SEMINAR REPORT

National Conclave on Technological Sovereignty - 2013

Held at Manekshaw Centre, Delhi Cantt

13 November 2013

Centre for Land Warfare Studies
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The Centre for Land Warfare Studies (CLAWS), New Delhi, is an autonomous think tank dealing with contemporary issues of national security and conceptual aspects of land warfare, including conventional and sub-conventional conflicts and terrorism. CLAWS conducts research that is futuristic in outlook and policy-oriented in approach.

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Table of Contents

NATIONAL CONCLAVE ON TECHNOLOGICAL SOVEREIGNTY (NCTS) – 2013

MANEKSHAW CENTRE, 13 NOVEMBER 2013

EXECUTIVE SUMMARY

India is heavily dependent on foreign countries for critical high-end equipment and software. This lack of ownership over critical technology can have serious ramifications on India's national security especially during times of conflict. As of now, India's capability to produce even low-to-medium-end defence technology equipment is limited. More importantly, some of the solutions will never be available in the market. For example, the Stuxnet worm that caused extreme devastation to the Iranian nuclear programme is unlikely to be offered to the Indian Military.

The aim of holding the NCTS 2013 was hence threefold. First, suggest a methodology to achieve technological sovereignty in defence acquisition. Second, suggest measures to boost indigenisation and self-reliance and third, examine the procurement process to make it more transparent and user friendly. Domain leaders from the government, military, research establishments and industry expressed their views on specific subjects during the conclave. Prior to the conclave, a series of discussions had also taken place over a six-month period to crystallise thoughts on the subject. These pertained to the importance and possibility of achieving sovereignty in the field of Information and Communication Technology (ICT), the need to re-define and identify organisations for Public-Private Partnership (PPP) and the necessity to improve the conditions for research and development within the defence industry, both private and public. Issues related to defence acquisition to include indigenisation and self-reliance, acquisitions through defence offsets and refining of defence procurement procedures were discussed in detail. Succeeding paragraphs give out the key issues discussed during the conclave along with a summary of our recommendations.

Key Issues

Indigenisation

Indigenous capability development would require partnership between public sector and private sector undertakings, to enable a shift away from India's heavy dependence on imports of critical, high-end equipment and software. The present mode of engagement of the government with the private sector is transactional and not partnership-based. This is partly due to the frequent controversies that take place in procurement. In the US and Israel, the government works closely with defence industry and this has led to great innovation. To create such a capability there is need for trust between the government and private industry. There is also the need to revive industry by instituting defence dialogue at the leadership level. To achieve these, an institutional framework is required, which would also involve the private sector in India to co-develop the roadmap for capability creation.

The lack of ownership over critical technology can have serious ramifications for India's national security especially during times of conflict. There is a need to develop defence production capability for low to medium end technology through joint ventures. Limited indigenous development through 'Licensed Production and Transfer of Technology (ToT) would lead to playing into the hands of few foreign vendors, with strategic and commercial ramifications.

Self-reliance requires focussing on indigenisation and technological sovereignty, premised on strong research capability. At present, both DRDO and private industry have inadequate research budget and focus. To promote indigenisation of technology, there is a need for a separate organisation for technology like a Defence Technology Commission (DTC), as proposed by Rama Rao and Kelkar Committees.

Production technology is very different from lab technology. Research and Development (R&D) is done by Defence Research and Development Organisation (DRDO) while Defence Public Sector Undertakings (DPSUs) and private industries are involved in manufacturing. This leads to a huge disconnect between design capability and manufacturing capability. There needs to be a stronger connection between R&D and manufacturing.

Information Communication Technology Electronics and Cyber (ICTEC)

India's strength is in IT. There is an excellent opportunity to harness the tremendous IT potential available within the country. However, more often than not young start-up entrepreneurial innovations are ignored. On the other hand, these enterprises are often targeted for buy ups by foreign companies.

There is a need to have an autonomous body that can co-opt expertise from the private sector to create technologies for at least the non-critical military requirements in the ICTEC. This body could conceptualise future warfare scenarios for the Indian military, and then work backwards to identify the technologies for acquisition or development. Such a body needs to be given a free hand in conceptualising technology needs (in consultation with the military) and then enable the private sector to develop and deliver the requirements on a long-term basis, which follows an agreed-upon roadmap. Buffering such an organisation from the constraints faced by the DPSUs would be essential.

Defence Procurement Procedures (DPP)

A formal interaction between industry and Ministry of Defence (MoD) is required. A comprehensive Frequently Asked Questions (FAQ) booklet can help iron out ambiguities about the DPP and related policies. Gradual tweaking of DPP is a better way to improve procedures, rather than bold steps, which may later prove counterproductive. DPP amendments should be adopted conservatively.

While a number of studies have been undertaken in defence acquisition, they are not sufficient. Formal training is also required for those in the acquisition wing. There is a need to build comprehensive and reliable data on Defence Industrial Base (DIB) to assess and catalogue defence capabilities and readiness, economic health and competitiveness, enable industry and government agencies to monitor trends and benchmark industry performance.

Industrial and export licensing policies should be favourable to defence acquisition. In DPP 2013 'Buy Indian' is the most preferred category and

emphasis should now be on purchasing from indigenous industries. ICT-related procurement must also be treated differently due to its inherently different character.

Key Recommendations

- We need to identify and raise an autonomous body to co-opt expertise from the private sector to create technologies. Such a body would also conceptualise future warfare scenarios for the Indian military and identify technologies that are required to be acquired or developed, based on an agreed roadmap. It is recommended that such an organisation should be a Section 25 company with linkages to educational institutions of repute and with significant co-investments from serious private sector players from within the country. Proposed organisation of such a company, built on the models of a Section 25 Company, is given in Figure 1 below.

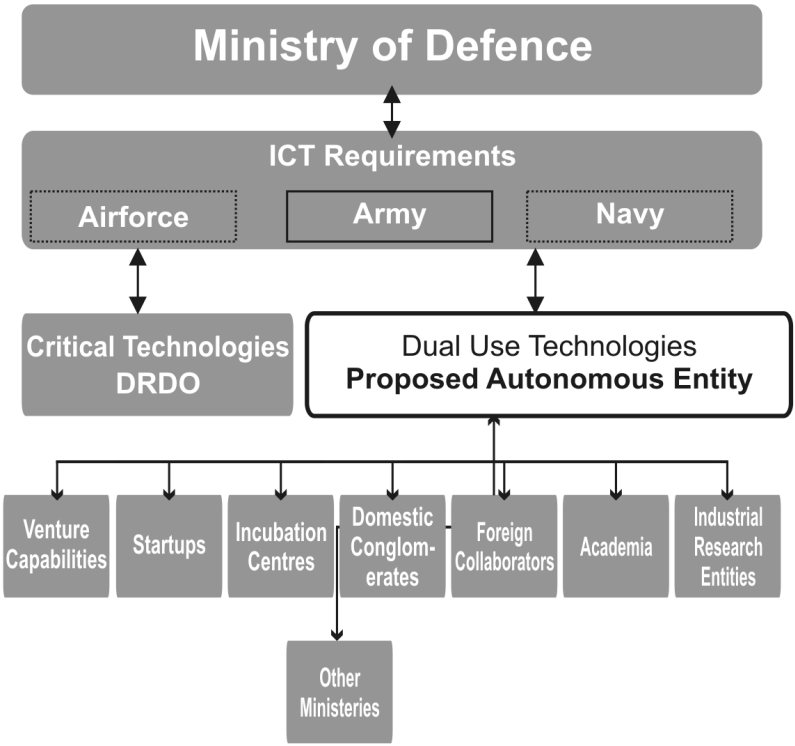


Figure 1: Proposed Structure body to facilitate leveraging of Private sector for ICTEC requirements in non-critical military requirements

- There is an urgent need to establish an entire ecosystem to design and develop indigenous ICT technologies through adequate support from government. A long-term technology roadmap should be formulated by the government in consultation with the defence forces. This can be used as a template by industry to develop critical high-end technology. The technology development strategy should involve identification of gaps and prioritisation of technological development. It could include a healthy mix of ToT mechanisms, R&D and Commercial Off-The-Shelf (COTS) solutions in a partnership mode with the industry. The role of ex-servicemen from the defence forces needs to be integrated in any indigenisation strategy, as they are the people with domain expertise and internal knowledge of the defence services.

