SP's

AN SP GUIDE PUBLICATION

DEFEXPO INDIA 2010 OFFICIAL PUBLICATIONS

DAY-1

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Defence Exhibition Organisation
Ministry of Defence
Government of India

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DEFEXPO INDIA 2010 OFFICIAL DAILY

PUBLISHERS OF: SP'S MILITARY YEARBOOK, SP'S AVIATION, SP'S AIRBUZ, SP'S LAND FORCES & SP'S NAVAL FORCES

SPOTLIGHT

» INSIDE «

CONGRATULATIONS!

Decisively sweeping away earlier scepticism emanating from certain quarters about the very planning and implementation of this year's chapter of the Defexpo, the event has emerged with a resounding bang under the remarkable steersmanship of the Defence Exhibition Organisation (DEO). Assuming the mantle of the sole organiser of this international event, DEO (a wing of the Ministry of Defence) has infused every single administerial procedure of Defexpo 2010—from exhibitor registration to website (http://www.defexpoindia.in/) development—with admirable professionalism and flawless execution. SP's congratulates the DEO for this remarkable feat and looks forward to four days of engrossing and unhindered industrial and business exchange!

DEFEXPO 2010 OPENS

India's projected arms spend: $100 bn over 10 years

By Vishal Thapar

Size, evidently, does matter. And India is making a statement about the size of its defence market at the sixth edition of Defexpo, the biennial Land and Naval Defence Systems Exhibition, which is being touted as largest defence exposition in Asia. Industry estimates peg India's arms spend at $100 billion (Rs 4,62,850 crore) over the next 10 years. "The Boeing-addressable business alone is $31 billion (Rs 1,43,917.5 crore) in the next 10 years," declares Dr Vivek Lall, Vice President of Boeing Defence, Space and Security. With Defence Minister A.K. Antony flagging off the four-day event today, the arms bazaar has descended on Delhi.

A whopping 650 exhibitors from 33 countries will flog their wares to the Indian armed forces, now clearly spoilt for choice. Israel, which is rapidly challenging Russia's pre-eminence as the principal arms supplier to India, is the largest exhibiting nation in terms of the area covered at Defexpo. Also making rapid inroads is the US, which has the maximum number of participants.

Even while defence industry majors jostle for the attention of the decision makers, a glimpse of the booming business in the background is the international contest for two multi-billion dollar tenders for 400 towed artillery guns and 197 utility helicopters, trials for which are set to begin.

Homeland security and space are set to emerge as the next big money spinners. India hopes its domestic industry smells the opportunity and uses Defexpo as a platform for striking partnerships with world leaders. "The large turnout indicates the keenness of the international defence industry to have a base out of India," says Dr M.M. Pallam Raju, the Minister of State for Defence.

Availability of money is the biggest motivator. This year alone, out of the Defence Budget of

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Straight Talk

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'L1 key criterion for procurement'

DR M.M. PALLAM RAJU
MINISTER OF STATE FOR DEFENCE

'BAE ready to support FMS for M777'

Andrew Gallagher, President, BAE Systems

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HINODE Technologies specialises in the application of advanced technology to ensure that the clients engineering function fully meets the ever demanding requirements of the market.

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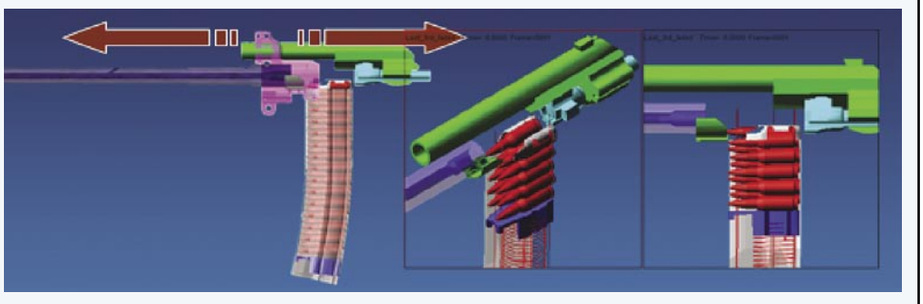

HINODE is focused on helping customers reduce time and costs in the design and manufacture cycle using the most advanced computer aided engineering (CAE) tools available, that have been developed for the engineering of complex components through complete system (defence, aerospace, automotive, rail, etc).

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"We have proven experience of providing advanced simulation, analysis, and Engineering services to the Defence sector – land, naval and aero system," says Ambuj Sharma, Director, HINODE. "Further along with partner JMS, HINODE has firm plans to enter into manufacturing of advanced electronics systems for the Defence customers," he adds.

For further details about HINODE Technologies visit *www.hinodeindia.com.* •

COFFEE BREAK

Eat Out

NORTH INDIAN CUISINE

Haveli: Hotel Taj Mahal
Phn: 23026162 **Timings:** 12:30 pm - 2:45 pm and 7:30 pm - 11:45 pm
Gulati: 6, Pandara Road
Phn: 23388836, 23782949
Pind Balluchi: 13 Regal Building, Connaught Place
Phn: 43720507 / 9650494994

CHINESE CUISINE

Berco's: Connaught Place
Phn: 43731111, 43731122, 43731133
Fa Yian: Connaught Place

MUGHLAI CUISINE

Karim's: Nizamuddin
Phn: 23264981: **Timings:** 12 noon to 3.30 pm, 6.30 to 11.30 pm
Nizam's: Connaught Place
Phn: 2332 1953

SOUTH INDIAN CUISINE

Sagar Ratna: Defence Colony Market **Phn**: 24333110, 24333440
Dakshin: District Center, Saket
Phn: 26521122
Saravana Bhavan: Connaught Place **Phn:** 23317755, 23316060

Thai Cuisine

Baan Thai: Oberoi Hotel
Phn: 24363030, **Timings:** 12:30 pm to 3 pm; 8 pm to midnight
Spice Route Restaurant: Janpath
Phn: 23341234/ 41501234
Ichiban Restaurant: Pandara
Phn: 23386599

Best of Bakeries

Bakers: Greater Kailash Market
Gourmet Shop: Vasant Kunj
Café Turtle: Greater Kailash
Phn: 24655641/2/3

Seafood

Melange: Saini Enclave
Phn: 22374590
Ploof: Lodi Colony
Phn: 24649026 / 24634666

DESSERT PARLOURS

Perfect Ice: GK **Phn:** 26441709
Gourmet Ices: GK II
Phn: 26232233, 26219866
Creams N Shakes: Jangpura
Phn: 24310141
Kwality Walls Ice Cream Limited: Connaught Place **Phn:** 23341160

FAST FOOD

Pizza Hut: Phn: 39883988
Nirula's: Phn: 44010101
McDonalds: Phn: 66-000-666
Dominos: Phn: 23416880-85
Haldiram: Phn: 28898030

MUST VISIT

Akshardham Temple

- **Location:** NH 24, Noida Mor
- **Entry Cost:** Free
- **Opening Hours:** 9am to 9 pm Closed on Mondays

QUTAB MINAR

- **Location:** Mehrauli, South Delhi
- **Entry Cost:** $5 or Rs 250. Free for children under 15 years.
- **Opening Hours:** Sunrise until sunset, daily.

RED FORT

- **Location:** Opposite Chandni Chowk, Old Delhi.
- **Entry Cost:** $5 or Rs 250. Free for children under 15 years.
- **Opening Hours:** Sunrise until sunset. Closed Mondays.

GARDEN OF FIVE SENSES

- **Location:** M.B. Road, Near Saket
- **Entry Cost:** Free.
- **Opening Hours:** 6 am to 9 pm

BAHAI (LOTUS) TEMPLE

- **Location:** Near Nehru Place
- **Entry Cost:** Free.
- **Opening Hours:** Daily, from 9 am until sunset.

INDIA GATE

- **Location:** Rajpath
- **Entry Cost:** Free.
- **Opening Hours:** Always open.

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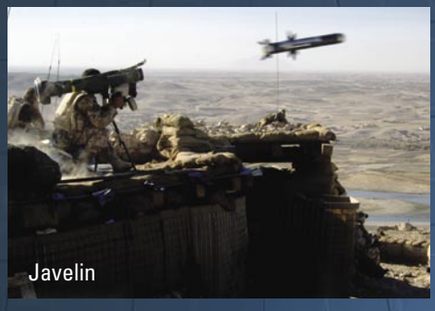

how

BETWEEN PARTNERSHIPS PROMISED AND PARTNERSHIPS ACHIEVED, THERE IS ONE IMPORTANT WORD: HOW.

In a world that continues to change dramatically, governments increasingly seek to accomplish their most vital goals by working with advanced technology companies from around the globe. Building and sustaining partnerships that achieve their objectives is a matter of how. And it is the how that makes all the difference.

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'L1 continues to be the DETERMINING FACTOR for procurement'

DR M.M. PALLAM RAJU, Minister of State for Defence

By Vishal Thapar

SP Guide Publications (SP's): What is your vision for Defexpo?

Dr M.M. Pallam Raju (Raju): We've noticed a substantial increase in participation. This indicates two things: one, there's a huge market here, and two, the keenness of the international defence industry to have a base out of India. Most players are seeing value in India's growing industrial competence. We're happy seeing the high level of interest. We want to showcase capabilities developed by indigenous R&D and products manufactured by Public Sector Undertakings.

SP's: What is your assessment of the size of India's military market?

Raju: We should be spending $30 billion (Rs 1,39,455 crore) in the next Five Year Plan period (2012-2017). That's the projected expenditure. This should create an offset opportunity of $10 billion (Rs 46,485 crore) for the Indian industry. The government is willing to give even more support to meet the requirements of India's armed forces.

SP's: India's Defence Procurement Policy (DPP) is updated regularly. What is driving the change?

Raju: The idea is to increase the indigenous content in our arms purchases.

SP's: DPP 2009 unveiled the 'Buy and Make (Indian)' category. Does it signal an end to the monopoly of the public sector?

Raju: We are providing a level playing field to the private sector. Defence was opened up to the private sector in 2001 (for manufacturing parts and sub-systems). We're giving a push to accelerate the process.

SP's: What has been the private sector's response to DPP 2009?

Raju: This is the gestation period for the private sector to look for partners and build competence. But it has definitely opened a new chapter in terms of providing an indigenous source for the armed forces to buy from. The private sector has to create this capability through a collaborative effort with companies or countries which have the relevant expertise. The response to the DPP 2009 has been pretty good. Industry is appreciating the changes which have been made. There's hope. It's a question of how quickly it happens.

SP's: What is the government stance on Rama Rao Committee Report for reforming DRDO?

Raju: The committee has done good work in the time frame mandated to it and come out with some brilliant recommendations. The DRDO is looking into what can be implemented. The government has a favourable view of the recommendations.

SP's: Will JVs between the international industry and Indian private sector be central to speeding up defence R&D projects?

Raju: Utilising the capabilities of the private sector and giving them a foothold in defence industry. That is the way forward. Development programmes have to be backed up by the private sector. So, for the private sector to participate in defence, it has to demonstrate capability in terms of an R&D base. This is a good opportunity. Foreign JVs for R&D are also welcome.

SP's: Despite the reform being attempted in the DPP, procurements take very long and several major tenders have been repeatedly cancelled. Doesn't the DPP fail the test of speed?

Raju: There are fast-track procedures for urgent military requirements. Immediate operational necessities are put on fast track. Cancellation of tenders happens only if there is a deviation from procedure. We definitely want to send the signal that the acquisition process is transparent and that any deviation or misconduct will not be accepted. This is probably the reason why the tenders you're referring to were cancelled.

SP's: Are you suggesting misconduct was the reason for the recent cancellation of the tender for mid-air refuellers for the Indian Air Force?

Raju: The Finance Ministry was of the view that the price was quite high. The option which was overlooked (Ilyushin-78)—and the one which India had purchased earlier—was significantly cheaper.

SP's: So, will L1 (or the lowest price bid) continue to be the determining factor and overshadow Life Cycle Cost considerations?

Raju: For government purchases, including those for defence, L1 continues to be the determining factor. There are suggestions otherwise. But given our set-up, L1 is the preferred guideline, as of today.

SP's: Why is there so much intrigue around arms deals?

Raju: One of the efforts of this government is to make the process as transparent as possible, and to speed it up. We've instituted penalties against any deviation from procedure. This is to put the system in order. Cancellations in the past have also happened because of detection of such offences.

SP's: Restrictions have been lifted on dealings with some arms companies despite ongoing investigations in corruption cases. Your comments.

Raju: Dealings with some companies had been put on hold following CBI investigations in the Ordnance Factory Board case. Some of these companies have been given permission to finish off pending business and fulfill old contracts. Only if they're cleared in investigations will new business be allowed with them. Yes, one of these companies has been allowed to take part in trials in the towed artillery tender. But this permission is conditional to a clean chit from the CBI.

In Other Words

- L1 (lowest cost bid) to be the determining criteria for awarding defence contracts
- India to spend $30 billion on arms purchases between 2012 and 2017
- Rs 8,500 crore worth of offsets committed to India
- Offsets can be waived in FMS deals
- DPP 2009 ends public sector monopoly, private sector to power growth in Indian defence industry
- JVs central to DRDO reform, to cut development time frame
- Conditional reprieve for companies named in OFB corruption case
- Ban on middlemen in defence deals to stay

SP's: Has there been any re-look at the ban on registered middlemen or agents?

Raju: We deal only with companies or governments through the Foreign Military Sales (FMS) route. This is a very clear indicator that agents are not allowed.

SP's: Talking of FMS, does the offsets clause apply to sales under this category?

Raju: FMS is a subset of the DPP. There are certain benefits. This is one of the acquisition options available to the government. Of course, the offsets policy applies to FMS, but it is the government's discretion to what extent offsets are implemented in such cases. The government even has the discretion to waive off offsets in FMS deals.

SP's: What's the progress with attracting offsets commitments for India?

Raju: Rs 8,500 crore worth of offsets have been committed to India so far. As of now, we're insisting on direct defence offsets only. We're waiting for some major programmes to get off the ground and investments to start coming in before considering any changes. We can't be tweaking the policy so soon. It may be too premature for that.

SP's: Would India consider changing its export policy?

Raju: The arms exports policy as it stands today is not very coherent. As capacities improve with increased private sector participation, there will be a time to look at policy and encourage exports. •

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'BAE ready to support FMS for M777'

ANDREW GALLAGHER, President, BAE Systems

SP Guide Publications (SP's): BAE Land Systems is reportedly on the verge of providing 145mm light howitzers to the Indian Army. What is the range of these guns, types of ammunition and how can these be air transported?

Andrew Gallagher (Gallagher): The M777 is, by some considerable margin, the lightest 155mm howitzer in the world, and the only one proven in battle. BAE Systems stands ready to support both governments in a possible FMS purchase. With standard ammunition range is 24.7 km, this goes up to 30 km with extended range rounds, and up to 40 km with a precision guided munition. The gun can be lifted by CH47 Chinook, CH53 Sea Stallion and V22 Osprey.

SP's: The AAV7A1 is already more than a-decade-and-a-half-old. Is a new variant being developed?

Gallagher: The AAV7A1 RAM/RS and other variants are still in service with the US and other armed forces. The most current version includes a more powerful 525hp turbocharged diesel engine and power train, and a Bradley Fighting Vehicle suspension. BAE Systems also provides a vehicle called BVS10 which is in service with the UK Royal Marines, the Dutch Marines and the French Army, which has just bought three different variants of the vehicle.

SP's: The Indian Army is going in for a Battlefield Management System. A Battlefield Surveillance System is also under establishment. What are the new technologies that BAE Systems can offer for these systems?

Gallagher: BAE Systems' interest in this arena is related to the Tactical Communications System. We are soon to induct into the British Army and Royal Air Force a new tactical communications system called Falcon. Falcon is the world's first tactical communications system based on an all IP (Internet Protocol) open architecture. The system provides secure deployable broadband voice, data and video, delivering the core of Network Enabled Capability. Falcon is interoperable with all NATO systems, enabling better information sharing and exploitation, improving military commanders' awareness and decision-making, and ultimately mission success. BAE Systems intends to use elements of what has been produced for Falcon in the bid for the Indian Army's Tactical Communications System programme.

SP's: The "Wasp" Rapid Deployment Reconnaissance Vehicle (RDRV) appears to be quite a compact vehicle. What is the manpower component it can carry? Are the tyres self sealing? Can it traverse desert terrain?

