on Friday that the SCS issue should not be “internationalized.”

*Business Standard*  
03 May, 2016

## **India Inc faces a cyber attack every 10 hours**

*India continues to rank as the third top source of overall malicious activity including spam, malware, phishing hosts and bots*

Even as Indian enterprises are increasingly going online, there has been a notable uptick in the number of attacks, especially targeting the small and medium businesses as most of them are not well protected.

According to a recent report by security software firm Symantec, November 2015 was most vulnerable month for India Inc when, on an average, 2.5 targeted attacks took place every day.

There has been a steady rise in attacks targeting businesses with less than 250 employees, in the past five years. “In 2015, one in two attacks (52 per cent) were aimed at small businesses in India, proving that companies of all sizes are at risk. Attackers motivated purely by profit can be just as technically sophisticated and well-organised as any nation state-sponsored attacker.”

India also continues to be one of the top sources of cyber attacks. In 2015, the country ranked 18th as a source of spam, an improvement considering that it ranked sixth in 2014. It, however, continues to rank as the third top source of overall malicious activity including spam, malware, phishing hosts and bots.

Some of the factors that are propelling this include large young population, millions of mobile connections and rapid adoption of cloud and integration of information and communications technology in critical infrastructure.

“The report reveals how lucrative India is for cyber criminals,” said Tarun Kaura, director (solution product management) for Asia-Pacific and Japan at Symantec.

“In fact, India is the second most favoured destination for ‘ransomware’ in Asia with the average number of attacks increasing 114 per cent to 15 per hour. Almost 10 per cent of these attacks were crypto-ransomware, posing a threat to consumers and enterprises alike.”

The government is also looking to increase cyber security in the country to protect people and enterprises from cyber terrorism. It is in the process of recruiting, on contractual basis, cyber security experts and partner with top international cyber security firms.

In December 2014, an expert group constituted by the home ministry submitted its report on Roadmap for Effectively Tackling Cyber Crimes in the Country after examining the global best practices.

As a result of all this, cyber security is also fast becoming a major growth area for Indian industry. According to industry body Nasscom, it would be a major revenue and job creator for the country going forward. By 2020, it has projected the cyber security sector to fetch revenues of \$35 billion apart from creating a million new jobs.

“We estimate cyber security is \$2.5-3 billion or about two per cent of the \$150-billion Indian information technology (IT) sector. With the IT sector on track to reaching \$350 billion by 2025, we estimate 10 per cent of this to come from cyber security,” Rajendra Pawar, chair, Nasscom Cyber Security Task Force, said recently.

### **Cyber threat**

- India 3rd biggest source of malicious activity online
- In 2015, a large business attacked once was likely to be attacked again; risk of attack for a small business was six times more
- India records 15 ransomware attacks per hour
- Every 6th social media scam impacts an Indian

*Deccan Herald*  
03 May, 2016

## **Thanks to ISRO, we have our own GPS**

With the successful launch of IRNSS-1G, the seventh and final of the satellites that form the Indian regional navigation satellite system, India now has its own global positioning system (GPS). Isro has again made the country proud by providing it with an indigenously designed navigation system. Only the US, Russia and China have their own systems now. The European Union and Japan are developing their own systems. The Indian GPS, called Navic (Navigation with Indian satellite constellation), has been in the making for long. The first IRNSS satellite was launched in 2013. The delay in launching subsequent satellites caused some loss of satellite time as all these satellites have a life of 10 years. But Isro did well to launch the last 3 this year. The need for a reliable GPS system need not be reiterated. India became acutely aware of the need for its own system during the Kargil war when the US refused to provide the country with the GPS data of the region.

The IRNSS will provide two kinds of services. The standard positioning service is for civilian use and the restricted encrypted service is for the armed forces. It will take some more time for the system to be fully operational as more tests are needed in all 3 segments of space, ground and receivers. Once it becomes functional, the applications are varied: terrestrial, aerial and marine navigation, tracking of vehicles and fleet management, directions for hikers and travellers, disaster management, integration with mobiles and spatial mapping of territories where its footprint falls. It gives a positional accuracy of 10 metres, which may be improved over time. The cost will also come down in future. Navigation signal receivers will have to be made by manufacturers for wider use of the system. With the use of a smart chip in a mobile or a positioning device communication is possible with the satellite all time.

There is a suggestion that the use of Navic should be mandated by the government in all its agencies and emergency systems. This may encourage the production of signal receivers. It is also possible to develop various apps for a number of areas by integration with mobile systems. In many ways, the country has made a remarkable leap with the development of Navic. Its range is limited to 1,500 km beyond India's borders. The US, Russian and Chinese systems have a global reach with 30-40

satellites in orbit. The Indian system will have to be upgraded and expanded in course of time so that it becomes global. The country's growing commercial and strategic interests will necessitate such expansion.

*The Hindu*  
*03 May, 2016*

### **3 ‘potentially habitable’ planets discovered**

Paris: An international team of scientists said on Monday that they had discovered a trio of Earth-like planets that are the best bet so far for finding life outside our solar system.