- The defence sector needs to be opened to private sector beginning with dual-use technologies needed by the military and on successful performance, followed by core critical requirements. Long-term commitments for a broad based partnership are required to provide the requisite confidence to the industry to invest in R&D and manufacturing of critical defence technology and to move away from transaction based dealings.

- In order to mitigate vulnerabilities in India's national information and communication infrastructure, indigenous components should be given higher weightage, as visualised in Defence Procurement Policy 2013, with the details of identifying what is truly Indian-owned and what is India-procured. The Buy (Indian), Buy & Make (Indian) and Make (Indian) projects should be given preference by the government in its defence procurements. The Make (Indian) projects are a new addition and should be the most incentivised. There is also a need to augment the L-1 method in ICT procurement for security to include Quality cum Cost Based System (QCBS), T1, and T2.

- We must patent core military technology, particularly in the field of ICT as it would help achieve the goal of self-reliance in its true sense. In addition, we need to develop world class facilities and products so that export can compensate for the lack of economies of scale at home, thus incentivising investment and participation.

- Industry needs to know what ICT indigenisation is being done in the country, what is planned for the future, and which future technologies will the PPP model be applied to. There is also a need to standardise technologies and promote standards-based ICT equipment and software for enhanced inter-operability across the three services.

- An IT-enabled environment needs to be created and capacity of the people in defence to absorb IT needs to be fostered. Emphasis on adopting IT transformation at the grass root levels is required. There is a need to involve the academia in the entire process.

- MoD, being the most paper-intensive entity, needs to lead by example, by IT-enabling its infrastructure. (Successful examples in Indian context are the banking sector and securities market). A change in the thinking and mind-set is required for technology adoption and assimilation, particularly at the leadership and decision-making levels in the defence establishment.

- Training must be a key intervention. A practice prevalent in private industry of "reverse mentoring" could be adopted by the military wherein young people who are technologically well-informed can teach and support the seniors in enhancing and improving their technological skills.Formal training in defence acquisition procedures is also required for military personnel before they are posted to such assignments as it takes a very long time to understand the intricacies involved. At present, they learn on the job, which has its own consequences. Officers posted on such assignments also need to have longer tenures. This could be five to six years instead of the two to three years tenure currently being followed. Training is also required for personnel in the defence industry who are involved in defence acquisition.

- A forum for regular and formal interaction between the industry and MoD must be established. In addition, a website open to all, could be created, where the requirements/RFI for defence procurements can be put up and anyone can propose a solution. Team 'Orlando' of USA can be used as a prototype model for participative R&D and production.

- R&D would require much greater funding for creation of world-

class production and distribution facilities for ICT equipment. The investments in R&D for core military technologies would lead to creation of more Intellectual Property Rights (IPR), which in turn would provide true ownership of the critical technology.

Conclusion

Indian industry is prepared to partner with the government but there has to be a credible mechanism in place to build a long term partnership. As of now, there is a trust deficit between the stakeholders particularly the defence and Indian private industry, which is inhibiting the achievement of technological sovereignty, self-reliance and development of ICTEC solutions for the military. Complete dependence of defence forces on public sector and on foreign suppliers is of concern to the private companies, which is compounded by lack of communication between industry and the services. Also, systems are highly paper and manpower intensive. Thus, precious human resource is wasted doing mundane tasks, adversely affecting their primary responsibilities. For path-breaking approaches purely bottom up or top down approaches alone cannot be solutions; a mix of both, in a ratio to arrive at a wanted solution, is the way out. A very active and functional public-private partnership is what can ensure movement towards self-reliance and technological sovereignty.

DETAILED SUMMARY OF TALKS AND DISCUSSIONS

Inaugural Session

Keynote Address: Lt Gen Anil Chait, PVSM, AVSM, VSM, ADC, CISC

Issues/Perspectives

- Existing 70:30 ratio between imports and exports does not augur well for India. There is a need to work ahead on the paradigm that 'Indigenisation and self-reliance are key to success and it is an issue of national security'.
- The Technology Perspective and Capability Roadmap (TPCR) has already been brought into public domain. A good beginning has been made in that the industry is now privy to what technology is required by the Indian military. Better versions of the same would be worked out in the future.
- DPP has undergone changes with a strong preference towards indigenisation and self-reliance and these procedures are rigorously being implemented.
- The MoD is cognizant of the industry's expectations and concerns with respect to core technologies the industry needs to focus on developing, especially with the limited finance available. The MoD is working towards delivering better clarity for the industry for its unfettered participation.
- Right now, it appears that technology is dictating tactics. However, convergence of the three T's; threats, tactics and technology is a must. A product technology generating a pull is not what is needed, rather it needs to be driven by tactics and doctrine.
- The option towards self-reliance should encompass the complete process which starts with research and design followed by development, manufacture, maintenance; the complete life cycle.

Session I: Institutional Framework For Partnering With Industry

Chairperson: Lt Gen AK Sahni, SM, VSM, DGIT

Speakers:

- Research Driven Focus to Identify Organisation – Lt Gen JP Singh, PVSM, AVSM (Retd), Senior Advisor DRDO
- Governance Structures – Shri R Chandrashekhar – Former Telecom Secretary
- Legal Structures and Funding – Mr Amit Cowshish, Ex FA Acquisition, MoD(Finance)

Issues/Perspectives

- Self-reliance requires focussing on indigenisation and technological sovereignty. This would involve creating advanced technology infrastructure and creating competing technologies of international standards, not only for domestic needs but also for exports to increase the customer base and bring in investments spurring further research and improved research establishments in the country. At present research budget allocated to DRDO is inadequate. In the private sector, there is hardly any basic or applied research in defence.
- India must identify and implement its own defence technology eco-architecture for building up indigenous R&D capabilities. The focus has to be on capacity building in select critical, advanced technologies for developing military products with commercial applications.
- The process of following Annual Acquisition Plans (AAP) is seriously flawed and does not facilitate achievement of 70% indigenisation. For that there has to be a strong MoD, strong R&D base and a vibrant DIB.

- There is a need for a separate organisation for technology like a Defence Technology Commission (DTC) as proposed by Rama Rao and Kelkar Committees.

- In a globalised world, no nation can be self-reliant in technology. While it is necessary to aim for reliance in certain areas, it is also important to focus on strengths so as to have a natural advantage. Our strength lies in the area of Information Technology which is not being utilised optimally.

- Number of young start-up entrepreneurial innovations have been coming up. While we don't seem to recognize them, they are usually targeted by companies from abroad. The small enterprises do not have the marketing reach, the size or the financial clout like big companies; the latter don't have the kind of innovation the small companies have. Here is an opportunity and need for synergy even between the big companies. This has happened in a big way in the west while in India the process is still in its early stages.

- Currently, the mode of engagement of the government with the private sector is transactional and not partnership based. This is also partly due to the controversies in procurement. In Israel and USA, close cooperation between the military and the defence industry has led to great innovations. We have failed to create such a capability and it is a major challenge. The innovation happening today in defence is minuscule and largely happening in the private sector.

- For technological sovereignty, we need to understand the size of the game and what it takes to get there. There is no way we can build this capability without an active and functional partnership with the private sector.

- Bottom up or top down approaches alone are not the solution. Path breaking approaches need a mix of both.