Gallagher: The Wasp RDRV is aimed at satisfying the requirements for a light airborne rapid deployment vehicle. The Wasp fills the niche for specialised, light, compact and robust reconnaissance vehicles with a high payload that can be deployed rapidly by air, sea or land. With a weight of 2,550 kg it can be airlifted with most medium lift helicopters while the payload capacity of 1,350 kg allows it to be fitted with a wide choice of operational payloads for special operations. The modular design of the cargo area ensures that it can be configured as a personnel carrier, 60mm mortar carrier, anti-tank vehicle, gun carrier, hostage release vehicle, surveillance vehicle or command vehicle. Four combat ready vehicles can be transported in a C130-J aircraft and dropped by parachute. The vehicle's top speed is 116 kmph. It can carry a five-man squad and can be fitted with run flat tyres. It is suitable for desert operations, but this can depend on the configuration of the vehicle, its load and the kind of desert terrain involved.

SP's: What is your company's experience in low observable technologies?

Gallagher: BAE Systems employs low observable technologies of differing levels in programmes, such as the Typhoon, the Taranis unmanned combat vehicle and, of course, in role on the F-35 Joint Strike Fighter. Low observable technologies should not, however, be seen as a panacea, they are only a component of a number of other factors that contribute to overall survivability. •

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BOEING

'For India, USS Arleigh Burke Class of American Aegis destroyers'

ROGER ROSE, Chief Executive, Lockheed Martin India

By Vishal Thapar

SP Guide Publications (SP's): Lockheed Martin has put in a lot of effort into its campaign for the Aegis Missile Combat System in India. How does it fit into the Indian Navy?

Roger Rose (Rose): The original offering by the US government was targeted at India's (under development) Project 17A frigates. We answered the RFI in 2007. More recently, there has been an unsolicited proposal to India for the sale of three Aegis-equipped KDX-3 destroyers to the Indian Navy. The KDX-3 is a Korean built 10,000 ton destroyer, for which Lockheed is the prime weapons systems integrator. Aegis is the only system which can protect a carrier battle group against a modern missile threat. India can take advantage of the $10 billion (Rs 46,425 crore) already invested in this technology.

SP's: Would the new offer of the Korean-built KDX-3 Aegis destroyer mean that the Indian Navy is no longer interested in the Aegis for its Project 17A stealth frigates?

Rose: The Aegis can be integrated with Indian warships of Projects 17A and 15B or the follow-on class to the 15B destroyers. The KDX-3, the world's most heavily-armed destroyer, is a fine example of how the Aegis missile defence system can be integrated with a foreign warship. India's Project 17A is expected to follow a modular concept of ship building. As far as I know, the Indian design has still not been finalised.

SP's: Are you suggesting that the KDX-3 model could be replicated by India in designing its warships?

Rose: Yes, it's a mature, frozen design. The KDX-3 packs a lot of firepower. It has 128 vertical launch cells (for firing missiles). It can deploy a variety of missiles ranging from surface-to-air missiles to Ballistic Missile Defence. The ship needs to be built around a mission. If the mission is to protect a carrier battle group, then the warship design has to accommodate a potent weapon system. Power, stealth and space requirements have to be catered to.

SP's: What has been the response of the Indian Navy?

Rose: The KDX-3 is being evaluated by the Indian Navy. Project 17A came before the Buy and Make (Indian) category was introduced in the Defence Procurement Procedure (DPP). The Indian Navy is now re-evaluating whether it wants a partnership with a public shipyard or a private one that can absorb technology from a foreign shipyard. The new DPP has created this choice.

SP's: But why is Lockheed proposing a Korean-built warship in stead of an American one to showcase the Aegis capability?

Rose: Korea's Hyundai is a very good shipyard. It turns out one ship every four days. But if the Indian Navy was to consider an American ship, we'd he very happy to talk about it. The US government has discussed with India possibilities regarding the USS Arleigh Burke Class of American Aegis destroyers. The Arleigh Burke is a very proven platform and is reasonably priced. The US, too, is building more of these for its own naval fleet.

SP's: So, is the Arleigh Burke on the table?

Rose: It's a government-to-government thing. There's some discussion between the governments and the navies about this.

SP's: Does the Aegis weave into the US proposal of a global naval partnership, touted as the '1,000-ship Navy'?

Rose: The concept of a '1,000-ship Navy' is still valid. It involves partnership of navies around the world to secure global trade and freedom of navigation on the high seas, because nobody has sufficient resources to police the sea lanes alone. I think that would be a perfect fit for an Indian Navy that could truly be the dominant navy in the Indian Ocean. While the interoperability that an Aegis partnership would be a stabilising factor, I don't think that it (Aegis) is central to the '1,000-ship Navy' concept.

SP's: Would you be able to integrate Indian missiles like the BrahMos in the Aegis system?

Rose: We've tried to indigenise the Aegis for the partner countries, like Korea, Japan and Australia. The BrahMos is a big missile. There's no problem integrating a weapon, but for this, the size of the ship needs to be pretty good.

SP's: Moving to Lockheed Martin's air force projects, do you expect more orders for the C-130 J Hercules?

Rose: We're in discussion for more orders. The original order is for six, with an option of another six. The facilities we're building at Hindon is for 12 C-130Js. So that would indicate that there's going to be at least another six. But its application is wide reaching. It can be special force, it can be BSF, it can be refuelling, just for troop transport, weather forecast. Lots of different organisations are now looking at the capability of this aircraft. You can make a case for dozens.

SP's: Russia has struck JVs with India for the development of the Fifth Generation fighter, the PAK-FA. Could Lockheed Martin make a matching offer to India with the F-35?

Rose: We're in active discussions with the Indian Air Force and the Indian Navy. We'd love to see India as a partner on the F-35. The perfect bridge to that is the purchase of the F-16, which represents a relationship with the US Air Force. Once that is established, it's a natural progression. You can see where all out fighters are merging. They're merging to the F-35. For users of the F-16, the F-35 is a good way to go. We've had requests for briefs from India.

SP's: Is the F-16 a must for this transition?

Rose: It's not, but it would make it a lot easier.

SP's: What's your assessment of the Russian PAK-FA?

Rose: It's very easy to make a claim about Fifth Generation capability. I would be very happy to stack that capability against an F-35 any time.

SP's: So, you'd like them to prove it.

Rose: I remember a famous quote which an RAF pilot once told me, "Nothing puts ordnance on target like power point".

SP's: Did the speed of development surprise you a bit? The aircraft is slated for induction in 2015.

Rose: Why don't we have this interview in 2015?

SP's: So, you are a sceptic on Russia.

Rose: I'm an engineer by trade. I'll believe it when I see it. On Russian capability, we tend to be conservative. I don't consider that plane comparable to the F-35. The F-35 is a whole different beast. I know the capability of the F-35 and I know what it takes to develop a Fifth Generation fighter. I don't think PAK-FA has proven capability right now.

SP's: Has India made a mistake by committing itself to PAK-FA?

Rose: That's a good question for India.

SP's: Some say it looks suspiciously like yours.

Rose: Lockheed Martin has been on the forefront of aviation development for decades. A lot of times, we arrive at the right answer first. •

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'Rope In Commercial aerospace work in defence offsets for India'

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Dr Vivek Lall, Vice President and India Country Head, Boeing Defence, Space and Security

'Rockwell Collins has extensive expertise in open systems architectures'

T.C. CHAN, Vice President and Managing Director, Asia Pacific, Rockwell Collins

SP's: What are the new technologies that Rockwell Collins is offering for the Asia Pacific region and which fields is the research and development headed? As the Asia Pacific Head, what are your thrust areas and objectives?

Chan: In the Asia Pacific region, we see immediate opportunities for a broad range of our offerings, ranging from the most advanced networked communication systems for air, ground and maritime platforms, to secure, ruggedized systems that fully utilises commercial technology. More specifically, we see opportunities in:

- Integrated avionics and flight deck systems for helicopters, multirole fighters and air transport aircraft.
- Net-centric communications, software defined radios, electronic counter counter-measure waveforms, data links and satellite communications.
- Navigation systems, including a new "micro" size hand-held GPS system.
- High precision targeting system for Forward Air Controllers and Forward Observation Officers.
- Ground soldier wearable systems that provide situational awareness and networking capabilities and are completely customizable to customer requirements.
- Unmanned Aerial Vehicle (UAV) control and navigation systems that are miniaturised, light-weight, highly reliable and proven with over 400,000 flight hours in theater on multiple UAV platforms.
- As a provider of total life cycle service solutions for our customers, having a global support network is a key differentiator for many of the solutions we provide. We have service centre locations all over the world, including the Asia-Pacific region.

As the head of our Asia Pacific region, one of my major efforts is to demonstrate to our customers that we are, in fact, Asia-Pacific centric. We realise that in order to expand our business throughout the world, it's important to be a local provider and not just a US company doing business in these regions.

SP's: The mainstay of joint interoperability, precision guidance in US and coalition platforms are based on Airborne Solutions involving enormous costs. How can this be achieved for ground forces with limited aerial platforms and at reduced costs?

Chan: We at Rockwell Collins have extensive expertise in developing open systems architectures, making it easier for our customers to keep up with the latest technologies at a lower cost. We also make full use of commercially available technology when possible.

A good example of this is our FireStormTM product, which was developed specifically for ground soldiers. FireStorm is our precision guidance targeting system for Forward Air Controllers and Forward Observation Officers. It provides the users with proven situational awareness, enabling ground personnel to seamlessly integrate with airborne assets.

SP's: You are aware that the Indian Army is going in for a Battlefield Management System (BMS) for the Battalion/Regiment level and below, right up to the individual soldier/weapon platform. What technologies can Rockwell Collins offer in the development of such a system? While Rockwell Collins offers a helmet mounted display for pilots of aircraft and helicopters, is a similar equipment incorporating communications available/under development for ground troops?

Chan: While Rockwell Collins has been a leader in helmet mounted displays for fighter aircraft, we are also a leading supplier of Helmet Mounted Displays (HMDs) for ground troops. We have thousands of our Proview SO35s full color SVGA HMDs deployed in Iraq and Afghanistan as part of the US Army's Land Warrior programme. These HMDs allow soldiers to access critical tactical information while maintaining situational awareness in the high threat battlefields they operate in. In the Asia Pacific region, one of the leading military organisations is currently using our HMDs.

In 2009, Rockwell Collins was awarded two contracts to provide systems that improve the situational awareness of the individual soldier. As the prime contractor for the integrated video display system for the US Army Mounted Soldier System programme we are providing HMDs and video distribution equipment for ground vehicles. We also received a contract award for the Technology Development Phase of the US Army Ground Soldier System (GSS) Increment 1 programme and have recently delivered our first systems to the Army for testing.

Our SentinelTM integrated soldier solution meets or exceeds all of the requirements for this project. We have demonstrated our commitment to delivering our solution on time and on budget. We feel we are well positioned to deliver a Sentinel solution, tailored to the Indian Army requirements.

(Continued in SP's Defexpo 2010 Show Daily 2, P10)

DRS Technologies' MRT Computers

DRS Technologies, Inc. announced that it received a $217 million contract to produce rugged computing systems which include Joint Platform Tablet military rugged tablet (MRT) computers, keyboards, docking stations, interface cables and base plates in support of the Movement Tracking System (MTS) for the US Army. The systems are designed and manufactured at the DRS Tactical Systems business unit in Melbourne, Florida. Deliveries began in 2009 and will continue upto 2010. The US Army will utilise the Joint Platform Tablet MRT as its next generation computing system for new and previously deployed MTS systems.

"Our team is very proud to have been selected to provide our MRT for use in the US Army's Movement Tracking System programme," said Mike Sarrica, Vice President & General Manager of DRS Tactical System, Inc." This important order provides a proven ultra-rugged computing system to our soldiers, with leading-edge dual core computing capability that can be relied upon for this mission-critical application. Additionally, it provides hardware commonality with other Joint programmes, and enables planned Army transformation to Joint Battle Command – Platform," he added.

The Joint Platform Tablet MRT is designed with expanded capacity to easily upgrade as increased capabilities and future requirements emerge. MRT capabilities include increased processing speed, a removable Hard Disk Drive, an emergency alert or "911" button that can signal an urgent situation back to the command and control center and a Night Vision Imaging System (NVIS) capable 10.4" display. •

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'ROPE IN COMMERCIAL aerospace work in defence offsets for India'

DR VIVEK LALL, Vice President and India Country Head, Boeing Defence, Space and Security

By Vishal Thapar

SP Guide Publications (SP's): Boeing started last year in India with an order for the P-8I maritime patrol aircraft. This year, there is movement on the C-17 Globemaster strategic airlifters. Seems to be happy days for Boeing in India. Where do you see Boeing's defence enterprise going from here?

Dr Vivek Lall (Lall): We're very happy with India's interest in acquiring 10 C-17s. Our strategy for the country is that of One Boeing. We've been doing business on the commercial side for 60 years and over the last four to five years, we've entered the market on the defence side. As an enterprise that offers the breadth and depth of our products and services, our talent and resources, we come into the market with aspirations to be India's preferred partner. So, the P-8s and C-17 are two remarkable strategic platforms. We also have the Apache attack and the Chinook heavy helicopters to offer, and if we're fortunate to be called for field trials, we'll do our best. The competition for the MMRCA (Medium Multi-Role Combat Aircraft) deal is very significant for all companies involved. Our strategy is two pronged: offer the best products and services and engage in an industrial partnership with India.

SP's: What's the progress on forging an industrial partnership with India?

Lall: On the P-8I, we have a $600 million-plus (Rs 2,777 crore) commitment on offsets. We've already signed a $4.7 million (Rs 22 crore) contract with HAL (Hindustan Aeronautics Limited) to provide weapon bay doors for the eight P-8I long-range maritime reconnaissance and anti-submarine warfare aircraft that will be delivered to the Indian Navy. HAL provides other equipment for P-8I through its avionics division in Hyderabad. In addition to its work on the P-8I programme, HAL also supplies Boeing with gun bay doors and wire harnesses for the F/A-18E/F Super Hornet and uplock boxes for the 777 commercial airplanes. We have an engagement strategy for India and want to make it part of our international supply chain. We want to be partners in India's quest to become self-reliant and a net exporter of defence products. As part of our F/A-18E/F campaign, we have signed 13 MoUs with Indian companies. This conglomerate has signed up with 38 Indian companies for offsets. There's a huge industry aspect to it.

SP's: How practical is India's offsets policy? There have been reports that the industry has been campaigning for more flexibility in defence offsets. What's your view?

Lall: India's Defence Procurement Process is a very forward looking policy. We applaud the policy. In terms of offsets, the one area which can evolve is the inclusion of commercial aerospace work as part of defence offsets. We're clearly One Boeing across the commercial and defence spaces. There are many synergies which can be passed on should there be flexibility to do both commercial and defence. Should defence offsets embrace commercial aerospace, it will make it easier for local industry to absorb them. We've done $40 billion (Rs 1,85,140 crore) worth of offsets in over 30 countries and never defaulted.

SP's: Is Boeing prepared to go beyond the conventional and enter the combat Unmanned Aerial Vehicle (UAV) space?

Lall: As we look into the future of any modern defence force, there will be an increase in UAV capabilities and we have something called Scan Eagle—a very effective UAV—and we will engage in discussion with the forces here in conjunction with the government. It's a very affordable and practical UAV capable of a variety of missions. So, I think in the future, we'll get into unmanned systems.

SP's: Is there a possibility for a joint development of an Unmanned Combat Air Vehicle or any other platform?

Lall: We have set up a research and technical centre in Bangalore recently. We're concentrating on various fundamental technologies and research areas. Besides R&D, we'll be launching an analysis modelling simulation centre. It's a centre that offers capability to model battlefield scenarios and do experimentations there. It's a tool for the customer to factor various assets on the ground and simulate environments. It can help the customer identify suitable technologies for the future. This centre is coming up in Bangalore. It's a Boeing-BEL collaboration, and we look forward to launching the second mode in Delhi.

(Continued in SP's Defexpo 2010 Show Daily 2, P12)

In Other Words

- Boeing calls for a change in India's offsets policy
- Space and homeland security the next big business areas
- Boeing set to enter the UAV space
- C-17 sale to India set to take FMS route
- Boeing will bid for $31 billion (Rs 1,43,480 crore) worth of defence business in India over the next 10 years
- Overall defence market over 10 years is $100 billion (Rs 4,62,850 crore)

National Instruments to display cutting edge electronics solutions

National Instruments has been bringing innovations in design and manufacture of commercially off-the-shelf hardware and software products to address various applications in the defence and aerospace sector. Its COTS-based hardware platform is being used by major aerospace and defence forces for developing a host of solutions such as Communication Systems, Electronic Warfare Systems, Automatic Test Systems, etc.

At Defexpo 2010, National Instruments is displaying cutting-edge solutions at the Central Hall, Stall No. L-1.40.1 (near DRDO stall).

The solutions on display are:

- Wideband Data Recorder
- Software Defined Radio
- Spectral Monitoring System
- Portable ATE for Radios
- GPS Spoofer for Countermeasure applications
- Flight Data Recorder
- Integrated Combat Vehicle Management System for Military (ICVMS)
- Audio Data Recorder and Playback (ADR)
- Unattended Wireless Sensor Networks for Border Security
- Acoustic Gunshot Location Detector
- TDOA based system for Direction Finding •

'Rafael looking forward to more investments, business in India'

LOVA DRORI, Executive VP Marketing, Rafael

By Sucheta Das Mohapatra

SP Guide Publications (SP's): What systems will Rafael showcase at Defexpo 2010?