The three orbit a dwarf star a mere 39 light-years away, and are likely comparable in size and temperature to Earth and Venus, they reported in a study, published in Nature.

“This is the first opportunity to find chemical traces of life outside our solar system,” said lead author Michael Gillon, an astrophysicist at the University of Liege in Belgium.

The planets had the “winning combination” of being similar in size to Earth, “potentially habitable” and close enough so their atmospheres can be analysed with current technology, he said.

Mr. Gillon and colleagues calibrated a 60-centimetre telescope in Chile, known as TRAPPIST, to track several dozen dwarf stars neither big nor hot enough to be visible with optical telescopes.

They zeroed in on a particularly promising one — now known as TRAPPIST-1 — about one eighth the size of the Sun, and significantly cooler.

The astronomers noticed that its infrared signal faded slightly at regular intervals, evidence of objects in orbit. Analysis confirmed they were exoplanets — planets revolving around stars outside our solar system.

The innermost two circle their dwarf star every 1.5 and 2.4 days. The more distant orbit of the third planet takes between four and 73 days.

*Business Standard*  
*02 May, 2016*

### **Novel 3D printed lens can detect terahertz frequencies**

Scientists have 3D printed a novel lens for terahertz frequencies which may lead to high resolution scanners that can detect biological weapons such as anthrax and plastic explosives.

The lens could make terahertz imaging, which is useful for security, cheaper, higher resolution, and more available. While X-rays can detect metal, they cannot detect plastic or chemicals. Terahertz scanners, however, can detect both of items to discover concealed weapons, biological weapons such as anthrax, and plastic explosives. Unlike X-rays, terahertz radiation is completely harmless to humans, researchers said.

"This advance means we can unveil previously inaccessible information of some opaque materials in high resolution," said Wei Cao, from the Oklahoma State University in US.

"This opens up an entirely new technique for a massive range of potential uses from biomedical research to security," he said.

The new lens has better imaging capabilities than common lenses, and opens the door for more advances in the mysterious realm of the terahertz, researchers said.

"Typical lenses - even fancy ones - have many, many components to counter their intrinsic imperfections," said Cheng Sun, associate professor at the Northwestern University.

"Sometimes modern imaging systems stack several lenses to deliver optimal imaging performance, but this is very expensive and complex," Sun said.

The new lens employs a gradient index, which is a refractive index that changes over space to create flawless images without requiring additional corrective components. The lens is made from a novel metamaterial that exhibits properties not readily available in nature.

"Such properties originate from its tiny structures that are much smaller than the terahertz wavelength," said Fan Zhou, a member of Sun's laboratory.

"By assembling these tiny structures, we can create specific refractive index distribution," Zhou said.

The lens was manufactured with a 3D printing technique called projection micro-stereo-lithography. The technique enables a scalable, rapid and inexpensive way to produce the tiny features that are needed for the lens to operate at the terahertz frequency band. The printing technology allowed the researchers to fabricate the metamaterial to precisely fit their designs.

"For printing, we use a photo-polymer in liquid form. When we shine a light on the material, it converts it into a solid," Sun said.

"The material forms to the shape of the light, allowing us to create a 3D structure. You cannot accomplish a gradient index with traditional manufacturing processes," he said.

*The Asian Age*  
*03 May, 2016*

## **LHC: Possibility of new particle discovery**

### **Was it a blip, or a breakthrough?**

Scientists around the globe are revved up with excitement as the world's biggest atom smasher — best known for revealing the Higgs boson four years ago — starts whirring again to churn out data that may confirm cautious hints of an entirely new particle. Such a discovery would all but upend the most basic understanding of physics, experts say.

The European Centre for Nuclear Research, or Cern by its French-language acronym, has in recent months given more oomph to the machinery in a 27-km underground circuit along the French-Swiss border known as the Large Hadron Collider. In a surprise development in December, two separate LHC detectors each turned up faint signs that could indicate a new particle, and since then theorising has been rife. "It's a hint at a possible discovery," said theoretical physicist Csaba Csaki, who isn't involved in the experiments. "If this is really true, then it would possibly be the most exciting thing that I have seen in particle physics in my career — more exciting than the discovery of the Higgs itself." After a wintertime break, the Large Hadron Collider, or LHC, reopened on March 25 to prepare for a restart in early May. Cern scientists are doing safety tests and scrubbing clean the pipes before slamming together large bundles of particles in hopes of producing enough data to clear up that mystery. Firm answers aren't expected for weeks, if not until an August conference of physicists in Chicago known as ICHEP. On Friday, the LHC was temporarily immobilised by a weasel, which invaded a transformer that helps power the machine and set off an electrical outage. Cern says it was one of a few small glitches that will delay by a few days plans to start the data collection at the \$4.4 billion collider. The 2012 confirmation of the Higgs boson, dubbed the "God particle" by some laypeople, culminated a theory first floated decades earlier. The "Higgs" rounded out the Standard Model of physics, which aims to explain how the universe is structured at the infinitesimal level. The LHC's Atlas and Compact Muon Solenoid particle detectors in December turned up preliminary readings that suggested a particle not accounted for by the Standard Model might exist at 750 Giga electron Volts. This mystery particle would be nearly

four times more massive than the top quark, the most massive particle in the model, and six times more massive than the Higgs, Cern officials say.