- The industry today is ready to partner with the government but there has to be a credible mechanism in place to build a long term partnership.

Session II: Procurement Systems & Practices For Technology Acquisitions And Indigenisation

Chairperson: Lt Gen SP Kochhar, AVSM**, SM, VSM, (Retd), former SO-in-C

Speakers:

- Offsets as Facilitator to Technology Acquisitions – Shri AK Gupta, Additional Secretary (Dept of Defence Production)
- Aligning DPP for Technology Acquisitions and Indigenisation of Defence Technology – Lt Gen AV Subramanian, VSM, DG WE
- ICT Procurement: Streamlining Procurements, Evaluation – Dr.Jaijit Bhattacharya, President CDEP
- ICT Procurement: Procurement Challenges and Remedies –Lt Gen SP Kochhar, AVSM**, SM, VSM, (Retd), former SO-in-C

Issues/Perspectives

- Acquiring critical technologies will lead to capability and capacity-build up leading to development of new technologies and enabling indigenous industries to grow with multiple spin-offs.
- Technology has been given prominent place in defence offsets guidelines and objectives to be achieved through these guidelines have been set down.
- The present status of Offset obligations is worth $ 4.25 billion, accrued till now, and is expected to grow to $ 8 - 10 billion in coming years.
- So far, no high end technology has been received under offset provisions. There are teething problems that need to be, and are being, addressed. Modification of offset guidelines is underway and the Department of Defence Production is open to receiving suggestions from various quarters.
- In DPP 2013 'Buy Indian' is the most preferred category and

emphasis now is on purchasing from indigenous industries.

- Licensing is now on a case-to-case basis. To ease the licensing procedure, a security manual is under development, compliance to which will be made mandatory for issue of license.
- Some peculiarities of defence acquisition to be contended with are
  - Planned obsolescence by industry, technology denial and restricted trade governing the arena.
  - Defence is monopsony - government is the market and the market maker.
  - Subject to enhanced probity, public accountability and transparency in procurement.
- Defence technology base becomes embedded in and is largely inseparable from the national technology base as in advanced countries.
- While a number of studies have been undertaken in defence acquisition, they are not sufficient.
- Civil military integration is very essential as sophisticated defence economy stands on sophisticated economy and wide supply chain.
- Industrial and export licensing policies should be favourable to defence acquisition.
- Costing of defence technology needs to be objectively probed. Think Tanks need to develop and establish some probing methods which can then be recognized by DPP. Government needs to make commitments with Industry through repeat orders, long term and sole-source contracts.
- There is a huge disconnect between design capability and manufacturing capability as production technology is very different from lab technology. R&D is done by DRDO while DPSUs, private industries do manufacturing. There needs to be a stronger connection between R&D and manufacturing.

- Need to build comprehensive and reliable data on DIB to assess and catalogue defence capabilities and readiness, economic health and competitiveness, enable industry and government agencies to monitor trends and benchmark industry performance.
- Cost Estimation guidelines need to be worked out.
- Categorisation committee should critically examine essential factors like capability of the industry, difficulty in mastering complex high-end critical technologies, foreign restrictions on military equipment and the urgency of induction of equipment by the armed forces before carrying out procurement categorisation.
- Provide simpler processes for evaluating indigenous content.
- Clarify issues related to taxes, industrial licensing and offsets.
- Roadmap procurement versus point procurement.
- ICT-related procurement has to be treated differently due to its inherently different character.
- Involvement from stage of Accord of Necessity (AoN) to the stage when the project is under development would lead to more appropriate identification of the requirements at the field level and will lead to higher implement-ability of RFPs formulated through an open consultative process that leverages vendor domain knowledge.
- Best Practices need to have a robust and accountable change control mechanism for rapid inclusions/exclusions from the RFP/EOI. There is a need of public website where non-mission critical and non-confidential requirements/RFI for defence procurements can be hosted for solution providers and academicians to propose a solution.

Special Address

Defence Acquisition Challenges and Road Ahead for Technological Sovereignty: Mr SB Agnihotri, DG Acquisition.

- Attempts should be made to identify incongruous/unjust issues and then strive towards removing them.
- Hiatus between prototype-making and production should be bridged by methodisation.
- To promote innovation by private enterprise, there is a need to develop a model where a developer who wants to make his own profit out of his IPR may do so by selling his technology to vendors, in which event he gets a mandatory equity in the share.
- Will technological sovereignty and indigenisation lead to cost reduction over time?
- In licensed production, a foreign vendor has the choice of squeezing the buyer in many ways- this issue has to be worked upon.
- What are we doing in terms of DPP?
- DPP promotes competition to DPSUs from private sector, and it is expected that costs should come down. As there is more and more competition to the DPSUs, the private sectors ability to innovate and to keep costs down comes into play.
- Gradual tweaking of DPP is a better way to improve procedures, rather than bold steps which may be counter-productive in the long run.
- There is a valid case in point for a separate ICT chapter for procurement.
- Clarity on classification of Indian vendors is under progress.
- Formal training is required for those in the acquisition wing.
- A formal interaction between industry and MoD is required for better cooperation. There is a suggestion for a compiled FAQ booklet to help both sides understand each other better.

TRANSCRIPTS OF SPEAKERS

National Conclave on Technological Sovereignty (NCTS) – 2013 was held on 13 Nov 2013 at Manekshaw Centre, New Delhi. The conclave was conducted as under: -

(a) Inaugural Session.

(b) **Session 1**. Institutional Framework for Partnering with Industry.

(c) **Session 2**. Procurement Systems & Practices for Technology Acquisitions and Indigenisation.

(d) Valedictory Session.

Inaugural Session

Welcome Address: Maj Gen (Retd) Dhruv C Katoch, SM, VSM, Director, CLAWS

It is my proud privilege to welcome all of you to the National Conclave on Technological Sovereignty 2013. This is an initiative that we took last year in which the prime movers were Lt Gen SP Kochhar, former SO-in-C and Dr. Jaijit Bhattacharya, President C-DEP. In this seminar we attempt to go beyond where we left off last year.

The question I am often asked is: why this focus by CLAWS on technology and technological sovereignty? The answer is simple; it is technology which will enable India to find its rightful place under the sun. And, while India has tremendous capacity as far as human resource is concerned, policy and institutional deficits and an adequate industrial base for defence production remain something lost. What we need to do in policy and other terms will be discussed during the course of this seminar and hopefully we will be able to chart forward a road ahead.

As Indians we have great capacity in many fields of technology. We have been able to send a mission to the moon and a mission to Mars is underway. In many fields we have achieved great success but when we look at something as elementary as a rifle, we fall short. Why can't we produce world-class equipment? If we have the capacity to send satellites into the space then why do we lack capacity for other issues? There are a great many number of issues that need to be sorted out in-house.

When we decide to use technology to solve a particular problem, we are faced with so many alternate technologies which are also available but not being used and may be much simpler. So it is not really a question of using one particular item but there are multiple steps we, as a country, must consider. We must get on-board the three prime groups: the user, the decision maker (both the politician and the bureaucrat) and the corporate world, to work together in a synergized manner so that India can find its rightful place under the sun.

Theme Address: Dr Jaijit Bhattacharya, President C-DEP

We have become a nation that is too risk-averse. We see the writing on the wall and still don't take steps to move towards what is an appropriate step. If you look at a situation of a military requirement, for neutralization of the adversary, strategic military capabilities is a requirement. A traditional engagement would lead to this kind of a situation, where the fall out leads to, not just a military fall-out, but political and social fall-out. And the fact they agree to amend or make laws post that kind of an interaction and agree to maintain international relationships post that kind of engagement, becomes extremely challenging. Another kind of response to such military requirements, which is in terms of cyber weapons, is where the fall-out is severe but the identity of the attacker is not clearly established; where you can get the signaling system down, banking system down, supply-chain down and choke the back-end support system such that the industrial might of the adversary is affected. This is not a futuristic scenario. Cyber warfare has already arrived. The best example is the cyber bombing of the nuclear centrifuges in Tehran. It has the same impact as the bombing of Hiroshima and Nagasaki. Then, even while it was being debated whether nuclear weapons existed and practical to be brought into military engagement, and before anybody could react, they were used. Those who had invested in the

technology became world powers, and those who hadn't, became secondary powers in the global scheme of things.