Lova Drori (Drori): Rafael will display the following groups/families of systems.

The Spike Family of Electro-optic, Tactical, Precision, Guided Missile Systems:

- Spike-LR
- Long range ATGM for infantry, LCV and naval vessels,
- Spike-ER – Extended Range ATGM for helicopters, LCV and naval vessels
- for the first time, Spike NLOS—guided missile (ATGM) providing Non-Line-Of-Sight strike capability at long ranges of up to 25 km with RF communication. The system is presented for ground application, however, it may be considered, as well, for helicopters, light combat vehicles (LCV) and naval vessels,

Air and missile defence systems:

- Spyder SR/MR
- Short and medium range air defence system
- New generation Barak (missile only)
- long range air defence missile system and
- for the 1st time the Iron Dome—defence against short range artillery rockets

Breaching solutions:

- Matador AS – Anti-structure breaching munition
- Matador WB – Wall breaching munition
- Simon – Door breaching rifle grenade
- Urban Star – Static assault round

Combat vehicle upgrading:

- Samson RCWS Family – Remote controlled weapon stations
- ASPRO-P – Passive add-on armor
- ASPRO-H – Hybrid add-on armor
- ASPRO-A (Trophy) – Active armor

Naval products:

- Protector – Integrated naval combat USV
- Sea Spotter – Staring, marine search, track and situational awareness

At the Defexpo 2010, we plan to release the TacMax, the Tactical broadband network for the ground forces. The new system will complement other advanced communication solutions from Rafael, such as the Ravnet.

SP's: Which is your thrust area: Indian Army, Indian Navy or the Indian Air Force?

Drori: Our thrust, in fact, is in all three—Indian Army, Indian Navy and the Indian Air Force. However, at the Defexpo we will focus on the Indian Army and the Indian Navy.

SP's: What are the solutions Rafael proposes to offer to the army and navy?

Drori: We are a customer friendly organisation, we do not believe in imposing solutions. Rather we offer a variety of systems that can benefit the user, serving as a solution to specific needs. We try to fulfill the need of the army, navy and air force. We try to provide the best solution that the defence forces need. They integrate our products to their solutions. All our productions are state-of-the-art, upgraded, available at a reasonable price and have the ability to provide every solution that the customer is looking for.

SP's: Elaborate on the Barack missile project.

Drori: This is a programme of IAI. Rafael's involvement is in the missiles and the interface between the system and the missiles. As far as my knowledge goes, the programme is completed. From the marketing point of view, we hope to get an order for the second batch of missiles.

SP's: Homeland security is a major issue in India. How does Rafael plan to address it?

Drori: As I have already said about the defence solutions, with regard to homeland security, we have the same approach. We believe that the forces know what is best for the security of the country. We offer a variety which can be inducted in the system where and when necessary. We are open to discussions and are very flexible in approach. Rafael can tailor solutions according to the need of the customer.

SP's: Your views on the offset clause.

Drori: High value hardware is a worldwide requirement today. New technologies need to be integrated in the defence sector. High value hardware has great return value for the money invested. And so, the offset clause is of great importance. The current offset regulations do not encourage us to provide sophisticated technology because we'll get the same offset credit for this technology as we'll get for a simple metal machining work.

SP's: What specific feature of Spike system gives you an edge over competitors?

Drori: Spike LR is a lightweight multi-purpose missile system with a range of up to 4 km (can be extended to 5 km if needed). It's state-of-the-art seeker and fiber-optic data communication has the ability to update or switch targets after launch, real-time intelligence and identify friend or foe, perform battle damage assessment, achieve extended range and pinpoint accuracy and minimize collateral damage. The Spike-ER Anti Tank Guided Weapon is the extended long-range version, capable of defeating targets at a range of up to 8 km. This missile is designed for installation on land vehicles, helicopters and naval platforms. Both Spike-LR and Spike-ER uses a day seeker or day/night seeker, tandem warhead, and retains the dual operation modes of Spike- Fire-and-Forget & Fire-Observe and Update. Likewise, the Spike NLOS is an electro-optically guided missile for ranges of up to 25 km with pinpoint accuracy and midcourse navigation. The weapon system can be launched from land, air and naval platform. Equipped with a variety of warheads, RF communication, unique advantages of hitting non-line of site (NLOS) targets, the ability to switch between targets and abort mission, the Spike NLOS can be operated both in offensive and defensive scenarios. These features give us an edge over others.

SP's: How do you analyse opportunities in India's defence sector?

Drori: We believe that India is a growing domestic buyer and we would like to be an integral part of it. We are at an advanced stage of negotiation on a Joint Venture with Bharat Heavy Electronics Limited and hope for a positive nod from the Indian government. The Indian defence forces, for the best of our knowledge, are very satisfied with our work and we are looking forward to more investments and business in India. •

Harris Corporation in IDIQ Contract for Tactical Multiband Project 25 Radios

Harris Corporation (NYSE:HRS), an international communications and information technology company, has been selected as one of seven contractors to supply the Department of Justice (DOJ) with next-generation P25 (Project 25) radios under an Indefinite Delivery, Indefinite Quantity (IDIQ) contract with a potential overall value of up to $750 million (Rs 3,481 crore).

Under the five-year contract, Harris joins a group of companies whose products meet established P25 criteria. The IDIQ contract does not specify purchase dates or quantities of equipment from any particular supplier.

"We are excited that the Harris wide range of radio products is qualified under the rigorous IDIQ to supply federal agencies with the standards-based P25 radios they need," said Dana Mehnert, group president, RF Communications, Harris Corporation.

The IDIQ contract is for the Departments of Justice, Treasury, Commerce, Education, Transportation, Veterans Affairs and numerous other agencies to procure P25 equipment, including digital radios.

APCO P25 refers to a suite of standards for digital radio communications for use by federal, state/province and local public safety agencies in North America to enable interoperable communication. The P25 suite of standards involves digital Land Mobile Radio (LMR) services for local, state/provincial and federal public safety organizations and agencies. Harris is a leader in APCO P25 technology and fully embraces the philosophy of standards-based solutions and multi-vendor procurement. •

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Boeing to showcase F/A-18IN Super Hornet

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Boeing to showcase F/A-18IN Super Hornet

February 11, Boeing opened its 'doors' in preparation for Defexpo 2010 during a media conference with the spotlight firmly on the $4.7 million (Rs 22 crore) contract with Hindustan Aeronautics Limited (HAL) for provision of weapon bay doors for eight P-8Is for the Indian Navy. P-8I—a long-range maritime reconnaissance and anti-submarine warfare aircraft—is a variant of the P-8A Poseidon which Boeing is currently developing for the US Navy.

Participating in Defexpo 2010, Boeing will showcase its F/A-18IN Super Hornet via a cockpit simulator; providing guests, stakeholders and Indian government officials a chance to experience the aircraft's advance features. Also highlighted via media briefings and presentations will be the C-17 Globemaster III strategic-lift cargo plane, and the CH-47F Chinook and AH-64D Apache Longbow attack helicopter.

"Many of our products and platforms are currently in competition or under active consideration by the (Indian) government, and we are looking forward to demonstrating how they will quickly contribute to India's defence modernisation and bring long-term industrial benefits to the nation," enthused Dr Vivek Lall, Boeing Defense, Space & Security (BDS) Vice President and India Country Head on Boeing's participation in Defexpo 2010. Considering the Indian government's increasing interest in BDS equipment, Defexpo 2010 will provide a prime opportunity to showcase the promising relationship between Boeing, BDS and various arms of Indian defence. •

BAE Systems ARTILLERY POWER

Two of the world's most powerful howitzers will dominate the BAE Systems' presence at Defexpo 2010. The BAE Systems FH77 B05 towed howitzer, and M777, the ultra light howitzer, will both be part of BAE Systems' biggest ever presence at DefExpo.

Andrew Gallagher, President, BAE Systems India said,"BAE Systems' commitment to the development of a long term domestic business in India, with a full range of skills and capabilities, is unmatched. We firmly support the Indian Government's aim of procuring 70 per cent of defence equipment domestically and see the establishment of Defence Land Systems India as a major contribution towards this objective."

M777, the world's lightest 155mm howitzer, will grace the BAE Systems stand. Next to the M777, on the Defence Land Systems India stand, will be the FH77 B05. This is the significantly upgraded and more powerful big brother of the FH77 B02 in service with the Indian Army, which performed so admirably during the Kargil conflict.

The BAE Systems FH77 B05 is bidding for the Indian Army requirement for towed 52cal 155mm howitzers. Trials with the Indian Army are due to start after Defexpo. The new upgraded howitzer, FH77 B05, has all round greater performance including increased range over the 39cal FH77 B02. It is intended that Defence Land Systems India would have a significant and increasing role in the production of FH77 B05, towards the intended goal of Defence Land Systems India becoming an artillery centre of excellence in India.

The M777 ultra light weight howitzer is now in the Foreign Military Sales (FMS) process for a possible FMS purchase between the US and Indian Governments. M777 is, by some considerable margin, the lightest 155mm howitzer in the world, and the only one proven in a battle. BAE Systems stands ready to support both governments in a possible FMS purchase.

Defexpo 2010 will also see the launch of the MPVI (Mine Protected Vehicle India). A mine protected vehicle specifically designed for Indian conditions – the vehicle will make its first public appearance at the show on Defence Land Systems India's stand. The result of collaboration between Mahindra and BAE Systems, MPVI brings battle proven life saving vehicle protection technology to India in an affordable package, based on an indigenously assembled chassis and drive train. MPVI will be built at Defence Land Systems India's Faridabad manufacturing facility.

The UK's new tactical communications system, Falcon, will also be on display. Falcon will enter service with the British Army and Royal Air Force this year and is the world's first tactical comms system based on an all IP (Internet Protocol) open architecture. FALCON provides secure deployable broadband voice, data and video, delivering the core of Network Enabled Capability. FALCON interoperates with all NATO systems, enabling better information sharing and exploitation, improving military commanders' awareness and decision-making, and ultimately mission success. BAE Systems intends to use elements of what has been produced for Falcon in the bid for the Indian Army's Tactical Communications System programme.

Anjani and BAE Systems recently announced a new partnership that will see the two companies collaborate to produce survivability and protection equipment for soldiers and vehicles in India. Anjani and BAE Systems will be displaying these capabilities on their stands. Anjani is bidding for the CRPF's requirement for 59,000 bullet proof vests. If successful, the vests will be produced by Anjani in India using BAE Systems' Tensylon technology. The Tensylon ballistic material, made from high performance polyethylene fibre, provides superior performance and a lighter-weight, cost-effective solution.

DefExpo also sees the India launch of BAE Systems' on-board power management system, which more than doubles the electrical power output of military vehicles to increase mission effectiveness. The system also provides power that can be exported from the vehicle during natural disasters and to support facilities and equipment such as field hospitals, command centres, and water purification systems.

BAE Systems will also be showcasing a whole range of products, including infantry fighting vehicles, high mobility vehicles, unmanned autonomous systems, protection equipment, and helmet mounted display technology. •

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India's DPP set to change again

Barely three-and-half months after the release of the Defence Procurement Procedure 2009, the Minitry of Defence is set to change the rules of the game again.

By Vishal Thapar

Secretary Defence Production R.K. Singh said Defence Procurement Procedure 2010 (DPP 2010) is just round the corner. The defining feature of DPP 2010 will be the government funding of defence R&D by the private sector. "It is proposed that the government will fund 80 per cent of the development costs by private companies," Singh said.

So far, the government has funded only the state-owned DRDO for R&D in defence. The DRDO, which has manoeuvred India's strategic programmes, has often faced criticism for delay and lack of delivery. Now, for the first time, the government wants the private sector to give a push to development of defence systems.

Multiple vendors will be involved in development projects. Bidding will follow the completion of development work. "The policy proposal is to give 65 per cent of the order to the L1 bidder (lowest price bidder) and 35 per cent to L2," Secretary Singh disclosed. Foreign participation will be disallowed for these specific government-funded projects.

DPP 2009 had made a sharp departure from previous policy by giving the Indian private sector the right to bid for defence tenders, effectively ending the monopoly of state-owned enterprises in defence procurements from domestic sources. Earlier, the private sector played a subordinate role, and could only be a systems provider to Defence public sector undertakings and the Ordnance Factories. The Buy and Make (Indian) category introduced in DPP 2009 also encourages the Indian private sector to enter into joint ventures with foreign defence manufacturers so as to acquire competence rapidly through transfer of technology.

"This would help Indian Industry to work out the technological requirements and build in-house capabilities in order to meet the future defence requirements. I am sure that the industry will respond positively to this proposal," Defence Minister A.K. Antony had said while introducing this measure.

There are clearly no full stops, and the Indian DPP continues to be in ferment. •

India's projected arms spend: $100 bn over 10 years

Continued from page 1

$30.5 billion (Rs 1,51,595 crore), $11.8 billion (Rs 54,781.5 crore) is set aside for capital expenditure for acquiring new weapon systems. The Defence Procurement Procedure (DPP) is being rapidly tweaked to give the impetus to the Indian industry to jump in and corner a significant part of the spoils. A policy change in 2009 ended the monopoly of the Indian public sector in arms purchases made domestically. "We're providing a level playing field to the private sector," says Pallam Raju.

Earlier, the private sector could only play second fiddle to government-owned defence industry, which alone could be the principal vendors. The extent of play to the private sector was restricted to public sector outsourcing, and their revenues were less than one-tenth of the capital budget for defence.

All that has changed. The addition of the 'Make and Buy (Indian)' category to the DPP-2009 is an invitation to the Indian private sector to enter into joint ventures with world leaders in order to bid with world-class defence systems. The government also wants to encourage research and development in the private sector defence industry. It proposes to fund 80 per cent of development costs for programmes entrusted to private enterprise. "If the private sector is participating in defence production, it has to demonstrate capability in terms of an R&D base. This is a good opportunity," says Raju. This is set to change the rules of the game for the government's Defence Research and Development Organisation (DRDO), which will see its role as the principal research agency being redefined. The DRDO, incidentally, is the largest single exhibitor at Defexpo 2010.

It's not just the DRDO but also the market which is being redefined. And just as there's no gain without pain, business on the streets of the arms bazaar is never easy. Several mega tenders have recently been cancelled in quick succession after extensive trials and evaluation. These include those for artillery guns, mid-air refuellers and helicopters. The DPP is in ferment, attempting to create more transparency in defence deals. Protracted time frames to finalise deals also do not fit into international best practices. Yet another change in the DPP is now in the offing.

But the sheer size of business in India's arms bazaar dispels any despondency. The first edition of Defexpo kicked off in 199 with a modest participation of 197 exhibitors. Today, the situation is transformed. New Delhi is a major destination for the international defence industry. Even compared to its last edition of 2008, Defexpo is on a gallop. It has grown 75 per cent in terms of area sold and 45 per cent in terms of participants.

Delhi's big bucks continue to draw the men of arms. •

FIGURE IT OUT

- Israel is the largest exhibiting nation (in terms of the are covered) — 1,248 sq m
- The US has the maximum number of participants — 25 companies
- DRDO largest single exhibitor — 1,199 sq m
- 650 exhibitors from 33 countries spread over 30,100 sq m
- Pakistan, China not invited
- Defexpo has almost doubled since 2008
- Army to provide security cover, including bomb disposal squads

Source: Ministry of Defence

Lockheed Martin First C-130J Super Hercules for Dyess AFB rolls out

The first Lockheed Martin [NYSE: LMT] C-130J produced for Dyess Air Force Base, Texas, leaves the company's paint facility in Marietta, Ga. Dyess will receive 28 C-130Js between 2010 and 2012 as part of the recapitalisation of its aging C-130H1s. The C-130J will give Dyess a proven airlifter that will fly further, faster, with more payload and much higher reliability. The first aircraft is scheduled to arrive at Dyess in the spring. •

'We plan to establish a dedicated infrastructure for the Indian Defence'

ADITYA VIJ,
Group President,
Defence, Punj Lloyd Group

By Ruchika Chawla

SP Guide Publications (SP's): What will Punj Lloyd be showcasing at Defexpo 2010?

Aditya Vij (Vij): We will display weapon systems that we propose to develop for the Indian market and where we have specific technology tie-ups.

SP's: Although Punj Lloyd is a market leader in engineering and construction, how do you plan on entering the defence sector? What will be your main contribution?