The Standard Model has worked well, but has gaps notably about dark matter, which is believed to make up one-quarter of the mass of the universe. Theorists say the December results, if confirmed, could help elucidate that enigma; or it could signal a graviton — a theorised first particle with gravity — or another boson, even hint of a new dimension. More data is needed to iron those possibilities out, and even then, the December results could just be a blip. But with so much still unexplained, physicists say discoveries of new particles — whether this year or later — may be inevitable as colliders get more and more powerful. Dave Charlton, who heads the Atlas team, said the December results could just be a “fluctuation” and “in that case, really for science, there’s not really any consequence ... At this point, you won’t find any experimentalist who will put any weight on this: We are all very largely expecting it to go away again.”

“But if it stays around, it’s almost a new ball game,” said Charlton, an experimental physicist at the University of Birmingham in Britain. The unprecedented power of the LHC has turned physics on its head in recent years. Whereas theorists once predicted behaviours that experimentalists would test in the lab, the vast energy being pumped into CERN’s collider means scientists are now seeing results for which there isn’t yet a theoretical explanation.

“This particle — if it’s real — it would be something totally unexpected that tells us we’re missing something interesting,” he said. Whatever happens, experimentalists and theorists agree that 2016 promises to be exciting because of the sheer amount of data pumped out from the high-intensity collisions at record-high energy of 13 Tera electron Volts, a level first reached on a smaller scale last year, and up from 8 TeVs previously. (Cern likens 1 TeV to the energy generated by a flying mosquito: That may not sound like much, but it’s being generated at a scale a trillion times smaller.) In energy, the LHC will be nearly at full throttle — its maximum is 14 TeV — and over 2,700 bunches of particles will be in beams that collide at the speed of light, which is “nearly the maximum,” Cern spokesman Arnaud Marsollier said. He said the aim is to produce six times more collisions this year than in 2015. “When you open up the energies, you open up possibilities to find new particles,” he said. “The window that we’re opening at 13 TeV is very significant. If something exists between 8 and 13 TeV, we’re going to find it.”

Still, both branches of physics are trying to stay sceptical despite the buzz that’s been growing since December. Csaki, a theorist at Cornell University in Ithaca, New York, stressed that the preliminary results don’t qualify as a discovery yet and there’s a good chance they may turn out not to be true. The Higgs boson had been predicted by physicists for a long time before it was finally confirmed, he noted.

“Right now it’s a statistical game, but the good thing is that there will be a lot of new data coming in this year and hopefully by this summer we will know if this is real or not,” Csaki said, alluding to the Chicago conference. “No vacation in August.”

*Deccan Herald*  
03 May, 2016

## **'Game-changing' new antibiotic created**

Scientists, including one of Indian-origin, have successfully produced 2 synthetic derivatives of "game-changing" Teixobactin - the world's first known antibiotic capable of destroying drug resistant bacteria. Teixobactin, which kills a range of pathogens without detectable resistance, was isolated from microorganisms found in soil - the natural source of nearly all antibiotics developed since the 1940s, researchers said. Last year, the discovery of the antibiotic Teixobactin by researchers in the US was hailed as a 'game-changer' in the fight against antimicrobial resistance, they said.

In order for it to be developed as a potential drug treatment, several versions of the antibiotic must be produced via chemical synthesis in order to overcome the hurdles of drug development. Now, researchers from University of Lincoln in the UK have become the first group of scientists to synthetically produce two derivatives of Teixobactin.

"Teixobactin originally evolved in soil to kill the bacteria around it, so our challenge was to produce the antibiotic synthetically," said Ishwar Singh from University of Lincoln.

"The method we created to do this uses commercially available 'building blocks' and has a single purification step," said Singh.

"We are now able to present the total synthesis of two derivatives of Teixobactin," he said.

*The Hindustan Times*  
03 May, 2016

## ANTARCTICA'S HIDDEN WORLDS

**Scientists say they may have discovered a large lake beneath the Antarctic continent, one that may hold life that has lain undisturbed for millions of years**



### DIGGING DEEP

The research team, including scientists from Imperial College London and researchers from USA and China, studied satellite imagery that showed grooves on the ice surface similar to those present above other sub-glacial lakes

**These grooves or channels** are in a region called Princess Elizabeth Land

### FURTHER RESEARCH

The team believes the lake is connected to a canyon system of channels that extends some 1,000km

### A GREAT LAKE

The lake is around 100km long and 10km wide, but isn't the first or largest to be discovered under the frozen continent

Lake Vostok, 240km by 60km in size, is the largest such lake. What sets the new lake apart is its proximity to a research station

If the existence of the lake and the channels is confirmed, it will be a major boost for Antarctic science and the life such sub-glacial lakes may harbour.