The other similarity between nuclear weapons and cyber weapons is that you cannot purchase them in the global market. You can go buy guns, fighter planes but you can't buy cyber weapons, one that has a specific impact. During the Tehran cyber-attacks there were no fallouts: the military objective was achieved with minimal social, political and diplomatic fall out.

Cyber-enabled warfare has its origin from both external abetment as well as internal abetment. Both external and internal abetments are extremely asymmetrical in nature. You can have a fourteen year old unleashing an attack and a large power will not be able to respond to that kind of an attack. Therefore it will not be surprising if a fourteen year old gets a Param Vir Chakra. This might sound a little too far-fetched right now, but the point being communicated is that conventional warfare is very rapidly getting relegated as the second line of attack. The need of the hour is to figure out the steps so that we can move towards addressing that kind of situation where instead of soldiers we have robots going in, that are controlled by a well-trained and highly educated back-end, where communications, positioning, supply chain and warfare by other means becomes very critical.

In addition to building up very fast and effective missiles can we have slow-moving bots going through the sea and landing on the port of the adversary and just sit there? We don't need high tech technology as they can just sit there powered by solar energy. It would take 30 days to travel as we are in no hurry. So the kind of warfare is very different. And as we have adversaries right across the border, not 2000 km away as in the case of many of the other world powers, we do not need remote-access missiles like them. All I am saying is that we need to think in addition to what already exists in the world market. Because the battlefield situations are changing, the kind of adversarial engagement is changing. Damaging banking, erasing the top level domain name of an adversarial country will all bring down the economy. No matter how strong our army is, we will not be able to counter a situation like this. The Indian Military does have a doctrine to visualize future warfare situations, and, based on that, there is a need to understand what kind of equipment and infrastructure is required.

The second part is the kind of organization and structure that is required. Now, if we need to have the kind of people that can handle bots and unleash warfare, it will not be supported by the current institutional structure. Therefore, we need to have new organizations and new structures that are evolved. That is what we plan to focus on: what is the kind of institutional structure we should have so that we can leverage the industrial might of this country, the brain power of this country, the private sector and have the ability to create our own arms and armaments, and not just the conventional armament, including cyber arms and armaments in a manner that is sustainable.

Traditionally what was needed was a very robust industrial sector. The army and the military were as strong as the strategic depth provided by the local industry. Now we are moving to the next kind of warfare, but do we have that kind of an industrial base? If we look at IT, we do have the skills but are we leveraging those skills? If you look at IT, we still don't have very fundamental technologies in place. We do not have the database, operating system, we have them in pockets, but we do not have them in a manner in which they can actually be adopted by a critical institution such as the Indian military.

The issue is can we do a nanonization? The term nanonization is something we coined, saying that the need for a cheap, economical car which can be quickly manufactured was an Indian need. Therefore it was only India that had to build it up. But India built it because we had the technology to build it. So what we need to do is first identify our own requirements, and then figure out the technology to actually build them up.

Our military terrain is different from that of the US and Europe. Most of our engagements happen in the hills. So why haven't we moved towards a mechanical mule? The US has come up with a proto-type for a mechanical mule, something we should have built long ago. But now we will end up importing these from the US. The industry needs an entire eco-system to be developed. The industry needs a roadmap that is informed about the requirements of the mule version II and how many would be required. It is a high risk environment as the Indian military might reject all that was developed. The issue involves three stakeholders:-

- The Indian military – that needs faster and superior solutions.
- Domestic industry – which needs assured business.
- Global industry - because we still don't have all the technologies.

We use the word sovereignty and not the word indigenisation. Sovereignty means that when we need and where we need the technology, we should be able to get it. So when you look at the cyber bombing of Tehran, it was not led by one country. There were three countries involved. The lead country had the technological sovereignty over the other two countries and therefore they were able to direct the countering of those countries to cooperate and unleash the cyber weapon. We need to have very productive discussions with the global industry and academia. We are not giving direction to the academia as to what are the areas in which we really need the research. Start-ups cannot have the domain knowledge that a General has who has spent 30 years in the army. But the 23 year old heading the start-up will have different ways of thinking and the technical know-how that the General doesn't have. Clubbing the two together would give us the strategic advantage that we so require.

> *Where the mind is without fear and the head is held high, where knowledge is free... into that heaven of freedom, my Father, let my country awake.*
>
> – Tagore

Keynote Address: Lt Gen Anil Chait, PVSM, AVSM, VSM, ADC, CISC, HQ IDS

I would like to devote my speech purely to technology and sovereignty in the Indian context. I don't claim to be an expert but having spent four months into this field as the head of the Integrated Staff, I would like to share my views as to how I see the development and how I can be an agent for change.

A 70:30 ratio between imports and exports doesn't augur very well for a country like India, a country that is going to be investing approximately 100 billion dollars in the next 15 years. It is not strange therefore that the Honourable Raksha Mantri has said that 'Indigenisation and self-reliance is key to success and it is an issue of national security.'

Typical of our diversity, it is not surprising, that while on one hand we can make and launch satellites and missiles and assist in making helicopters and other high-end technology items, we cannot build small items that are required for defence of the security regime. This in itself is a strange paradox of Indian diversity.

The reasons as to why this has happened are very well known and documented and include:-

- Relative isolation
- Protection, with regards to the model that was adopted
- Inability to absorb technology
- Lack of infrastructures
- Different set of policies
- Non availability of levelled playing fields

But, for the desire that we need to be self-reliant in the age of globalization, which is a different model altogether, we need to look at what we are going to do about it. Let me take the issues one by one.

First of all, the new document that is the TPCR, has already been put up. Whether it is adequate or not to meet the industry's requirement, is a separate issue; but it's a good beginning that has been made. We have been able to put across as to what is the technology that is needed to be brought inside which are going to be related to the products that the Indian military would need. It's a different matter that we will not be able to give you the exact numbers or be able to tell you that whether we will be able to do that immediately or later. But I want to ensure to everyone who is here that we are cognizant of the fact that the industry, both the private sector and the public sector, need identification of the technology that is likely to be brought inside so that it can help in the categorization of the product.

Unless that industry comes inside, product in its various hues are available, we will not be able to categorize. And if we are not able to categorize the product for the defence, then why would the industry invest? So, as far as

the TPCR is concerned, there are slippages that are likely to occur as an offshoot of the reduced availability of money, and therefore, for someone who is wanting to be competent, he needs to have more clarity and focus as to the interest of the end user.

I am hopeful that in due course of time, having becoming cognizant of this fact, we should be able to initiate some steps, with the approval of the government, as to how can we bring more clarity and more understanding of issues so that industry can concentrate, based on the time zones that we have set for the acquisition of a product. I am also hopeful that in the future there will be a better version of the TPCR that is much more detailed than the present version.

Now I come onto the second issue of categorization of the product because that is exactly what the industry is keen to know about. When you look at the major changes in defence procurement that were initiated from 2002 onwards, when DPP started to occur, reforms were introduced in the system and you started to see revisions in the procurement systems which manifested in the form of DPP 2002- 2013... And the scope towards indigenisation started to change. And now you have a different precedence to be applied as far as making products are concerned. And we have to convince ourselves that, as the implementer of that policy, the thrust is towards self-reliance or indigenisation. Therefore the categorization process has been laid down and it is rigorously being implemented. Now that's an assurance I can give as it is exactly what we do.