Vij: The group has strategically diversified into the defence industry, under the Government of India's public-private partnership initiative. Punj Lloyd is establishing itself as a credible original equipment manufacturer offering state-of-the-art technology with the objective to indigenously develop genuine force multipliers that will contribute to providing a decisive edge to the Indian armed forces. It is establishing a dedicated infrastructure that can be effectively leveraged for defence programmes.

SP's: Can you elaborate on the elements of the tie-up you have concluded with ST Engineering/ST Kinetics?

Vij: We have a collaboration agreement with ST Kinetics for two programmes meant for the Indian Army.

SP's: Who are some of your other partners in making and supplying to bid for Indian defence orders?

Vij: We have several technology partners whose products are targeted to meet the requirements of the Indian armed forces.

SP's: Punj Lloyd sees the defence sector as a serious growth opportunity, yet do you think Indian companies make avail of this growth opportunity? How do you plan to take advantage and grow as a part of this sector?

Vij: As mentioned, we plan to establish a dedicated infrastructure for the defence sector as the Indian armed forces modernise their equipment. We would like to work with the public sector and complement their activities.

SP's: Any personal feedback pertaining to India's defence sector and Defexpo 2010?

Vij: India's defence sector is expected to grow rapidly in the next decade as we continue to modernise our equipment for the needs of today. Defexpo 2010 will offer an opportunity to global defence Manufacturers to display their latest technology and facilitate partnerships in India.

SP's: How do you view the offset and its upcoming role in the interest of India?

Vij: Offset is an important step with the ultimate objective of value creation in the country. This will help the Indian companies absorb transfer of technology and create an environment for co-production with Global Primes.

SP's: How do you view the Defence Procurement Procedure (DPP) which has evolved over the years? Any specific suggestion on the front?

Vij: The objective of progressive changes in the DPP is aimed at encouraging private industry to supplement the efforts of the public sector and work in concert with them.

SP's: Which specific defence production lines Punj Lloyd is looking at? Where do you see Punj Lloyd five years down the line and the coming 10 years from now in the defence market?

Vij: Punj Lloyd is creating a dedicated defence infrastructure to service the needs of the Indian armed forces. As we get into production of specific systems, we will share additional information.

SP's: Does Punj Lloyd have any plans to export defence equipment and if so, which are the countries likely to be targeted?

Vij: Our first objective is to serve the needs of India. At the same time, as we develop competence in identified areas, we would like to be part of the global supply chain for international defence Companies. •

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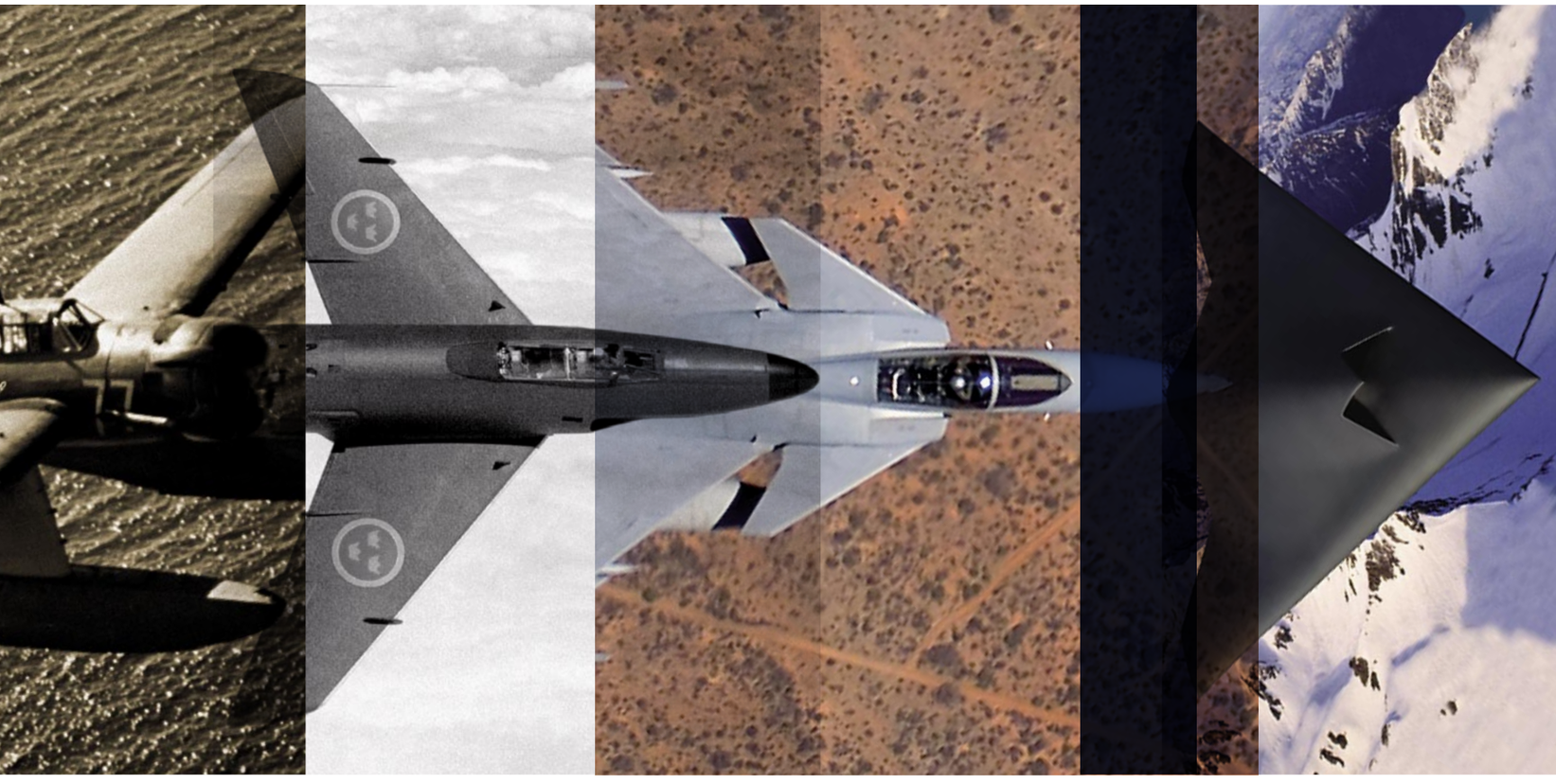
CAE leads 'simulating' market in India

OUR HISTORY
YOUR FUTURE



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SELEX Galileo Eye on business opportunities

By Ruchika Chawla

SELEX Galileo, a Finmeccanica Company, will be pursuing opportunities at Defexpo 2010, connected with the need to modernise existing platforms with next-generation sensor systems focusing on Surveillance, Protection, Land & Battlespace and Simulation & Training.

SELEX Galileo has a significant heritage in working with India, delivering the Company's most successful products. These have ranged from protection systems and ESM to Precision Approach Radar and target drones. Activities in the country also include a repair facility and the training of Indian personnel. SELEX Galileo is currently pursuing opportunities in the maritime patrol and surveillance domain, related to retrofit programmes for the Sea King and Kamov-28 helicopters of the Indian Navy. The Company's ATOS (Airborne Tactical Observation and Surveillance) system provides wide area and targeted surveillance (overt or covert), anti-submarine warfare and environmental and border control. ATOS can be integrated with Seaspray, the Company's cutting edge Active Electronically Scanned Array (AESA) Radar technology. For Unmanned Aerial Systems and for helicopters, SELEX Galileo offers smaller and lighter PicoSAR AESA radar, which provides an unrivalled all weather capability in the Land & Battlespace sector.

SELEX Galileo is also pursuing various programmes for the upgradation of armoured vehicles as well as those for the enhancement of land troops' awareness, effectiveness and protection where equipment can be linked together within a common tactical network. One solution is the battle-proven Laser Inertial Navigation and Pointing System (LINAPS) which provides pin-point navigation and pointing accuracy for artillery, and is in service with several armed forces. The Company's other solutions include the modular and proven 3rd Generation Fire Control System TURMS/T which is a significant upgrade for Main Battle Tanks such as the T-72, the electro-optic suite for the dismounted soldier, and the acoustic hostile locator HALO. To provide a solid base for the growth of the company's Electronic Warfare and Protection business in India, SELEX Galileo last year signed a Memorandum of Understanding with BEL to explore EWrelated business opportunities for the Indian market. The Company is currently promoting the combatproven HIDAS defensive aid suite that delivers world-class protection for helicopters, as well as radar decoys for naval vessels and aircraft such as the Eurofighter Typhoon. •

Elettronica: Europe's leading manufacturer of electronic equipment

Founded in 1951, Elettronica is Europe's leading manufacturer of Electronic Defence equipment. According to the Journal of Electronic Defence (JED), the top magazine of the EW community, it is also the fourth in the world. The company designs, produces and fields a range of products that cover all aspects of Electronic Warfare: naval, land and air environments; ESM, ECM, ELINT, RWR, SOJ class of equipments; passive and active functions. The Company's "mission" is concentrated on EW, with no other diversion. Each and every aspect of defence electronics, from passive monitoring of enemy, neutral and even friendly electromagnetic (e.m.) emissions – both in asymmetric and symmetric combat conditions, in peace, tension and wartime — to self, mutual and stand-off protection of own combat and support platforms, to the analysis of complex battlefield scenarios, in real-time and non real-time, for tactical and intelligence purposes, is addressed.

"Elettronica has always been a unique case on the Italian defence industry scene," stated Mr Benigni recently, adding, "Thanks to its small size and its largely private shareholding structure, it enjoys a degree of operational flexibility that the large groups have never had. The highly technical nature of its area of activity, the force multiplier effect of its products and its leading position on the Italian market has given it a strategic value that goes well beyond its size, both nationally and internationally."

In India, to increase the volume of its export business, Elettronica is actively addressing the new Indian Defence Programmes. Elettronica's approach to the potential Indian defence market is that of co-supplying and/or co-developing, together with Joint Venture Companies (JVCs), local companies, the Defence Research and Development Organisation (DRDO) and the Indian Ministry of Defence (MoD), niche technology systems. These are the result of its almost 60 years of Research and Development (R&D) in the Electronic Warfare (EW) area alone and would enhance the defence capabilities of Indian airborne, naval, and land-based platforms. For this purpose, Elettronica is seeking the cooperation of local industries to explore possible opportunities and thus establish a stronghold in the Indian market: in this context, Elettronica has signed a Joint Venture Agreement (JVA) with ALPHA Design Technology of Bangalore. This JVC will enable ALPHA to become a good industrial reference in India for Defence Electronics.

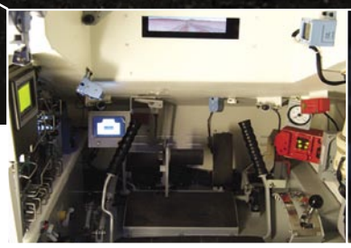
Within the programmes to which Elettronica is already applying the above approach, its proposals are being favourably received by the Indian Armed Forces. In the airborne and naval fields in particular, cooperation with DRDO Research Institutes will provide the basis for upcoming programmes for EW systems both for fighters (new aircraft and upgrades of existing aircraft), and for naval and/or helicopter platforms. The Elettronica approach to India is based on the following principles: offering high performance EW systems that are readily available and can be easily supported in order to minimize cost throughout their operational life cycle; know-how and technology transfer to the country; cooperation with DRDO institutes and with local industry; establishing Joint Ventures; guaranteeing the offsets requested by the MoD.

Today, on the occasion of the Defexpo Exhibition, Elettronica launches its new product conceived for the Communications EW market segment. In the escalation of Military Operations Other Than War, following the end of the Cold war era, intelligence agencies worldwide recognised the urgent need of a change of pace in the planning and execution of intelligence gathering activities. Apart from the traditional fields of operations, executed by highly specialised units and mainly addressed towards medium to long term observation, the interception and exploitation of communication signals originated by a wide variety of analog and digital radio devices is gaining more and more importance. This is due to the fact that insurgents, criminals, "lord of wars" and any other type of apparently non-organised opponents, but also military corps belonging to developed and developing countries are using commercial communication media to establish rapid and effective networks between them, with the advantages of rapid growing technology always available at practically no cost. The "race to the GHz" and the digitalisation of waveforms with increased bandwidth, if compared to analog devices, now technically joins what was strictly separated in the past doctrine. Communication EW and Non Communication EW are now facing similar technical challenges that require an integrated and symmetric answer. Furthermore, the type of operations in field couldn't easily allow the deployment of special EW units and the intelligence cycle, with the fine tuned information, fused with data from the plethora of other sensors (electro-optical, radar, etc.) is needed at the right time. And this represents the ideal completion for a fully committed EW company. Elettronica is the ideal partner and the most qualified supplier of integrated Sigint Systems that are based on front end, processing units and IT components that are indifferent to frequency range, bandwidth, modulation, etc., but flexible enough to be tailored to operational requirements that may vary at a glance. Our systems are "naturally born" with network enabling capabilities, and can be fitted on practically any type of platform. •

CAE India Pvt Ltd is proud to have partnered with TATA Advanced Systems Ltd (TASL) to develop a complete T-90 tank training system. The comprehensive solution includes state-of-the-art simulators for the T-90 driver, T-90 gunner, and T-90 crew, which all combine to deliver the fidelity and realism required to train the entire crew in the T-90 tank. CAE India and TASL have also developed a state-of-the-art T-72 driver trainer to address the training requirements of T-72 operators.

As the Indian Army prepares to roll out nearly 1,000 domestically-produced T-90 tanks over the next decade, TASL and CAE India stand ready to deliver the training systems required to ensure mission readiness and success.

Come visit CAE India's booth (Hall 18, Booth #31G) at Defexpo 2010 to see and learn more about CAE's world-class simulation-based solutions for India's defence and homeland security forces.



T-90 driver trainer

T-90 gunner trainer

T-90 crew gunnery trainer

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General Dynamics UK Best response to Indian Army's Battlefield Management System

As the tempo on the battlefield increases on a daily basis, soldiers, their commanders and their supporting forces on the ground, in the air or at sea need to be joined up so that all forces are aware of, and can respond to any given situation. Every soldier in that theatre needs to know where their colleagues are, where the enemy is and what their next move is likely to be. They also need to be able to react to the decisions of their commanders at a moment's notice.

Speed and clarity of communication are key to out-manoeuvring the enemy and protecting soldiers.

Many armed forces around the world, including that of India, know that they need to modernise if they are to maintain their military edge. But delivering such a system is not simple, which is why many of those who wish to upgrade look to General Dynamics UK Limited, the company recognised as the leading prime systems integrator with the greatest experience of delivering cutting edge C4I solutions around the world.

The reason why General Dynamics UK is preeminent amongst C4I systems integrators is because it recognises that each military force can have very specific requirements for their C4I system, dependant on factors including the size and organisation of their military, where they are likely to be operating and that country's military doctrine.

By offering a vertically integrated system and equipment package, the majority of other defence contractors miss this point, as they attempt to impose their own solutions on the customer.

The Indian military's Battlefield Management System (BMS) is a complex and ambitious programme with its own specific requirements. It will aim to integrate tactical command and communication for all Indian actors in the theatre of the battlefield.

To do this it will need to deliver such capabilities as an integrated mobile battlefield tactical internet offering secure-voice, secure-data, situational awareness and video capabilities throughout the battlespace; to a large user population both dismounted and in vehicles, in units, Headquarters and Command Posts.

To achieve this it will also need to upgrade its fleet of tanks, armoured fighting vehicles (AFVs) and other vehicles to accept this ultra modern equipment. This approach will provide the network capability to all levels of the military necessary to ensure cohesive communications that deliver a key advantage on the battlefield.

Such a complex programme requires a prime system integration partner that has experience of large, sophisticated projects. General Dynamics UK is that partner.

Having delivered the flagship C4I system to the British Armed Forces over the last eight years, and having provided similar capabilities to Dutch, Romanian and Libyan forces as well, General Dynamics UK is the only systems integrator who fully understands the challenges and complexity of delivering such a system, because it has done it.

For example, integrating over 13,000 new and legacy AFVs, including Russian T-72, T-90 and BMPs into a bespoke C4I system takes a global level of expertise that only General Dynamics UK has the track-record of delivering.

Of additional key benefit to the Indian Government, is General Dynamics UK's unparalleled track record of working with local partners and developing indigenous capability, bringing its skills together with those of local companies, many of them Small or Medium Enterprises (SMEs). We are committed to supporting Indian national guidelines and regulations for industrial participation, and have demonstrable track record of our ability to deliver in this area.

As a prime systems integrator, General Dynamics UK brings the best people and equipment together to deliver the best possible solution. In India, General Dynamics UK will work closely with Indian industry to identify a solution to the Indian military's BMS requirement which will benefit Indian industry and the Indian Armed Forces for many years to come.