Now, here again, there is a connectivity with the TPCR; as far as the AoN of various products, whatever be the field, army, navy, air force, security or the new fields and domains that are going to be coming out, we are aware that large numbers of AoNs have been issued. Now that's not what you all are looking at, as that has already come about and it's too late. You are interested in knowing what will be the future of the events that would be available? And if there is an industry prioritization based on the limited money we have available, and we are able to say that these are the core technologies areas, and if these are shared with the industry, then the industry is in a position, based on the prognosis of the requirement, to invest in the technology to bring about the reliance that we are trying to achieve. Therefore, what is of interest and what is going to be watched by the industry is, what are we

going to be doing for the future? I am also hopeful that there is going to be a certain amount of rationalization in our processes which will enable much better coalescing of the end-user with the industry.

Let's now look at the issue of self-reliance. This whole idea of getting a product and fitting it into an Indian system is something that technology is dictating as to what the tactics should be. You have a product, you see technology that is available and you say how do I use this technology? Is it servicing the doctrine? Is it servicing the strategy? Is it servicing the threat? Or is it servicing the tactics? The three T's; threats, tactics and technology and their convergence is a must. And it's a must especially in the Indian context because in the Indian sub-continent the threat and challenges are very different from what outside. So a product technology generating a pull is not what is needed. What we are looking at is how tactics and doctrine would dictate technology to meet its requirement. And if that is the mantra we need to follow then we need to be certain as to what is going to be our concept and thereafter look at the concept to pull technology. This will only happen provided we understand and appreciate it in our narrative and context. Western narrative and context does not serve India. Technology must serve the Indian narrative and context.

Tactics must decide how technology services its requirements. And if this is the case then let's look at what are the options? Do we go for a soft option; do we look at the option of ToT? Is ToT going to provide us the answer? Has it managed to provide the answers so far? Soft answers do not provide the technology sovereignty that our nation seeks in the context of self-reliance.

Therefore we have to look at the hard option. The hard option should include the complete process which starts with research and design followed by development, manufacture, maintenance; the complete life cycle. And if its life-cycle process is examined, brought inside through the framework of self-reliance, only then can we succeed. We have to look at it holistically: we bring in the technology, we ensure that incentives are provided and we improve the procedural and policy issues to ensure that the industry starts to participate more cohesively.

In the end, I would like to mention that the people who are dealing with this subject are acutely cognizant of the challenges that are faced by the industry.

There is a growing realization that a country like India, which wants to be a great power, is the second largest arms importer, in a day and time when the dollar is fluctuating... we need to look at indigenisation... we need to look at sovereignty in the context of globalization of the world and how the business models are working to ensure that we do not become a part of an alliance so that we can pursue the government's chosen policy of non-alignment and being independent; thus having an advantage not only in regards to assured supply of a product, not only on the greater cost effectiveness which will accrue over the life cycle, not only because wealth needs to be created inside, but also because of the employment this 100 billion so-called figure will generate for this great nation. I can only say that the Indian military will contribute to this with its eyes wide open.

Vote of Thanks:

Maj Gen Dhruv C Katoch, SM, VSM (Retd), Director, CLAWS

It simply remains for me to thank General Chait for his very perceptive views in which he has given a clear road map on what we need to do to achieve some level of technological sovereignty. The thought process that he gave in the convergence of tactics, technologies and threats is very relevant for the armed forces. The address has set the tone for the deliberations that will follow in the next two sessions. Ultimately in my view we will have to look at policies that are in consonance with national interest. And we would need the requisite organizations to deliver on those policies so that the nation gets what it so desperately needs.

Session I: Institutional Framework for Partnering with Industry

Opening remarks by the Chairperson:

Lt Gen AK Sahni, SM, VSM, Director General Information Technology

I will set the ball rolling for this session with a few introductory remarks. Indeed, high-end technology is a game changer in all walks of life today and the armed forces are no exception to these changes. It is important to realize that, as the Indian army transgresses to a networked environment, and our reliance on these sub-systems, directly or indirectly, increases, these rapid changes will have a direct impact on the forces. In recent times there has been an increase in non-contact attacks in the domain of cyber which can influence contact warfare. It is necessary to develop key technologies indigenously, build a large DIB and synergize research establishments like DRDO, DPSUs and the private sector. On a more realistic note, the partnership of industries to share knowledge and provide indigenous solutions to the armed forces should be supported by a robust regulatory framework.

Speaker I: Research Driven Focus to Identify Organisation-

Lt Gen JP Singh, PVSM, AVSM (Retd), Senior Advisor DRDO

> *"Self-reliance is not just a function of number or of percentages. At the heart is our ability to clearly define those strategic and critical areas in which development of national capability is a must. We must pursue this goal with determination and a long term perspective".*
>
> – Prime Minister Dr Manmohan Singh, May 2008

The Prime Minister said the above lines while addressing the Combined Commanders' Conference in 2008. A country cannot think of self-reliance without focusing on indigenisation or sovereignty of technology which would involve creating an advanced technology infrastructure and also creating competing technologies of international standards which means not only our domestic needs but also for exports which increases the customer base and would bring in investments spurring further research. This would improve the research establishments in the country. For instance in 2012, the US spent about US$ 75 billion on basic research in defence and national security; France ploughs back 15% of its annual turnover back into research in the aerospace industry. The stated policy of China is to become an innovative nation by 2020 and a global scientific power by 2050. In India, 85% of the defence R&D is given by the government to the DRDO which is about 5% of the defence budget. There is hardly any basic or applied research in defence going on in the private sector. Within this budget, having accounted for revenue budget and budget for strategic developments like technology demonstrators and mission mode projects, hardly 0.5% of the budget remains for R&D. There is no equity funding as far as defence R&D is concerned. In China, 22.5% of the funding in defence research is happening through equity route from private equity investments, 60% of their funding comes through the industrial and business houses. There is a pan-national approach with civil military R&D going on hand-in-hand, unlike the vertical silos we are operating in our country. Even the Naresh Chandra Committee talks about the Chinese 863 program which stands for 1986 March program. In 1986, China allocated US$ 200 billion

for ICT of which US$ 150 billion was for telecommunications and today China is a global leader in telecom. There were slippages in 2001 and foreign consultants were brought in to correct it and more money was released. Today China is a global leader in telecom. India must identify and implement its own defence technology eco-architecture for building up indigenous R&D capabilities. We have to focus on capacity building in select advanced technologies which are critical in developing military products and also have commercial applications where the customer base has to widen. This will happen in ICT also. Towards this end we then need to try out a new model where niche SMEs and R&D agencies are given a buy-in contract to develop technologies. Thereafter, we need to raise funds to set up the advanced technology infrastructure beyond what the MOD releases. The developed products should be of international standards to create commercial markets for them. The commercial feasibility of the advanced technology is going to sustain the infrastructure in the centres of excellence which are going to get created in this process. We need a specialized organisation to do this. Some of the existing realities today are:-

- Indigenous research rarely industrialized.
- Restricted market.
- Private sector's reluctance to invest in defence R&D.
- Significant technology gap and shallow DIB.
- In the current scenario DRDO has evolved as a strong R&D organization.
- Tight regulations not conducive to innovative efforts.
- Disconnect between stake holders.
- Regulations in defence industry limit customer base.
- Meagre amount spent on technology.
- Globalization & diffusion of technology has lowered barriers to acquiring technology.
- Commercial sector now catalyzes far more techno-innovations than

DIB.

- Industry is weak at basic research but good at pulling research through to products.
- No specialization policy in MoD.