For more information visit General Dynamics UK on Stand 14.28, Hall 14 of DefExpo 2010. •

CAE leads 'simulating' market in India

By Ruchika Chawla

CAE, a world leader in providing simulation and modeling technologies, held a round table conference on the eve of Defexpo 2010 on February 13. The purpose was to highlight CAEs success in India. Speaking on the occasion, Martin Gagne, Group President Military, Simulation Products, CAE, said, "Being the industry leader for simulators in India, CAE will showcase its UAV mission base simulator, the FWD observer trainer, and the Command & Staff system (which was developed in India exclusively for the Indian Navy) at the Defexpo. It will be a showcase of our technology," stated Martin Gagne, Group President Military, Simulation Products, CAE.

With annual revenues above C$ 1.6 billion (Rs 7000 crore), CAE employs more than 6,500 people at more than 90 sites and training locations in 20 countries. CAE focuses on civil and military full-flight simulators and training devices, and especially for missiles and UAVs. CAE has the ability to transfer technology as per the needs and requests of the customers. Gagne also announced the mid-year launch of its Helicopter Academy to Train by Simulation of Flying (HATSOFF), a joint venture with HAL, and India's first Level D helicopter simulator training facility. •

Eurocopter Spotlight on AS550 C3 Fennec, EC725 and Panther

Eurocopter, the world's leading helicopter manufacturer is showcasing a significant presence at Defexpo 2010 with its star product "the AS 550 C3", participating in the ongoing trials for the Reconnaissance and Surveillance Helicopter requirements of the Indian Armed Forces. Eurocopter is also presenting its range of military helicopters and state-of-the-art technology. As Norbert Ducrot, Eurocopter Senior Vice President Sales & Marketing Asia points out, "By participating in the key RFPs with our best products, we hope to continue to support India acquire the right mission equipment and develop a strengthened aerospace industry. Over the next few months, we will also further our relationship with India by exploring opportunities for setting up joint ventures with our long time partners and establish a strong footprint to provide end-to-end service to the country."

The AS550 C3 which is undergoing trials for the Indian Army and Air Force requirement of Reconnaissance and Surveillance Helicopters will be one of the key products to be showcased at the event. Also showcased will be specification and mock-up models of the EC 725, which is Eurocopter's key offering for the Indian Multi-role Helicopter requirements and the Panther, which is best suited for the requirements of the Indian Coast Guards.

With reference to both the Indian military and civil markets, Eurocopter currently holds a leading position achieved through strong partnerships. In the military space, Eurocopter has had a fruitful association with India for over 4 decades through two co-operation agreements with Hindustan Aeronautics Limited (HAL).The relationship started with a license production enabling HAL to manufacture more than 600 helicopters of the Alouette 3 and Lama type (Cheetah/Chetak). In 1984, HAL associated with Eurocopter in the development of the Advanced Light Helicopter. The co-operation with HAL has been further strenghtened with Eurocopter outsourcing metallic and composite work packages. HAL is part of Eurocopter global supply chain and is producing Ecureuil/Fennec airframes, joining the ranks of very few select tier one suppliers.

In the civil space, Eurocopter has successfully formed partnerships in both public and private sector with Pawan Hans Helicopter Limited and Indocopters. These partnerships cover the entire spectrum of helicopter activities, from manufacturing to operations, maintenance and product support. •

F-16IN Super Viper from Lockheed Martin

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NEWS DIGEST

AgustaWestland Modern military helicopters

AgustaWestland, a Finmeccanica company, is featuring its range of modern military helicopters at Defexpo 2010. From the 2.8 tonne single engine AW119 upto the 16 tonne three engine AW101, AgustaWestland has a complete range of helicopters to meet future helicopter requirements of the Indian Armed Forces.

The AW119 is a high performance single engine helicopter ideally suited for a range of utility and communication roles, especially for operations in hot and high conditions. The AW119 can carry up to seven passengers in its 3.45 m3 (121 ft3) cabin, the largest cabin of any helicopter in its class. The AW119 is being offered to the Indian Armed Forces to meet the Ministry of Defence's Reconnaissance and Surveillance Helicopter (RSH) requirement.

The light twin engine AW109 Power and Grand helicopters are ideally suited for a range of government and public service applications including maritime and coastal security missions. Both helicopters are now widely used around the world and offer high performance with very competitive operating costs.

The AW139 is the world's best selling medium twin engine helicopter with nearly 450 sales since 2004. In addition to its success in the commercial market the AW139 has become the leading helicopter in the government and public service market in the 5-7 tonne class. The AW139 is ideally suited for government transport duties as well as SAR, law enforcement, maritime patrol and medical rescue roles. Powered by two Pratt & Whitney PT6C-67C turboshaft engines, the AW139 is the fastest helicopter in its class with a cruise speed of 165 knots (306 km/h). It also has the best hot and high performance of any helicopter in its weight class and is the only helicopter in its class designed to the latest safety standards. The AW139 is now operating with several government and commercial operators in India.

The T129 has been offered to the Indian Air Force for its attack helicopter requirement. Having recently won the Turkish Armed Forces attack helicopter competition that included both European and American competition, the T129 could be a strong contender, offering the best compromise of cost and capability. The T129 has the performance to operate with minimal restrictions even in hot and high conditions, thanks to its two 1015 kW LHTEC CTS800 engines with FADEC. With four weapon stations the T129 can carry an impressive range of weapons and a substantial weapon load.

The NH Industries NH90 is the best selling helicopter in the 10 ton market with over 500 sales confirmed so far. AgustaWestland is leading the marketing of the naval version of this helicopter for future Indian Navy requirements. The NH90 is the world's first helicopter to enter production with an all composite airframe and fly-by-wire flight control system. Designed as a military maritime helicopter from the outset the NH90 is designed to operate from ships performing a wide range of naval roles including anti-submarine warfare, anti-surface warfare and maritime patrol.

The AW101, the largest helicopter in the AgustaWestland range, has been offered for the Indian Air Force's VVIP helicopter transport requirement. The AW101 cabin is 30 per cent larger than its nearest competitor providing increased space and passenger comfort. Equipped with three engines, the AW101 has superior safety in the event of an engine failure, when compared to twin engine designs, especially while operating in hot and/or high conditions. •

ASTOR enables quick decision making

Raytheon Company's Airborne Stand-off Radar system continues to support coalition forces in theatre. ASTOR is a sophisticated air-to-ground surveillance system that provides 24-hour all-weather actionable intelligence.

The ASTOR system comprises five Sentinel aircraft, six tactical ground stations, two operational-level ground station units, support vehicles, and an extensive and sophisticated support infrastructure. Raytheon has delivered all ASTOR equipment to the UK Ministry of Defence and supports the system in the field, assisting the front line on operations and in training and logistics.

The ASTOR's dual mode radar incorporates synthetic aperture radar and moving target indicator for wide-area surveillance. Data from the radar system is exploited and disseminated by an extensive and sophisticated communications suite including wide and narrow-band data links, tactical data links, secure VHF and UHF radios, and satellite communications. All are controlled through a central mission system operated by crews in the air and ground segments.

"Raytheon's moving target indication and synthetic aperture radar technology allow near real-time dissemination of critical data to the ground forces," says Tim Carey, vice president for Intelligence, Surveillance and Reconnaissance Systems. "The actionable intelligence provided by ASTOR has had an immediate operational impact on the success of UK and allied ground forces in theater," he adds.

Raytheon Systems Limited is a prime contractor and major supplier to the UK Ministry of Defence and has developed strong capabilities in mission systems integration in defence, national security and commercial markets. RSL also designs, develops and manufactures a range of high technology electronic systems and software at its facilities in England, Scotland, Wales and Northern Ireland. •

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Defending India's Skies with Eurofigher Typhoon

India finds itself in a fluid threat environment. To keep its borders secure, the nation has to anticipate and to pre-empt dangers far into the future. This turns the ongoing MMRCA campaign into a key element for a forward looking defence strategy. Whichever combat aircraft India chooses, one thing is certain: The 126 multi role fighters will have to remain in service for three to four decades. This requires the latest technology available with the greatest growth potential.

While some manufacturers try to sell 30 years old technology, Eurofighter Typhoon offers the latest and the most advanced combat aircraft capabilities available in the world market. The aircraft entered service only recently and has a life span of 40 years ahead. It is therefore ideally positioned to evolve with India's changing security needs through continuous upgrades and enhancements.

Rugged, robust and extremely agile, Eurofighter Typhoon is the world's most capable combat aircraft. Its proven swing role capability guarantees unparalleled flexibility and tactical versatility to commanders: Air-to-air and air-to-ground missions can be flown simultaneously, without landing or configuration changes. With the flick of a switch in the cockpit, a pilot can turn his combat aircraft from offence to defence.

In addition, a comprehensive weapons payload and high armament flexibility make the aircraft easily adaptable to a wide range of mission requirements. The aircraft's extraordinarily powerful EJ200 engines also provide a decisive edge over potential adversaries they ensure top-of-its class speed, take-off power and agility. Its unrivalled operational capabilities make the Eurofighter Typhoon the ideal answer to the threats India might face today and in future.

While India's security is no doubt priceless, Eurofighter Typhoon also provides the most cost effective long term solution to boost its defences. Designed for low maintenance and life-cycle costs, this swing-role fighter delivers real value for money with reliability and unmatched availability to any Air Force which operates them.

Choosing the Eurofighter Typhoon also ensures tangible political benefits: For one it would strengthen India's strategic independence because the nation would gain access to the most modern defence technology - without hidden constraints. Germany, UK, Spain, Italy, the four nations supporting the campaign, will give India access to the most modern military technologies without implicit political demands, end use monitoring or site inspections. This means that buying the Eurofighter Typhoon will not compromise India's sovereignty.

In addition, India can strengthen its political, defence and economic relations with four European nations which offer a fair partnership based on mutual respect. Their governments, armed forces and defence industries are strong and reliable security partners. Selecting Eurofighter Typhoon would meet another strategic objective: Simultaneously engaging Europe's leading aerospace and defence companies and their 400 suppliers' will significantly diversify India's supplier base. Linking up with Europe's largest defence programme also allows Indian companies to tap into the vast defence production expertise of BAE Systems, EADS and Finmeccanica.

With more than 700 aircraft in the order book and six customers (Germany, United Kingdom, Spain, Italy, Saudi Arabia, Austria), Eurofighter Typhoon is not only Europe's largest defence programme. As the world's only international combat aircraft, it epitomises cross-border defence cooperation. An unrivalled industrial partnership offer extends this spirit of trust and technology sharing to India: Eurofighter Typhoon invites India to become a key part of this international cooperation on which the entire aircraft programme is based.

As a true R&D and production partner, India can play a major role in many forthcoming upgrades which Eurofighter Typhoon is bound to undergo during its lifespan of 40 years. Co-developing cutting edge future capabilities will boost the self-reliance of India's defence sector and lift it to a new technological level. Getting the most modern technology available in the world market and partnering its further development is an opportunity for India which no other competitor can offer. India's security deserves the best combat aircraft. Eurofighter Typhoon is the right choice. •

AH-64D Apache

Whether it is keeping peace in Afghanistan or Iraq, or entering service around the world, the AH-64D Apache helicopter has adapted to every challenge it has faced in its evolving role as a world peacekeeper.

The Apache is a multi-faceted combat system that matches the demands of each mission and performs well in high-altitude mountain engagements, the extreme conditions of desert combat and urban combat. Operated by a growing number of defence forces, international Apaches are flourishing. Twelve nations, including the United States, have selected variants of the world's most advanced multi-role combat helicopter for their defence needs.

Apache has expanded far beyond its original mission as a rapidly deployable, force multiplier against heavily armoured vehicle opponents. The AH-64D Apache Longbow features fully integrated avionics and weapons, plus state-of-the-art digital communications capabilities that enable it to be the forward eyes of battle commanders around the world. Next-generation AH-64D Apaches flown by the Royal Netherlands Air Force have spent time in Africa, Iraq and Afghanistan supporting peacekeeping operation. AH-64 Apaches, from several nations, including British Army, have joined the ranks of international defence forces supporting peacekeeping operations in Afghanistan. US Army Apaches are in service around the world. The Apache Block III is the latest variant of the Apache AH-64D, which includes the following enhancements:

- **Future Force Connectivity**
  - Open Systems Architecture (OSA) - Segregates flight software from peripheral software
  - Seamless communications
  - Instant situational awareness and sharing
- **Off-Board Sensors**
  - Level IV Unmanned Aerial Vehicle (UAV) control
  - Extended-range sensing
- **Extended Range Sensors and Weapons — the key to survivability**
  - Extended Range Fire Control Radar (FCR)
  - Radar Frequency Interferometer (RFI) passive ranging
  - Extended-range missile
  - Layered survivability – the ability to bring them home
- **Cognitive Decision Aiding System (CDAS)**
  - Aids survivability – dynamic re-routing
  - Speeds critical battle tasks
  - Data fusion merges on- and off-board sensor imagery and data
- **Improved Aircraft Performance**
  - Improved high-hot capability (6K95)
  - Increased payload capability
  - Increased maneuverability throughout spectrum
  - Pure GE-T700-701D engine fleet (Common withUH-60)
- **Improved Maintenance/Training**
  - Advanced Health and Usage Monitoring System (HUMS)
  - Longbow Integrated Maintenance Support Software (LIMSS) improvements
  - Automated parts identification
  - Embedded diagnostics
  - Advanced Interactive Electronic Technical Manual (IETM)
  - Multi-mode laser •

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BUILDING on trust

By Brian Nelson

Soon after Boeing India was incorporated in 2004, Boeing Defence, Space & Security executives went to work opening the once off-limits Indian defence market for Boeing.

"Our first trip in-country was to Aero India air show in 2005," recalls Jerry Vincent, who was assigned business development responsibilities for the F/A-18 Super Hornet in India. With him was Mark Kronenberg, who is now the vice president of International Business Development for BDS.

"Things were starting to move fast," says Kronenberg and adds, "The US State Department had just given a green signal to the US defence contractor sales to India and at about the same time India issued a Request for Information for 126 new multi-role combat fighters." To the handful of companies in the world building combat fighters, the India competition promises to be one of the biggest international fighter purchases in decades. But Boeing was not among the companies which were sent the initial information request. That's because few in India, even in the Ministry of Defence, regarded Boeing as a defence company, which made the work of Vincent and Kronenberg all the more pressing.

"The Indian Air Force (IAF) was glad that Boeing, known for its quality in commercial airplanes, also had a defence arm and created products like the F/A-18 Super Hornet," says Vincent, who, along with Kronenberg, scrambled to get Boeing a seat at the bidder's table. Yet, their initial meetings with the Defence Ministry and IAF would not have happened were it not for the six-decade legacy of trust already established in India by Boeing Commercial Airplanes.

"How could I not meet the Boeing Company?" the Chief of the Indian Air Force is reported to have said as he welcomed Chris Chadwick, the president of Boeing Military Aircraft.

The Boeing executives' realised that to succeed in India, the company had to present one face to the customer that simply said "Boeing". Internally, this 'One Boeing' approach reached across intra-corporate boundaries to capitalise on talent, technology and expertise across the enterprise.

In line with this strategy, BDS brought in someone to lead its initiatives in India with a solid background of Commercial Airplanes experience in India. That was Vivek Lall, who is now responsible for promoting the F/A-18 Super Hornet and other BDS defence products in the Indian defence market.That early strategy is working.

- In 2009, Boeing won the biggest US defence deal with India with the multibillion-dollar sale of the eight Boeing P-8I long-range anti-submarine aircraft, with more sales possibly on the way. Although a BDS product in name, the P-8I is a derivative aircraft based on Boeing's 737 passenger aircraft, which Lall was aware of since his Commercial Airplanes days.
- In January 2010, India sent the US government a request for information on a potential order of 10 Boeing C-17 Globemaster III military transports, a deal industry analysts say could exceed $2 billion.
- The F/A-18 Super Hornet has become a strong contender in India's fighter competition, which is worth $10 billion. The Super Hornet completed the India phase of the all-important flight trials in August.
- In October, Boeing submitted bids for India's Heavy Lift and Attack helicopter requirements, offering the CH-47 Chinook and AH-64D Apache.
- India selected BDS to maintain the three Boeing Business Jets operated by the Government of India.

India's defence requirement represents to a $31 billion market opportunity for Boeing over the next 10 years, according to Kronenberg. "If we do this right, we are very well-placed to become India's defence supplier of choice," he says. But sales are only a part of the story. Boeing is forging partnerships with Indian companies that will inject new talent and processes into Boeing, making it a leaner company with lower costs that can win new sales and preserve jobs. "In this new world, partnerships are the only way to go, and we're building them," Lall says.

Boeing has placed work packages with Hindustan Aeronautics Limited (HAL) that include F/A-18 gun bay doors and wire harnesses, and is sharing with HAL Lean+ and programme management principles. If Boeing wins the fighter contract, HAL will assemble 108 of the 126 aircraft in India, as required in the Request for Proposal.