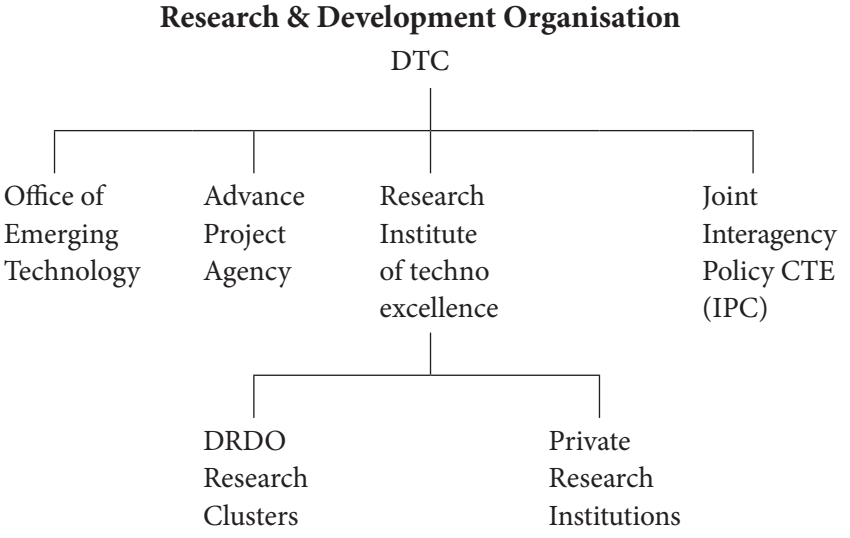
Today the requirement of the armed forces exceeds the present national capabilities particularly in ICT. The technology life cycle of new weapon systems is getting shorter than its functional life. So, the rate of obsolescence is increasing, and in ICT, weapon replacement happens without fully realising the equipment costs. Today, the expenditure on research ceases before the equipment program starts. Thus in many a case, indigenous research is rarely industrialized by our own companies. Mostly it gets abandoned because of the want of cutting edge technology.

The TPCR is based on a doctrine of urgent requirements. It is based on the Annual Acquisition Plans (AAP) document which is valid for two years. It is seriously flawed and we cannot achieve 70% indigenisation with that approach. Primarily, only those countries follow an AAP kind of concept of procurement who have a strong MoD. There has to be a strong R&D base and a vibrant DIB. There has to be a long term acquisition policy. To be serious in innovation it has to sell. When there is no market there will be no investments and when there are no investments there will be no global-standard products coming in. The private sector is reluctant to invest in under-explored defence R&D because of associated financial risks. In this scenario, DRDO has evolved into a strong R&D organization. Today, it is the only organization engaged in serious R&D and there is underutilization of this vital organization. There is a need for a separate organization for technology like a Defence Technology Commission (DTC) as proposed by Rama Rao and Kelkar Committees. Some of the functions of the commission should be:

- Formulate self-reliance policy in national security preparedness.
- Oversee msn mode implementation of self-reliance policy, plans and programmes.
- Review status of self-reliance in weapons & platforms.

- Ensure integration & synergy of efforts of all stakeholders.
- Approve & review programmes for maintaining lead in futuristic requirements.
- Consider & approve offset techno-road-map, production plans of indigenous developed systems, infrastructure investments.
- Consider & approve techno tie-up with foreign governments.
- Approve and sanction major projects, programmes & infrastructure projects of DRDO.

Proposed structure of the Defence Technology Commission (DTC):



The likely functions of the Office of Emerging Technologies within the DTC:

- Identifying game-changing technologies on the horizon.
- Explore emerging technologies that will change battle-space and affect future strategic environment.
- Conduct war-games (WGs).
- Legal, ethical, moral & policy implication of game-changing technology {Identify & debate issues that define game changing technology, e.g., unmanned sys, autonomous robotic sys, power of data mining techno, potential of additive manufacturing, Directed-Energy Weapons (DEW)}.
- WGs to be attended by military professionals, scientists, engineers, investors, ethicists, lawyers.

Advanced Project Agency: Another issue both the Rama Rao Committee and Naresh Chandra Committee talk of, is an advanced project agency like the Defence Advanced Research Projects Agency (DARPA), so that the nation is not technologically surprised. It should be chaired by the Scientific Advisor to Raksha Mantri and assisted by University Grants Commission (UGC) Chairman, DG Council of Scientific and Industrial Research (CSIR), Director Bhabha Atomic Research Centre (BARC), Director Tata Institute of Fundamental Research (TIFR) and Indian Institute of Science, Bangalore (IISC) Bangalore. It should steer futuristic military research, identify, fund and guide cutting edge projects for futuristic security requirements. It should also fund IITs, universities, private labs and collaborate with DRDO labs and other state labs.

Joint Inter-Agency Policy Centre

- Co-chaired by the National Security Advisor (NSA) and Secretary Dept of Science and Technology (DST).
- Examine State of natural Security R&D priorities, policy and funding.
- Ensure multi agency, multi service approaches to preserve robust R&D programmes across the government.

To conclude, initiatives that need to be taken are:

- Adopt international benchmarks.
- Explore advanced technology in niche markets for export at comparative costs.
- Develop JVs in advanced technology R&D for commercial applications.
- Build specialisation in Indian defence industry in production engineering.
- Encourage international collaboration with OEMs, venture capital investors & Indian R&D to form consortiums and penetrate the global supply chain.
- Build hard infrastructure and soft infrastructure.
- Raise finance through entrepreneurial opportunities.
- Implement defence offset policy to incentivize advanced techno capability building for domestic market & exports.

Speaker II: Governance Structures -

Mr. R Chandrashekhar, Former Secretary Telecom and President NASSCOM

Talking about technological sovereignty one has to take into account that technology is not only moving fast but is also globalized. No nation, without exception, can be self-reliant in technology; so it is one thing to aim for reliance in certain areas but it is also good to look at where our strengths lie. If we focus on our strengths we have a natural advantage. Advantage, because we start at a much higher place and don't have to look at the difficulties in building that base. If we look at India today, where we are really strong, the one sector where India is known the world over and in a sense India is a calling card anywhere in the world, is in the area of Information Technology. This spans communication technology and electronics as well because IT is not just a sector. It a horizontal and cuts across every other sector and technology that is dominating our lives today. It not only dominates civilian areas, but also warfare, today. It also dominates war by other means and creates conditions where it feels the actual war is better as it happens only on the field. That is the nature of how all-pervasive it has become. In that crucial area we happen to be leaders of a kind. Today more than 50% of global outsourcing in IT is done in India. This is an industry which has grown to over US$ 100 billion in twenty years and is still growing at 12%-15% a year. It employs nearly 3 million people, and, within the government there are about 50,000 working in this field. Given the strength in it, if we see how well we are utilizing it, the answer is, not very much. Today, we are threatened by countries which are nowhere in terms of capabilities in this and we seek support from countries that envy our capabilities. The Indian IT industry has built its reputation based on services, and, over time, the value addition has not gone up tremendously, but the breadth of services has gone up. It is no longer IT services alone but all services built around IT, so much so that today Indian IT companies serve all the Fortune 500 companies and many more across the world. Given the track record they had in the last 10 years, the situation has transformed from IT companies providing solutions that they were asked, to companies now asking them to suggest ways to transform their business. That's where the limitation

is; we may be good in services, but does that qualify us to be an agent for transformation and be the fountainhead of innovation? That really is not the case and the new trend is heartening. The new trend is there are tremendous numbers of young start-up entrepreneurial innovations coming up. Many of them are doing very innovative things and are looked up to and targeted by companies from other countries while we don't recognise them. While many of them have capabilities, they don't have the marketing reach, the size or the financial clout like big companies; but the big companies don't have the kind of innovation the small companies have. There is an opportunity and need for synergy even between the big companies, which within the industry is beginning to happen. It's in its very early stages in India, but has happened in a big way in the west. Today the mode of engagement of the government with the private sector is very transactional and not a partnership based approach at all. This approach is also partly due to the controversies in procurement. In Israel and US, defence has been the biggest reason for innovation, working closely with the industry. We have failed to create such a capability and it is a major challenge. The innovation happening today in defence is minuscule and it's largely happening in the private sector. Unless we believe that ignorance is bliss, we are enduring unknown liabilities by depending on others for critical infrastructure. And the tragedy is this is happening in an area where we are known world over for our strength. We are doing R&D for all the major companies across the world. The latest Intel chip was 100% designed in India. Can there be anything more paradoxical than this? It's a very different game and we cannot do it the way China did. China is a world leader in Telecom. It is no secret that some of the people behind the Chinese telecom giants have roots in the Chinese Army. So we say don't procure from China. But this is the case with everyone else. We are always vulnerable as long as we get it from someone else. There are commercial interests behind many controversies that are created. If we don't have the capability within the country we can only choose who we want to be vulnerable to. We can't choose whether or not we want to be vulnerable. It is a choice we have to make. There are no permanent friends in international politics. How does this capability get built? For instance one of the biggest Chinese telecom companies has 110,000 employees globally and out of this 60,000 are into R&D. This is one company in one country. When we talk of technological sovereignty have we understood the size of the game and what it takes to get there? We can't do it the Chinese way but we can certainly do it the Indian

way. For building such a capability, there is no way we can build it without having a very active and functional partnership with the private sector. This is difficult in today's challenged times where every transaction is subjected to scrutiny. There are ways to do it. How do we build systems which are transparent and accountable? It is possible because along with many virtues our IT industry is also the most credible. There are number of institutions that have been set up in collaboration with the private sector. Educational institutions like IIIT Hyderabad have been set up which have now become role models for new institutions being set up on those lines. In the area of research in particular we had telecom centres of excellence set up in the DOT, IT Research Academy and Centre for Development of Telematics. So it is possible to take up this model and optimize the parameters. From these partnerships we see that the government doesn't really understand how the private sector functions, and the private sector doesn't understand how the government functions either. We see this from the fact that 80% of our IT revenue is from exports. Today we see a situation where big companies are finding it difficult to get board approval to invest any money in government projects. Small and medium companies have gone bankrupt because of involvement with the government. Companies look at time value for money which the government doesn't do. These are the issues we need to factor in. Path-breaking approaches do not happen purely by bottom up or top down approach alone. It's a mix of both.

I would like to conclude by saying that given where we are, the industry today is extremely prepared to partner with the government but there has to be a credible mechanism in place to build a long term partnership.

Speaker III: Legal Structures and Funding –

Shri Amit Cowshish, Ex FA Acquisition, MoD (Finance)

In a way I will start from where Mr. Chandrashekhar left. The theme, institutional framework for partnering with the industry, assumes the need for setting up an institution, a Section 25 company. I will focus on the setting up of a Section 25 company. First thing for a Section 25 company is to have a clear objective. It's mentioned in the concept note and I quote "It is intended to give adequate incentives to genuine ideas and enhance defence technologies. It is essential to evolve a structure akin to DARPA of the US to promote research by academia, industry and think tanks."… its clear there is an urgency to create an institutional framework that is able to involve the private sector in India to co-develop the roadmap and solutions required to meet the challenges of the new warfare paradigms that are fast evolving. There is a need to have an autonomous body that can co-opt expertise from the private sector to create technologies for at least the critical military requirements in the ICTEC area". It is a broad canvas. The first thing is to be absolutely clear on the objectives because once it is set up it is very difficult to change the articles of association without the prior approval of the central government. It is not only the procedural difficulty; more importantly, the difficulty could be to get the government to agree to the changes. My understanding is that the proposed Section 25 Company will have a major stake from the government, given the nature of the objectives. The perception of the difficulties is based on the assumption that this entity will depend for funding, to a very large extent, at least to begin with, on the government of India. I would like to make three points in this context

- The first point is the proposed distance from DPSUs. Regardless of the efficiency of the DPSUs it will be difficult to buffer the entity given that it will be funded to a large extent by the government. From the government's point of view it will make little sense to fund an entity for doing something without utilizing the idle capacities in the DPSUs which have been set up and to an extent are being sustained by the exchequer.

- The second point is concerning the likely overlap between some of the functions presently being carried out by government organizations, DRDO in particular.

- The third point concerns the practicality of the tasks envisaged for the proposed entity. The note says *"The contracts could be ten to twenty year contracts, similar to what the Government of USA gives to its military contractors for developing and supporting futuristic military technologies"*. The basic question is on what basis are these contracts given. We don't have many of the organizations or institutional mechanisms the US has. What about the assured orders at the end of the R&D effort which every boardroom is going to look forward while making their proposal. How will the proposed entity be in a position to make a long term commitment in this regard? What about the funding for such long term contracts?

Similarly there is another para on IPR, the need to lay down the norms related to the ownership of the IPR which are created or have been acquired under the umbrella of the proposed entity and share those norms with the industry. All these issues broadly relate to the ecosystem required to nurture indigenous R&D. This has been the vision of all the efforts by the government in this direction. The issue is how will the proposed entity deal with these issues and how will it be in a better position to influence the government in taking the right decisions to solve problems related to licensing, the ease of doing business and so on without which all the efforts to promote technological sovereignty will come to a naught.

There are certain differences between other sectors and the defence sector because of which the task looks even more complex and the need to involve a large number of organizations starting from the MOD itself, various departments within, the services, other ministries, Ministry of Micro, Small and Medium Enterprises (MSMEs) and so on. DARPA is a part of the Department of Defence (DOD) in the US. It cannot be equated to a Section 25 company or a Section 25 company cannot be part of the MoD.

The second aspect I would like to talk is the structure of the proposed company. To set up a Section 25 company as per the Companies Act there are three basic conditions:

- Its objectives should only be to promote commerce, art, science, religion or charity.
- It should apply its profits in only promoting its objects.
- The central government should have granted a license recognising them as such.

There are issues related to shareholders, appointment of directors and so on. In my view the most important of all these compliance-related issues would be the identification of the group of people who would steer this company. The concept says that it can be akin to telecom sector skill council. But the situation might be very different; for one, there are a large number of stakeholders. Another aspect is that we cannot have an entity that steps on the toes of the existing ones. There is another important factor related to the leadership issue. Experience shows how difficult it is to bring multiple stakeholders on the same page and this has to be resolved before setting up the entity. The third aspect is funding. Once the first issues have been resolved it should be comparatively easy to resolve the issue of funding. There is no requirement of paid-up capital, but the seed money can come from the government in form of equity, grant or loan. Capital grants can also come from government by way of grants to set up the infrastructure required for this company. The main issues could be recurring grants for revenue expenditure. The proposed entity should looks for ways to reduce and systematically eliminate dependence of grants from the government. The existing laws permit the company to raise funds. The sensitivity comes in because of the nature of the company. The constituent member of the company should bear the revenue expenditure to a large extent. We can't possibly get funded to a large extent by the government and then raise funds from the private industry abroad. Lastly it would be wise to have a provision for funding in the civil estimates of the MOD and not in the defence budget.

To wrap up - it may be better to set up the proposed organisation as a society since there would be lesser compliance issues. It could later be converted to a Section 25 company.

Discussion:

- We have to develop an organization which can think long term. Are we structurally organized to do this in the first place? We have the silo of the NSA, the services and the MOD. The Chief of Defence Staff (CDS) hasn't come yet. Then there is the silo of defence production, defence R&D, and another of finance. How to synergize all these according to the requirements?

- A Defence Technology Commission will work provided the long term technology integrated perspective plan and the mission requirement plan is formulated.

- The processes for a production run will be entirely different from limited series production. The Indian industry is unfortunately too huge for licensed production. We falter in conversion of the technology demonstrators to mass production.

- Today ICT is an area which has an umbilical linkage with every military system. This has a private sector base within the country which wasn't there 60 years ago. How do we incorporate this to ensure the ICT systems or sub-systems give us that technological security that we want.