BDS also is exploring partnerships with numerous other Indian companies and has begun signing contracts to satisfy work placement requirements from the P-8I sale. Boeing and India's Bharat Electronics Limited are jointly developing an analysis and experimentation centre in Bangalore and New Delhi to assist the service branches in understanding how to satisfy future defense and security needs.

Looking back, Chadwick, president of Boeing Military Aircraft, marvels at the work that has been accomplished in a short time by One Boeing in India.

He also sees a larger legacy. "I believe the U.S., Boeing and India have the potential to build a great and lasting defense partnership," he says. "And one of the greatest symbols of that partnership can be the Super Hornet," he adds. •

Brian Nelson is the head, International Communications, India, Boeing Defence, Space & Security

Raytheon weapons for India's new fighter aircraft

As the Indian Air Force (IAF) engages in the Medium Multi Role Combat Aircraft competition, it has a dazzling array of choices in regard to fighter jets.

As the Indian Air Force (IAF) engages in the Medium Multi Role Combat Aircraft competition, it has a dazzling array of choices in regard to fighter jets.

The United States is offering the Lockheed-Martin F-16I Super Viper and Boeing F/A-18E/F Super Hornet, which have an almost unparalleled reliability level proven in thousand of combat hours. The robust European defence industry is offering the Saab Gripen, Dassault Rafale and the Eurofighter Typhoon. Even the Russians are queuing up to offer their MiG-35 to the IAF.

The IAF has to choose from the F-16 or F/A-18, the weapons package offered by the US government, which include a full complement of Raytheon weapons: the AIM-120C-7 Advanced Medium Range Air-to-Air Missile (AMRAAM), the AIM-9X Sidewinder, AGM-88B High Speed Anti-Radiation Missile (HARM), Paveway precision guided bomb, and AGM-154C Joint Standoff Weapon.

As important as it is to choose the right aircraft, it is also important for India's defence forces to see what weapons will arm the newest fleet of fighters. For Raytheon, which has enjoyed reputation as the world's biggest missile manufacturer, the question is almost an academic one.

"Our weapons are platform agnostic," says Harry Schulte, vice president of Raytheon's Air Warfare Systems product line. "In other words, you'll find Raytheon weapons on literally dozens of aircraft," he adds.

"Raytheon builds all its weapons with the safety of the war fighter and the people handling the weapons at the top of our mind," says Schulte. "We engineer redundancies into our products to ensure they will never explode during maintenance or as the result of a malfunction. This approach has ensured that we have never lost any lives because of an accident or a mishap with one of our weapons, and that's a record we intend to keep," he adds •

Rafael: Breaching & Urban Warfare Devices

The current global geo-political situation has brought about prominent changes in relation to the nature of the combat scenarios as well as the weapons being developed by the various manufacturers. Keeping this in view, Rafael is presenting a broad spectrum of Breaching and Urban Warfare Devices at the Defexpo 2010.

The developer of military systems, Rafeal believes that future conflict will be based on an asymmetric nature. No more huge confrontations between regular army forces, with long armor columns fighting each other are seen. Rather unconventional fighting-based confrontations between regular armies and guerilla forces located in sheltered and hidden positions in the midst of civilian populations is being envisaged.

Military Operations in Urban Terrain (MOUT) introduces many challenges into different combat scenarios, Low Intensity Conflict (LIC) or complex anti-terror situations. In asymmetric war, the enemy is at an advantage because of using simple munitions relying on the natural protection of three dimensional urban structures. Mission forces are usually divided into small self-reliant groups (bubbles) that confront the complexity of the urban battlefield. Traditional weapons are insufficient for this scenario.

Rafael's breaching solutions provide a modern spectrum of operational solutions for military forces to surprise the enemy and reduce risk to friendly forces, eliminate collateral damage and ensure that innocent people are not hurt.

Rafael has developed a variety of breaching products – rifle launched, shoulder launched and static hand emplaced munitions – to assist in urban warfare confrontations. These products can solve door entry problems, create mobility corridors through walls and structures as well as defeat urban structures, bunkers and light armoured vehicles.

The breaching systems family products and capabilities are:

- SIMON/GREM: Breaching of all types of doors, eliminating risk to the operator and reducing injury to personnel near the door.
- MATADOR AS: Shoulder-launched, fully disposable munition that can be fired from an enclosure. It is multi-purpose munition, effective against enemy hidden in structures, fortified positions and light armour vehicles. In addition, it has Mouse Holing wall breaching capability. These features make it very effective in MOUT scenarios.
- MATADOR WB: Shoulder-launched wall breaching weapon with FFE (Fire from Enclosure) capability using the Davis Gun launching method.
- MATADOR MP: It destroys bunkers and light armoured vehicles. This is a shoulder launched weapon with FFE capability. It has engagement capability of 500 m and the munition weight is 11.3 kg (24.9 lbs).
- URBAN STAR: Hand-placed munition with a tandem warhead similar to MATADOR AS. It can be operated against structures providing a lethality effect behind walls as well as other tasks such as constructing roads and runways for creating foxholes. •

ELBIT showcasing broad array of capabilities

Elbit Systems has a broad array of capabilities demonstrating full system interoperability, which is being demonstrated via a multimedia presentation at Defexpo 2010 (booth18.17 G, Israel Pavilion, Hall 18, ground floor).

The presentation, **"Networking in Action"** features real life combat situations and demonstrate how the systems' interoperability, in offensive operations on enemy territory, enables achievement of crucial objectives. The presentation allows viewers to experience dynamic combat experiences and missions with special effects replicating how the systems work in fully realistic views. Like previous Elbit Systems' presentations which have won prestigious international awards, this one promises to be just as memorable and exciting.

Systems featured in the multimedia presentation

Skylark® I-LE: This new model Skylark® unmanned aircraft system is based on the vast experience accumulated by Skylark® and is being presented in real-size in the Elbit Systems booth.

BRO@DNET Wireless Point to Multi Point broadband WiMAX - based communications system: This complete turnkey, network based communications system expands the concept of "Network-Centric Warfare" (NCW) solutions.

ELSAT2000 - Tactical, Full Military Standardised Satellite Communication on-the-Move (SOTM) Solution: It is the first tactical, full military standardized satellite communication on-the-move (SOTM) solution, allowing low visibility profile and high data rate broadband capabilities.

Tactical Multimedia Router: TMR is designed to disseminate voice, data and video over narrowband and broadband Mobile Ad-hoc Networks.

SDR-7200 - Software Defined Radio: SDR-7200 allows true command on move with data communication of several Mb/s across various band widths.

Elbit Systems' advanced broadband Military Wireless LAN supporting live video transmission and reception: MaXess® is based on advanced ad-hoc networking protocols, enabling the land warrior to efficiently close the sensor to shooter loop.

VIC-500 Digital Intercom for tanks and other military vehicles: It is a digital wireless intercom system that links the on-board crew members among themselves as well as with the external world.

Display and Sight Helmet System: DASH enables pilots to aim their weapons simply by looking at the target. DASH measures the pilot's Line-Of-Sights (LOS) relative to the aircraft, and transfers its information to other aircraft systems.

Portable Lightweight Designator/Rangefinder: The PLDR-II system is a lightweight, cutting edge laser designation and targeting system.

CORAL-LS - Hand-held 3-5 µm FPA Thermal Imaging Camera: It is a Thermal Imaging Camera with integral 1.06µm imaging capability, incorporating a See Spot Camera.

Spectrolite (SPS 65V-5): A unified EW suite for helicopters and transport aircraft, Spectrolite packs advanced EW capabilities into a single LRU, delivering superior identification and location under challenging conditions.

Passive Approach Warning System: PAWS are a highly effective family of operationally deployed staring IR Missile Approach Warning Systems.

MUSIC® MUlti-Spectral Infrared Countermeasure System: It is a Laser Based DIRCM System for Protection of Aircraft from MANPADS. MUSIC® is being presented in graphic format in the Elbit Systems booth.

Following are being demonstrated in the Elbit Systems booth:

Dominator® Integrated Infantry Combat System: It detects, delivers, decides, disseminates. Dominator® empowers infantry units with full situational awareness, networking them into integrated information systems.

CORAL-CR - Hand-held 3-5 µm FPA Thermal Imaging Camera: It is a CORAL-CR's light weight, ruggedised construction and excellent picture quality are well suited for security and perimeter defence target acquisition missions.

LILY: It is a new family of lightweight Thermal Imaging Weapon Sights (TWS) designed for use by individual infantry soldiers.

Micro-CoMPASSTM - Micro Multi-Purpose Advanced Stabilised System: An 8" extremely lightweight and compact day and night surveillance system, Micro-CoMPASSTM is optimised for use in a wide range of platforms.

Hermes® 90: This UAS features high survivability and is a long endurance UAS with 18 hours mission range of up to 100 kilometers.

Following Unmanned Systems are being presented in the Elbit Systems booth in a 1:10 scale:

Unmanned Aircraft Systems (UAS):

- **Hermes® 450:** It features new capabilities with improved communication channels and more powerful engine performance
- **Hermes® 900:** It has recently completed a successful maiden flight and will commence serial production following the completion of additional flight tests.
- **Skylark® I:** A mini/man-pack UAS, Skylark® I is ideal for lower echelons self support reconnaissance close range beyond-the next-hill missions
- **Skylark® II** is a close range tactical UAV that can perform day, night and adverse weather observation, data collection and target marking at mission ranges exceeding 50 kilometers.

Unmanned Surface Vehicle:

- **Silver Marlin:** It is a fast, agile, highly maneuverable medium-sized USV featuring autonomous obstacle avoidance sensors and controls.

Armoured Fighting Vehicles (AFVs):

Full Gun Electronic Suite for Artillery (GES): It controls all guns' electronic components: Integrated Navigation System, Gun Auto Laying Drive, Laser Range Finder, Vision Devices and interface to radios and ACCCS (Artillery Command Control and Communications System).

Weapon Integrated Battle Management System (WIN BMS): It is an essential add-on to virtually any combat vehicle's mounted sensor or weapon system, forming well-coordinated battle teams that perform their tasks with optimum speed and precision.

Laser Warning System (E-LWS): These systems can detect, categorize and pinpoint laser and IR sources including laser rangefinders, laser designators, beam rider transmitters, IR illuminators and trainers.

ELISRA – An Elbit Systems Company

Situational Awareness Panoramic IR – Add –on Power for Mission Safety: It provides a breakthrough solution for piloting and situation awareness enhancement while answering the commonly encountered 'looking through soda straw' problem experienced by aviators worldwide.

COMINT-DF/ELINT/COMJAM/DFECM: The COMJAM solution provides modular, easily reconfigurable building blocks. Together, these building blocks, optimally configured for the specific armed forces, create a formidable COMJAM power.

Sunstone GES 210: A ground-based, tactical and strategic ESM/ELINT system, Sunstone GES 210 is a field-proven system delivers exceptionally accurate real-time situation awareness, and continuous, 24-hour ESM/ELINT information gathering.

TSR 2300 - Elisra's new line of receivers enables coping with wide band, frequency hopping systems that blend into the "regular" former generation spectrum congestion, while carrying out the desired COMINT systems' mission requirements. •

Khilanmarg, Northern India: After avalanche

Saving lives in disaster situations...

The Life Locator® system uses Ultra Wide Band (UWB) technology to vastly improve the odds that rescue, not just recovery, will be the ultimate outcome of disaster situations like building collapses, avalanches, flash floods, earthquakes or other natural disasters.

Precision

PRECISION ELECTRONICS LIMITED

"we always know who we're working for"

F-16IN Super Viper from Lockheed Martin

Page 40

DCNS: Mistral amphibious attack vessels

Lockheed Martin's F-16IN Super Viper is a unique new fighter sharing a heritage with the world's only fifth generation fighters – the F-35 Lightning II Joint Strike Fighter and the F-22 Raptor. Evolutionary integration of fifth generation technologies makes the F-16IN the most advanced fourth generation fighter in the world today.

This ultimate fourth generation fighter has been tailored exclusively to meet or exceed all of India's Medium Multi Role Combat Aircraft (MMRCA) requirements. The F-16IN is the right choice for the Indian Air Force (IAF) and is ready for integration into India's infrastructure and operations now.

The ability of Lockheed Martin Aeronautics to incorporate the latest technologies into the F-16IN is the key to expanding mission roles and improving combat capability, therefore creating the most effective multi role fighter today. With a robust upgrade capacity and the continuous insertion of technology, the F-16IN can be readily equipped with emerging capabilities throughout its lifecycle.

The Super Viper has the most advanced technologies and capabilities available today on the international market. It is truly the ultimate fourth generation fighter with all it brings to the battlefield.

Active Electronically Scanned Array (AESA) Radar

The Northrop Grumman APG-80 AESA radar is the only AESA operational in the international market today. This revolutionary all-weather, precision targeting sensor has been exported by the United States government and is defending a sovereign nation today; no other MMRCA competitor can make that claim. The APG-80 AESA radar provides outstanding situational awareness and detection; ultrahigh-resolution synthetic aperture radar mapping, fully interleaved modes of operations with automatic terrain following; and air-to-air tracking of multiple targets.

Net-Centric Warfare Capability

The fusion of net-centric operations and onboard data provides a total battle space picture and optimises mission accomplishment. The F-16 was the first multi-role fighter to incorporate a data link capability, and the IAF's Operational Data Link (ODL) can be integrated onto the F-16IN when available, ensuring interoperability with other IAF aircraft. Data integrates through all phases of the mission – from mission planning, navigation, communication and target prosecution to return to base – transforming the pilot from an aircraft system manager to a tactician.

Modern, Full-Color, All-Digital Glass Cockpit

The pilots receive easy-to-interpret information via the all-digital cockpit and helmet -mounted cueing system. The large color displays are capable of fusing data from on- and off-board sensors, reducing the workload and enabling the pilot to focus on the mission.

Advanced Survivability Features

The low radar signature of the F-16IN reduces detection by enemy radars. Its single-engine design has smaller infrared and visual signature than twin-engine fighters. The internal electronic warfare system avoids or defeats the most advanced threats. Superior agility and excellent pilot situational awareness reduce vulnerability to attack, while critical systems redundancy and shielding enhance survivability.

Enhanced High Thrust Engine

The F-16IN offers the highest thrust engine in the competition, the General Electric F110-132A. It has 32,000 pounds of thrust with an unprecedented record of safety, reliability, maintainability and durability. The F110 incorporates the latest technology, including full authority digital engine control, for maximum fuel efficiency and performance.

Safety, Reliability and Maintainability

The F-16IN is the most reliable, maintainable and safest multirole fighter in the world . . . based on more than 13 million flight hours in peacetime and combat operations. Also, our support approach provides the lowest life-cycle cost and is consistent with existing IAF maintenance practices.

Proven Combat and Operational Effectiveness

- Over 400,000 combat hours
- More air-to-air victories (72-0)
- Over 100,000 combat missions flown
- Over 2,200,000 ordnance delivered in combat
- Over one million operational sorties in support of the Global war on Terror

Lockheed Martin understands that meeting the specific needs of each partner, the company insures that the F-16 maintains an unmatched record of program performance and mission success. India's partnership with Lockheed Martin can provide access to the highest technology, opportunities for technology co-development, low-risk licensed production, transfer of technology, and opportunities for extensive long-term business. The Super Viper facilitates a key strategic partnership with the United States and the US Air Force including joint training, logistical and operational concepts.

Also, Lockheed Martin has a proven history of successful partnerships. The F-16 is the fighter of choice for 24 nations with 52 follow-on buys, including successful international licensed manufacturing of 928 aircraft. Lockheed Martin's worldwide industrial partnership success is unsurpassed by anyone and includes these accomplishments:

- Establishment of four highly successful international F-16 manufacturing lines
- Demonstrated ability to transfer advanced technology successfully
- Over $37 billion in offsets realised by 40 countries
- Establishment of indigenous international support systems
- Joint technology development for international markets •

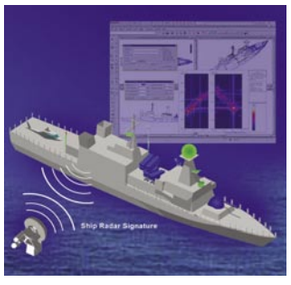
Globally validated IDS Design Frameworks

REDUCES TIME-SPEND ON PROJECTS. OFFERS SIGNIFICANT COST SAVINGS.

SHIP DESIGN

SHIP ELECTROMAGNETIC DESIGN FRAMEWORK

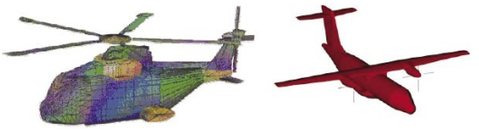
Ship EDF offers a simulation environment for the e.m. design of modern ships covering various applications viz.: Electromagnetic Compatibility (EMC), Radar Cross Section (RCS), Infrared (IR) applications over the full frequency spectrum. Ship EDF matches the requirements of naval units designed to reduce ship signatures & integrating new concept combat system equipment: Ideal companion for naval engineers involved in real ship design applications.



AIRCRAFT DESIGN

VIRTUAL AIRCRAFT DESIGN FRAMEWORK

VIRAF-EM, has been conceived to provide the payload integration & signature management with a suite of integrated electromagnetic design and analysis tools for assessing equipment performance and signature response in radar and IR bands by operating on the same physical model (geometries and materials and equipment) kept under configuration control by database.



ANTENNA DESIGN

THE ANTENNA DESIGN FRAMEWORK

The ADF is an innovative, object-oriented kernel which together with its large set of e.m. tools offers a fully configurable system able to cope with any need pertaining to model antennas in free space or when mounted on spacecraft. It is an asset for both design engineering - for the design of antennas, and system engineering - for the evaluation of the interactions of the e.m. fields generated by the antennas with the spacecraft.

All designs validated by leading design engineering organizations in the world.

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Increasing war readiness using IT as an enabling technology

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Information Technology can have a sizable impact on defense services (Air Force, Navy and Army) by significantly improving operational readiness and service levels.

Worldwide, many countries have already adopted state-of-the-art information technology to significantly improve the performance of their defense equipment. Such initiatives have helped these countries improve their war readiness at lower costs.

Proper integration of Information Technology also improves logistics–which play an important role in the value chain of any defense establishment¬– and simultaneously reduces logistical costs.

Logistical costs in the case of complex assets like ships, aircraft, tanks and gun, include costs incurred in maintenance, materials, product improvement and disposal. These are much more significant when compared to acquisition costs, and could be up to 3 to 4 times higher. Personnel costs are also a large component of logistics. In fact, a recent study reports that 33% of US Air Force is employed to perform the logistics workload.

Improving logistical processes results in more than the aforementioned financial value. A recent study conducted among 450 US companies on logistical improvements reported that these also resulted in cutting service failures by 50%, reduced cycle time, and significantly increased productivity.

Despite such value, utilization of IT in the Indian defense sector remains much below its fullest potential. The objective of this paper is to create urgency among appropriate authorities in the government and services to initiate IT driven improvement initiatives in defense manufacturing organizations and services (air force, navy and army). The same is attempted through brief discussion on different case studies from defense sector.

CASE STUDIES

The world is witnessing a huge tectonic shift in the international defense scenario. Increasingly, high technology equipment and information technology-driven systems are being inducted into the services worldwide, particularly in the western world. One such program is the JSF (Joint Strike Fighter) program of the US Government. (For instance, the Joint Strike Fighter (JSF) program of the US Government has proven to be highly successful.)

Today, only after a fighter aircraft completes its sortie and lands on the tarmac, either on an airbase or a carrier, are maintenance staff able to run diagnostics tools and execute maintenance activities. While this sounds normal in a peacetime scenario, such activity leads to much longer downtime of the aircraft in wartime situations. For instance, in the Gulf and Yugoslav wars, the US Air Force found that they required many more aircrafts than anticipated to sustain constant bombing raids.

In contrast, the new IT-enabled Joint Strike Fighters of the US Air Force, however, have the advanced functionality of running diagnostic tests for onboard maintenance systems during the flight itself. Using component-based software solutions, they also send this data to the enterprise system on the airbase or the aircraft carrier through secure communication channels. As a result, maintenance staff is ready with their equipment, tools and spares to perform maintenance activities by the time the aircraft returns after its bombing or reconnaissance mission. It is estimated that this process saves crucial time in maintenance that can now be diverted to strategic missions. Additionally, the Air Force would require fewer aircrafts to perform missions of the same intensity. We believe that defense forces worldwide are exploring many systems like the component-based software of JSFs to harness the advantages of high-tech equipment and information technology.

Another technology that is rapidly entering the defense services is RFID (Radio Frequency Identification). It gives a huge competitive edge, especially in battle scenarios, by greatly reducing the time to find replacement spares by the easy location and identification. RFID systems integrated with IT driven business applications help defense forces reduce turn-around time for maintenance activities.

IT applications today are being used worldwide by several leading defense services (Air Force, Navy and Army), defense manufacturers, and defense contractors, including Lockheed Martin, BAE Systems, British Army, French Air Force, French Navy, South African Air Force, South African Navy, Norwegian Air Force, Norwegian Navy and HAL (Hindustan Aeronautics Limited).

Some of the cases of usage of IT solutions by defense organizations, both services and manufacturers, are listed below:

Fleet Support Limited (FSL), one of the UK's leading providers of Royal Navy and commercial ship repair services, has selected IT solution to provide an integrated business solution for engineering, project delivery, maintenance, manufacturing, financials and human resources. FSL's objective is to replace a number of disparate systems with an integrated solution, covering all aspects of the business, which will enable FSL to meet its growth and performance objectives. The catalyst for the replacement of its current systems is the 10-year contract with the Ministry of Defence to provide the highest standards in ship repair services and accurate up-to-the-minute information on performance to its customers. FSL is a joint venture between BAESYSTEMS and Vosper Thornycroft, who are both major suppliers of ships and systems to the Royal Navy. FSL's facilities include several dry docks and extensive workshops for ship repair support and general engineering. A wide variety of ship repair activity is carried out ranging from emergency dockings to voyage repairs, refits and conversions.

A United Defense subsidiary, Bofors Defence, Sweden, has implemented interesting IT applications. The solution, comprising support for processes including design, purchasing, manufacturing, quotation, and project management, went live in August 2003. Apart from the company's end-to-end competence, Bofors Defence's ambition is to be the global leader in intelligent ammunition and in many other areas of technologies. Bofors Defence has a wide range of products, which include mission-assigned systems for precision response as well as protection systems, ammunition, and launchers.

Babcock BES improved efficiency with launch of IT driven materials and manufacturing management systems. Babcock BES's principle customer is the Ministry of Defence Warship Support Agency, which is part of the Defence Logistics Organisation. Whilst Britain's naval shipyards are recognized as essential strategic facilities, many MoD refit contracts are let on a commercial basis and must meet stringent terms for cost and delivery. In addition, Babcock BES also has a core program of refits, allocated on a preferred contractor basis using the principles of partnership sourcing. This allows the yard to plan ahead and invest in the facilities required to meet the future needs of all its customers.

Derco Aerospace the World leader in military aircraft logistical support has implemented MRO (Maintenance, Repair and Overhaul) and business software. The solution has provided Derco Aerospace, Inc. of Milwaukee, Wisconsin, with business software and services. Derco is a world leader in providing military aircraft logistical support that includes supplying spare parts and performing repair and overhaul services. The company has implemented component-based enterprise applications, software for the extended enterprise and maintenance, repair and overhaul (MRO) software.

IT enabled improvement initiatives are being undertaken by General Dynamics UK for the BOWMAN Logistics Information System (BLIS) for the British Army. The BOWMAN program will replace the Clansman Combat Net Radio (CNR) with a secure voice and data service. BOWMAN will provide battlefield communications for those elements of all three UK Armed Services that take part in, or provide direct support to, land operations. It is the primary means of command and control below brigade level in the land battle and will be installed into all operational platforms. BLIS system includes asset tracking, configuration management, maintenance, reordering and the gathering of usage information. The system covers the organization of front line repairs, which are often carried out in or near the field of operations, industrial repairs and the subsequent return to the field operations.

Component based software made an interesting connection with **Exostar** for BAE Systems. The first phase of a BAE SYSTEMS e-commerce project which links 'back office' production and scheduling systems to Exostar, the global e-Marketplace for aerospace and defense, has gone live. The system piloted using component based software, is now available to all BAE SYSTEMS businesses and enables many different systems in use within the company to be connected to Exostar for transactions and information exchange with suppliers and customers.

Two General Dynamics (NYSE: GD) business units have implemented component based software for the Department of Defense. About 800 total users at the General Dynamics C4 Systems site in Taunton, Mass., and Network Systems site in Needham, Mass., are now using Component Based Applications. Two Advanced Information Systems (AIS) sites—in Mountain View and Thousand Oaks, Calif.—went live in early 2003. These business units use web-based components to manage functions throughout the entire supply chain management process, including manufacturing, procurement, project control and customer order processing.

A leading component based ERP vendor (IFS) and Northrop Grumman Information Technology have formed an alliance to provide component based products and services to Northrop Grumman IT's extensive foreign military customer base. For the foreign military defense market, component based solution provider and Northrop Grumman are offering a select group of its more than 60 web-based components. This integrated suite of component-based business applications includes maintenance, repair and overhaul (MRO), logistical fleet management, product data and document management, supply chain management, engineering and project delivery, e-business, and enterprise asset management, along with other modules.

The UK Ministry of Defence (MoD) has selected Lockheed Martin UK as the prime systems integrator for the Joint Asset Management and Engineering Solutions first increment (JAMES1), previously referred to as the Fleet Management— Management Information System (FM MIS). Component based applications will facilitate Lockheed Martin Simulation, Training & Support (LM STS) in providing the core software. A project christened JAMES1, the first step in an incremental program to deliver increased capabilities in the management of defense equipment assets, will provide commanders with a better understanding of equipment condition and its readiness for training. It will support the greater aspiration of the MoD to manage battle-winning equipment as a whole fleet rather than by individual units, where all equipment is presently held regardless of operational status.

U.S. Army has recently selected IFS Applications for Enterprise Manufacturing and Maintenance Execution Systems for use in its Logistics Modernization Program (LMP) at all of the Army's arsenals, depots, and ammunition plants. Army Materiel Command (AMC) manages, through its subordinate commands, a maintenance and production enterprise that easily equates to a Fortune 100 industrial organization with a diverse assortment of functions that is seldom, if ever, duplicated in the commercial sector by a single company. This means that agility and suitability for a broad array of manufacturing and maintenance, repair and overhaul (MRO) activities was a key factor in the Army's selection of IFS Applications. IFS Applications will bring efficiency to ongoing refurbishment of assets such as ground vehicles, missile and radar support systems, engines, transmissions, and fixed wing and rotary wing aircraft used in ongoing military operations. Similar system will be useful for the Indian Army.

IFS customers within the aerospace and defense industry include the United States, British and Norwegian defense organizations as well as the Eurofighter consortium. Commercial MRO shops and operators include Bristow Helicopters, Aero-Dienst GmbH, Hawker Pacific, and Jet Turbine Services. In addition, IFS provides solutions to original equipment manufacturers (OEMs) such as General Dynamics, Lockheed Martin, BAE SYSTEMS, Saab Aerosystems, and GE Aircraft Engines. Experience of many of these projects indicate that IT can bring about significant improvement in proactive decision making process.

Indian Case

Hindustan Aeronautics Limited (HAL) is a high technology aerospace complex, the largest of its kind in Asia. Its capabilities span a wide range of activities in virtually all areas of aerospace technology. HAL's activities encompass all aspects of design, manufacturing and overhaul of aircraft, aero-engines, helicopters and all types of aggregates and avionics fitted on them. HAL has spread its activities to cover various areas of Design, Development, Manufacture and Maintenance of aerospace vehicles. HAL has 17 production divisions, and the same is being expanded and regrouped into nearly 27 divisions.

The company has an ambitious mission viz., "to become a globally competitive aerospace industry, while working as an instrument for achieving self reliance in design, manufacture and maintenance of aerospace defense equipment, and diversifying to related areas, managing the business on commercial lines in a climate of growing professional competence."

HAL is implementing IFS ERP applications covering engineering, MRO (Maintenance, Repair, and Overhaul), manufacturing, materials management, human resource management, financial management, project management, workforce management, quality management, document management, supply chain management, and corporate performance management. In terms of scope, the current initiative at HAL is considered as one of the biggest ERP-II projects in the world.

With ERP applications, HAL has consolidated a number of separate systems into a single integrated system. This will enable HAL to enhance productivity and profitability through adoption of best business practices across the organization, resulting in optimized project management, improved manufacturing planning, reductions in inventory, and improved turnaround times of aircraft. In addition, HAL will be able to analyze up-to-the-minute business information to continuously improve performance and customer satisfaction.

The implementation of the ERP system at HAL is aimed at improving the organization's profitability by substantially reducing inventory, decreasing delivery cycle times, reducing operational costs and improving manpower productivity, and ultimately improving the quality of its services. The project has been jointly implemented by BAeHAL (a joint venture between BAE Systems and HAL) and IFS. The IFS ERP system has been already implemented in various platforms like (1)Sukhoi – 30 (Aircraft Manufacturing, Rotable MRO, Aircraft MRO, (2) MIG-27 (Aircraft MRO, Rotables MRO, Spares Manufacturing), (3) MIG-23 (Rotable MRO, Spares Manufacturing), (4) MIG-21 (Variants – 69, 75, 77, 96) for Aircraft MRO, Rotables MRO, Spares Manufacturing, (5) MIG-25 (Rotable MRO, Spares Manufacturing), (6) MIRAGE 2000 Landing Gear (Rotable MRO, Spares Manufacturing), (7) MIG-29 (Spares Manufacturing), (8) R25 Engine (for MIG 21 BIS) (Manufacturing, MRO), (9) R11 Engine (for MIG 21) Manufacturing, MRO, (10) R29B Engine (MIG 27) for Manufacturing, (11) RD 33 Engine (MIG 29)- MRO, (12) AL 31 FP Engine (Su 30)- Manufacturing, MRO, (13) KSA Rotables - Manufacturing, MRO, (14) TG16 Rotables - Manufacturing, MRO, (15) Jaguar- Aircraft Retro Modification, Aircraft Manufacturing, Spares Manufacturing, (16) Hawk- Hawk Aircraft & Spares Manufacturing, (17) Airbus Door- Manufacturing for Exports, (18) Boeing Uplock Assembly- Manufacturing for Exports, (19) PTA- Manufacturing, (20) Adour MK 811 (for Jaguar)- Engine Manufacturing, Engine MRO, (21) Garrett 331-5- Manufacturing, MRO, (22) Artouste III B (for Chetak & Cheetah Helicopters)- Manufacturing, MRO, (23) ALH (Advanced Light Helicopter) (Indigenous)- Helicopter Manufacturing, Helicopter & Rotable MRO, (24) Chetak - Helicopter & Rotable MRO, (25) Cheetah- Helicopter & Rotable MRO, (26) LCA (Light Combat Aircraft) – Indigenous -Aircraft & Spares Manufacturing, and (27) IJT (Intermediate Jet Trainer)- Aircraft & Spares Manufacturing.

CONCLUSION

In this paper impact of IT on the performance of defense manufacturing and services (air force, army and navy) organizations have been discussed. The same has been done through discussion on the use of IT by leading defense players worldwide. It has been demonstrated that IT driven improvement initiatives can significantly improve war readiness of defense establishments. •

BAE Systems & Anjani Technoplast Ltd JOIN HANDS

BAE Systems and Anjani Technoplast Ltd have joined hands to bring the latest, lightest and most cost-effective survivability products and personnel protection materials to India.

As part of the relationship, Anjani would manufacture protective equipment using TensylonTM— a versatile, high performance polyethylene ballistic material exclusively developed by BAE Systems to make survivability products, such as body armour and vehicle armour, even lighter and stronger.

Earlier this month, Anjani submitted bullet resistant jacket samples — using Tensylon ballistic material consolidated into vest inserts — to India's Central Reserve Police Force for its current bid of 59,000 protective jackets. If Anjani is awarded the contract, the bullet resistant jackets will be made using BAE Systems' Tensylon material at Anjani's Greater Noida facility in India.

"Our partnership with Anjani is another solid example of BAE Systems long term commitment to India," said Tony Russell, President, Security & Survivability, BAE Systems. "Bringing Tensylon ballistic tape to India is a critical first step forward for us," said Russell. "Together, with Anjani's established production base in India; and BAE Systems' global presence and continuous investment in survivability technologies, we are collectively leveraging our strengths, talents and resources to better protect India's police forces and support India's first responders," he added.

Initially, the relationship will focus on integrating Tensylon ballistic fibre and tape into various products for Indian defence and security forces. BAE Systems is also evaluating manufacturing other survivability systems and accessories in India, including the Modular Lightweight Load-Carrying Equipment (MOLLE) System, which improves mission efficiency by allowing for customisation in the field without compromising mobility or readiness.

Since 1994, Anjani, through its armouring division, has been committed to developing robust and modern day body armour solutions for India's defence and security forces. "Our partnership with BAE Systems to process Tensylon tape in India will bring the latest technology in the field of armouring to India," said R.K. Gupta, Managing Director, Anjani Technoplast. "It is a proven and cost-effective technology, and our independent tests have confirmed the superior performance of Tensylon ballistic tape," added Gupta.

Tensylon, as a ballistic application has already proven its combat effectiveness in Mine Resistant Ambush Protected (MRAP) vehicles deployed in Iraq and Afghanistan. Available as a fibre and tape, its versatility and performance make the Tensylon product an ideal survivability solution for tracked and tactical wheeled vehicles, commercial armoured vehicles and individual protection equipment, such as helmets and body armour.

The relationship with Anjani is another example of BAE Systems' commitment to the development of a long term domestic business in India. It's a commitment to grow capabilities, not just in manufacturing, but in design, development, testing and support. BAE Systems supports the Indian Government's aim of procuring 70 per cent of defence equipment domestically. •

DCNS: Mistral amphibious attack vessels

Mistral-class LHDs are designed to accommodate and support a large range of landing craft, helicopters and UAVs. They are also NATO certified to carry a joint embarked HQ. These vessels are the biggest ships in the French fleet after the Charles de Gaulle aircraft carrier. The new class of vessel is designed to meet new and emerging military challenges.

With a displacement of 21,000 tonnes for a length overall of 199 m, Mistral-class vessels offer a speed of 19 knots and sufficient endurance and range for global force projection. As normally configured, a typical payload might include over 450 troops, 16 heavy helicopters, two hovercraft or four LCM landing craft and one-third of a mechanised regiment complete with armoured vehicles (1,000 tonnes). These ships feature electric propulsion using azimuth pods and high-level automation compatible with a complement of just 160.

DCNS designed the 21,000-tonne Mistral-class vessels to the French Navy's requirements. In response to emerging operational needs identified by other navies, DCNS offers Mistral family variants with displacements of 14,000 tonnes (Mistral 140) to 25,000 tonnes (Mistral 250). The entire family benefits from the operations-proven design of French Navy's Mistral class. Key features common to all Mistral-family vessels include a flush-deck architecture (i.e. unobstructed flight deck), several helicopter spots and excellent payload. All vessels feature a fully equipped hospital which can be tailored according to customer needs and practices. Alternative propulsion arrangements are also available, including conventional diesel or Z-drive electric, all ensuring excellent manoeuvrability. The design allows for easy technology transfer and cooperation with naval and commercial shipyards with DCNS supervision or support.

Mistral-class vessels can embark materiel, prepare materiel prior to disembarkation, project embarked forces, command operations, support forces during shore-based operations, support shipboard command teams, support ship-based units (medical and paramedical staff, munitions supplies, helo air group, vehicles, landing craft, etc.), re-embark forces.

In the force projection role, Mistral-class vessels typically deploy both landing craft and helicopters.The 5,200-sq.m flight deck offers six helo spots: five for NH90/Tiger-class helicopters and one for a Super Stallion-class heavy-lift helicopter. The 1,800-sq.m below-deck hangar, served by two lifts, provides storage and maintenance space for 16 helicopters. Each ship also carries four LCM landing craft or two LCACs while each 95-tonne LCAC air-cushion landing craft can carry several armoured vehicles and infantry carriers, all stored in transit on a 2,650 sq m deck.

The class also offers ample capacity as a hospital ship or for humanitarian evacuation missions. The 750 sq m hospital comprises 20 separate areas, including two operating theatres, an X-ray room and a 19-bed ward. Hospital capacity can be further expanded by adding field hospital modules. The helicopter hangar can even be converted into a fully-equipped 69-bed field hospital. For humanitarian evacuation missions, these vessels can be reconfigured to provide temporary accommodation for a large number of refugees as demonstrated during the Baliste operation off Lebanon in mid-2006.

In late 2008, the French government launched the BPC3 programme to acquire a third Mistral-class vessel. On this 3rd ship, called Dixmude, DCNS will manufacture and integrate the combat system, which includes communications, navigation and combat management systems. These tasks involved in its production demand high value added skill levels, in order to enable the BPC to conduct its operational missions, and represent a quarter of the overall cost of the ship. Work on the third BPC was launched in April 2009. •

MHD 200 Expeditionary capability from ThysenKrupp

Navies around the world are increasingly encountering the need to include expeditionary capabilities within their fleets.

Whether in the counter-terrorism and hot extraction role, or in providing humanitarian assistance in such situations as the Haiti earthquake or flooding in Bangladesh, or as the backbone of a peace support mission, multirole dockships able to carry vehicles, containers, helicopters, and personnel, including special forces, are increasingly a focus of naval thinking.

India, with its significant national, regional and out of area responsibilities, is no exception. As naval shipbuilders and the Indian Navy seek to expand their design and technology partnerships, ThyssenKrupp Marine Systems offers great new thinking, this time for expeditionary capabilities with its innovative Multi-Role Helicopter Dock Ship MHD 200. The MHD 200 provides a multirole sealift capability that can operate completely independently of shore facilities. Besides a wide range of military roles, this ship is equipped for disaster relief, and many other humanitarian missions.

As ships and systems become more complex and demands grow, navies around the world are finding that commonality is becoming an ever increasing advantage. Technical officers, NCOs, and ratings who serve on one ship type within a family can also serve on the other, saving training costs and ensuring that the navy always has the necessary skills available.

The MHD 200 has ample space for helicopters. Six landing spots allow uninterrupted day and night operations, while the hangar deck provides space for up to 11 further medium sized helicopters (NH 90 or similar), workshops, stores, and offices.

An amphibious component including a floodable well dock in the vessel's stern for two landing craft utilities (LCU) or one air cushioned craft (LCAC), as well as two landing boats (LCM) and RHIBs on davits port and starboard above the vehicle decks ensure further flexibility. The ship's ability to load containers with its own onboard crane makes it independent of harbours when necessary. The MHD can carry up to 54 standard 20ft containers and – during an entirely humanitarian mission – can accommodate several thousand people aboard for short periods. Its 30-bunk hospital provides surgery and other medical facilities during humanitarian and combat situations.

For peace support and rapid response and intervention missions, the MHD 200 can carry up to 800 fully armed troops. It has 1000 lane metres for vehicles, sufficient to guarantee a mechanised battalion's mobility.

To protect itself, the MHD 200 can be fitted with a 16 cell VL System and 2 CIWS and – to counter asymmetric warfare threats – six weapons stations featuring remotely controlled machine guns for 360 degree coverage.

In short, the MHD 200 is an invaluable asset for governments and navies requiring a multi-role support ship capable of fulfilling the following assignments:

- Military and/or civilian crisis response
- Operations in areas with little or no port infrastructure
- Strategic sealift operations for personnel, stores, equipment, etc.
- Pre-emptive or enforced protection of embassy personnel and other nationals in crisis or natural disaster areas
- Pre-positioning of personnel and logistic support
- Helicopter platform
- Amphibious operations
- Command and Control, including as an operations centre for naval task forces, air operations, and land forces
- Humanitarian and medical assistance
- Evacuation/ disaster relief / Search and Rescue
- Joint Forces / Joint Operations headquarters
- Logistic support / RAS – Replenishment at Sea

With the MHD 200, TKMS has in its portfolio a vessel that offers defence forces a flexible logistical support platform firmly embedded within the highly successful MEKO® family.

Since 1980 alone, more than 160 naval vessels, ranging from frigates and corvettes, patrol ships and minesweepers to auxiliary and special purpose vessels have been built or are under construction by TKMS shipyards. Navies across the globe are among the users of these ships.

At the heart of TKMS' success are the numerous MEKO® frigates and corvettes designed and in many cases built by Blohm + Voss. MEKO® stands for "Mehrzweck-Kombination" (multi-role combination). Ships based on this concept are distinguished by their modular design.

Forty years of MEKO® experience have been integrated into the German Navy's F124 and F125 frigates and K130 corvettes, the four MEKO® A-200 SAN stealth frigates for the South African Navy, and many other ships.

Smaller naval vessels, such as patrol boats, are also part of TKMS surface portfolio. In the field of minesweepers, the LANDSORT class produced by Kockums is currently undergoing a comprehensive modernisation and adjustment to future requirements.

TKMS' yards have also been involved in the construction of specialised ships such as the PLANET, a SWATH research and testing vessel delivered to the German Federal Office of Defence Technology and Procurement in 2004. This series is continuing with the construction of two SWATH vessels with particularly good seakeeping qualities for the German customs authorities.

In addition to the development and construction of naval surface vessels, the company's services include a comprehensive range of training programs for its naval customers.

Particularly significant in TKMS' international offering is the strength of the shipbuilder's parent company, ThyssenKrupp AG, with its diversified portfolios and international activities, employs about 198 000 people worldwide including 4 500 people in India, among them 1 700 skilled engineers. Significant investment, and technology and skills transfer over the past half century and more have ensured that ThyssenKrupp India has strong manufacturing presence in all of the industry segments it is active in. •

Rafael Tactical broadband network on-the-move

At Defexpo 2010, Rafael will present Tactical Broadband Network (TacMAX). Rafael's TacMAX family of base stations, relay stations and mobile stations deliver high quality broadband video, data and voice services on-the-move. TacMAX is based on the most advanced network technology that exists today – cellular 4G technology guaranteeing ultra high data rate.

TacMAX is the ideal solution for applications including, military cellular for a fast deployable broadband data network in the division/brigade battle zone or in any crisis or special operation zone, broadband network along terrestrial or coastal borders or any other special purpose broadband wireless network with mobile subscriber requiring ultra-high data rates.

The TacMAX unique design leverages all the benefits of cellular 4G technology while adapting it to battlefield requirements and threats. TacMAX supports fast system deployment, extended range, mesh capabilities, EW and more. TacMAX serves a wide variety of mobile station subscribers – military vehicles, portable or fixed/deployable sites. •

Northrop Grumman Key Security Capabilities for India

Northrop Grumman Corporation (NYSE: NOC) will showcase a range of industry-leading capabilities in airborne early warning and control systems for maritime reconnaissance, fire control radars, unmanned aircraft systems, coastal surveillance and marine navigation, and ships.

"India is an important market for Northrop Grumman and with core competencies and proven capabilities in unmanned systems and airborne early warning and control we are ready to meet the country's current and evolving homeland security priorities," says John Brooks, president Northrop Grumman International Inc. and vice-president of business development for Northrop Grumman Aerospace Systems sector. "Our focus is to link together and network all of these systems to create solutions that respond to India's requirements for a coordinated national defence structure. We look forward to showing how our products and capabilities can help India achieve its defence modernisation objectives," he adds.

Among the exhibits on display will be Northrop Grumman's world leading capabilities in airborne early warning and control. It features the E-2D Advanced Hawkeye and the multi-role electronically scanned array (MESA) radar.

The E-2D Advanced Hawkeye programme has enhanced the E-2 mission system by providing a more powerful radar and avionics system to create an advanced AEW&C capability. An E-2D Advanced Hawkeye crew workstation and flyable cockpit simulator will be included among the exhibits to demonstrate the benefits of the E-2D for military and civil applications.

The MESA surveillance radar is an advanced airborne surveillance sensor and provides peninsular protection enabling sophisticated air-to-air and maritime coverage and integrated friend-or-foe identification. A computer demonstration of MESA capabilities and scale model of the array is being showcased.

Also on display will be a model of Northrop Grumman's AN/APG-80 active electronically scanned array (AESA) radar for the F-16IN Super Viper multi-role fighter aircraft.

Northrop Grumman's airborne surveillance capability will also be highlighted with a model of Fire Scout, the Vertical Unmanned Aircraft System (VUAS) multi-role UAV on display. Fire Scout has recently deployed initially with the US Navy.

The company's latest generation of navigation and ship control technology will be highlighted. The Northrop Grumman Sperry Marine VisionMaster FT provides a highly integrated, fully networked suite of marine radar and electronic charting systems designed to form the backbone of the modern ship's integrated bridge. In addition to the standard suite, Northrop Grumman will feature its integrated platform management solution as part of the VisionMaster FT defence offering.

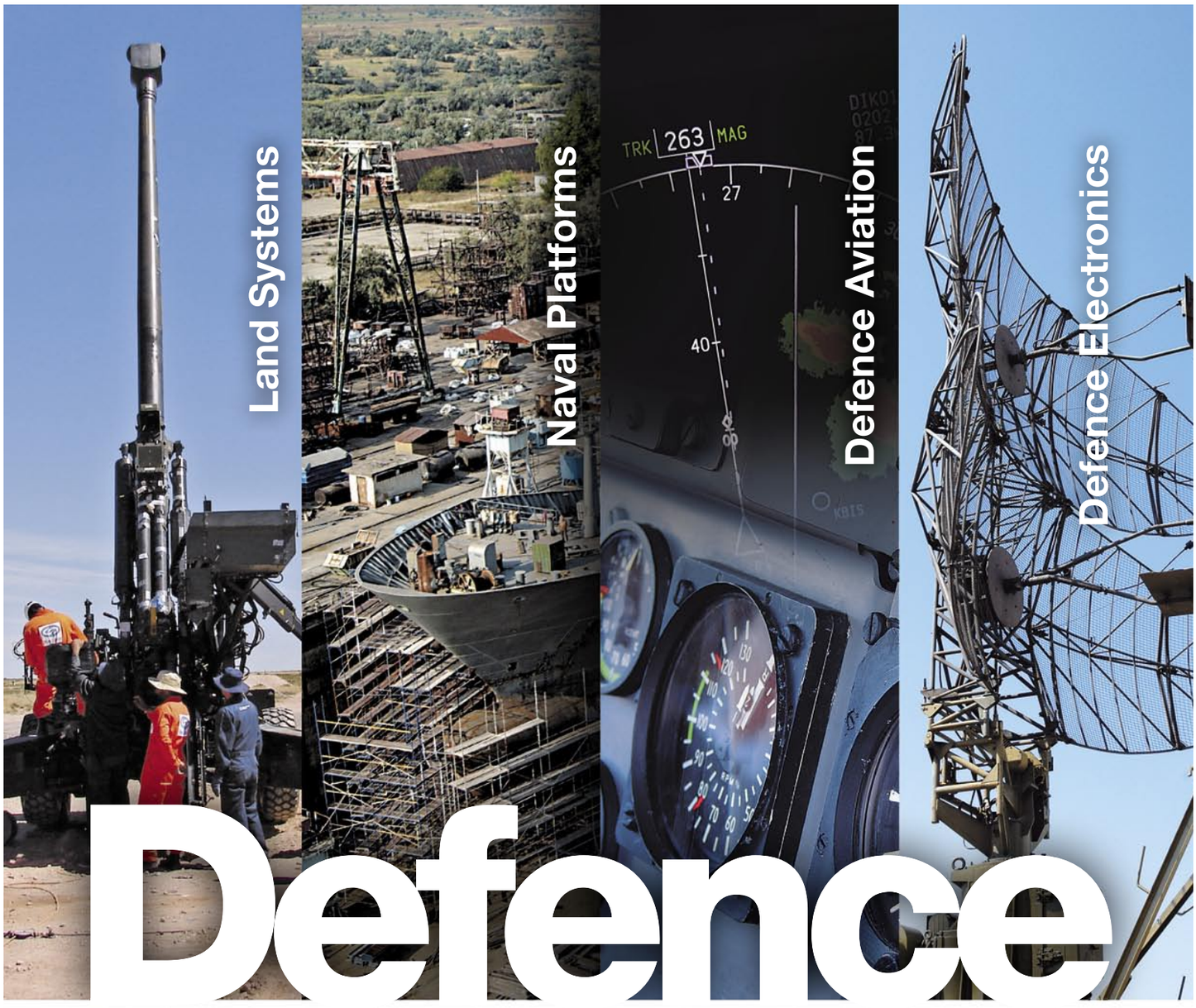
The other programmes displayed at the Defexpo are models of directional infrared countermeasures (DIRCM); the LITENING advanced airborne targeting and navigation pod; the mine warfare mission system Airborne Laser Mine Detection System (ALMDS); and the Joint Multi-mission Expeditionary Craft (JMEC) that demonstrates the company's scalable network-centric warfare C4I system for high-speed boats capable of operating in locations from high-seas to the most challenging inland waterways.

Northrop Grumman's capabilities in maritime security for military and civil applications will be featured with the Harbour and Coastal Security (HCS) system being highlighted. HCS integrates off-the-shelf computers, communications, and sensors with sensor processing and Maritime Domain Awareness (MDA) databases to provide a flexible, standards-based command and control system supporting layered, multi-agency, maritime security and safety operations. HCS can easily be adapted and scaled for shore based, off shore, or shipboard use.

Also available for viewing will be the Dismounted Computer System (DCS), a multi-processor computer system capable of operating two different Operating Systems simultaneously designed for installation in military vehicles and the Soldier Link System, a lightweight wearable communications system for ground forces.

The company will also be promoting its LPD San Antonio-class Amphibious Warfare and Transport ship and the International Patrol Frigate, a versatile warship based on the multi-mission National Security Cutter currently operated by the U.S. Coast Guard.

Northrop Grumman Corporation is a leading global security company whose 120,000 employees provide innovative systems, products, and solutions in aerospace, electronics, information systems, shipbuilding and technical services to government and commercial customers worldwide. •



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