- A central team of ICT will be mission critical systems which include C4ISR, Command & Control etc. Where is the central definition of Command & Control in the Indian armed forces? Any R&D lab will produce a technology demonstrator at the end of the research in limited numbers.

- Irrespective of the availability of technology we should be independent in critical technologies to ward of technology denial regimes. In the past, wherever we were denied technology, we have become self-reliant.

- The six centres of excellence set up by DRDO to work on specific technologies are.

    - Fluid Dynamics at IISc, Banglaore

- Composite manufacture at IIT, Kanpur
- Aerospace Design at IIT, Mumbai
- Life Sciences at Bharathiar University
- Telemetrics at University of Calcutta
- High Energy Materials at University of Hyderabad

Concluding remarks by the Chair - Lt Gen AK Sahni, SM, VSM, DGIT

Our strength is the IT sector. We need to see how the new institution for partnership will be, by restricting it to ICTEC. How to make this happen? Institutes within the ambit of the government tend to have their pitfalls. They become captive, and after a time become too large to lead innovation and lack the necessary force for innovative thinking. I would look at a two-pronged attack on this whole issue as mentioned by the speakers. One, we need to have an institutional vectoring in or tweaking of the existing systems whether procurement or identifying the methodology for an institution to oversee R&D or looking at manufacturing. Two, we have to get an autonomous or semi-autonomous body to focus exclusively on the aspects of ICT and see how this partnership can take shape. The point of restricting it to this sector is because there is a case for dual-use technologies that would get developed in the R&D sector. When it is dual-use there is a spin-off in the commercial world and funding would be easily available. We need a structure which has certain amount of linear and umbilical linkages with the government agencies but is autonomous or semi-autonomous with financial and legal independence mandated by the government so that it can interface and function with the private industry so that it can identify and support R&D projects which will have a spin-off for the military.

Session II: Procurement Systems & Practices For Technology Acquisitions And Indigenisation

Speaker I: Offsets as Facilitator to Technology Acquisitions – Shri AK Gupta, Additional Secretary (Dept of Defence Production)

The key word in DRDO's vision is "world-class science and technology base". To make India world class in technology we need to either acquire or develop technology ourselves Some of the advantages of acquiring critical technologies are: enables design, development and production of complex defence platforms, capability and capacity build up leading to development of new technologies, enables indigenous industries to handle subsequent product upgrades, enables integration of Indian Industry in the global supply chain, spinoff benefits in synergistic fields.

To have a head start in this direction, we can develop critical technologies in the beginning and then develop our own platforms. Acquisitions enable us to design, develop and produce complex defence platforms and leads to capability and capacity build up. Technology has been given prominent place in defence offsets guidelines and for the first time in August 2012, we have come out with the objectives which we want to achieve through these guidelines. These objectives are: fostering development of internationally competitive enterprises, augmenting capacity for research, design and development related to defence products and services and encouraging development of synergistic sectors like civil aerospace and internal security. The focus of the second objective is on our own design and development and to achieve these we have offset obligations. The present status of offset obligations is worth $ 4.25 billion accrued till now and it is expected to grow to $ 8 - 10 billion in coming years. India is the largest arms importer in the world and it is expected to grow. To leverage our huge acquisition we have provisions in our existing guidelines. These are investment through ToT to the Indian enterprises [Para 3.1(c)], ToT to Government Institutions [Para 3.1(e)], the quantum of discharge under Para 3.1(c), as 10 percent of buy back [Para 5.7]. Under 3.1 {C}, we have a multiplier to the extent of 1.1. Another area of focus is Critical Technology Acquisition (TA). We have given

a list of Critical technologies in our Defence Offsets Guidelines where huge multipliers have been given - 2.0 for exclusive use of Armed Forces without restriction on numbers, 2.5 for entire Indian Market without restriction on the numbers and as it becomes less and less constraining the multiplier goes up i.e. 3.0 with full and unfettered rights, including right to export.

So far we have not received any high end technology under any of these provisions. The status at present is that only one proposal was received for Critical Technologies and due to the exorbitantly high cost it was not agreed to. This shows that there is some problem somewhere in our guidelines. We have not been able to clearly specify what we want i.e. aim, depth and proper costing. There are a host of issues that need to be addressed. In DPP 2013 we now have a hierarchy of categorizations. We have started with "Buy Indian" as the most preferred category and emphasis now is on purchasing from indigenous industries. We have been getting a number of requests for issue of licenses. So far 204 licenses have been issued out of which 41 have been operationalised. Connected issues with this are security architecture for licensed companies. As far as India is concerned, exports is minuscule now but is expected to grow in coming years. Even in exports we need to see what kind of mechanisms we will use for end use verification, especially physical verification for private users. We are developing a security manual, compliance to which will be made mandatory for issuing license. Security of technology is an issue which is presently done on one to one basis whenever technology is required.

We are now thinking of modifying the offset guidelines and are receiving suggestions from various quarters for the same. In Directed Offsets, we are making it mandatory to include ToT in the Request for Proposal (RFP) itself. Similarly, for Critical Technologies, we need to define in greater details, as listing out one line or a paragraph may not be enough to explain our requirements.

Speaker II: Aligning DPP for Technology Acquisitions and Indigenisation of Defence Technology –

Lt Gen AV Subramanian, VSM, DG WE

Aligning DPP for Technology Acquisitions and Indigenisation is at the executive edge. We know if we don't ensure technological security and protect technology we already have with us, we will land up in situations like this. Whenever we try and speak about this issue we take reference of USA, a nation capable of making a statement like this - "US has a very strong, even unreserved, support from American citizens for a powerful defence system capable of deflecting any actual or potential threats by means of technological superiority in all areas. United States' objective is overall technological superiority."

We could have not made a statement like this as "India had to contend with societies that are more concerned with social welfare than military threats, a fact reflected in the budget priorities. Government procurement needs to reflect the harmonised slant to promote infusion of indigenous solutions."

To this audience, I don't have to speak about the peculiarities of defence industry. When we say it is a strategic industry, there are issues such as planned obsolescence, technology denial and restricted trade governing the arena. That defence is monopsony, is very well known to this audience – the government is the market and the market maker. Nuclear, space and defence industries are subject to probity, public accountability and transparency in procurement.

According to guidelines for policy on technology, it is a restricted, valuable, limited national security resource. It needs to be protected and invested in pursuit of national security objectives as it is very essential not just for processing this technology but to protect technology which further requires investment. So the very act of possession alone is not complete around here, we have to protect it. International trade is the key to a strong DIB. The defence technology base resides in a broad range of institutions that include DRDO laboratories, other government laboratories, universities, private research facilities, defence industries, and "dual-use" civilian industries. As

the civilian industries move increasingly to the cutting edge of technology, the defence technology base becomes embedded in and largely inseparable from the national technology base. This is how advanced countries move and we know that will happen. As far as the Defence Industry Spread is concerned, the level we normally work with is tier I and the OEM/Integrator. When we address, we tend to address at that level. We should have tier I, tier II & tier III coming in a way that they can co-exist at that level.

We have evolved from Public Accounts Committee (PAC) Report 1989 to DPP 2002 to Defence Production Policy (DPrP) 2011 to Joint Venture (JV) Guidelines DPSU 2012 and lastly to DPP 2013. Over a period of time we have realized we will not be able to work only according to DPP and hence came out with a very innovative and forward DPrP. It is not possible to work within the realm of pages of Defence Procurement Procedures alone.

DPrP-2011 is a very well-articulated procedure to build-up a robust indigenous DIB by proactively encouraging larger involvement of the Indian private sector. It supports "substantive self-reliance in the design, development and production of (equipment) required for defence in as early a time frame as possible" by creating "an ecosystem conducive for the private industry to take an active role, particularly for small and medium enterprises (SMEs)." It will simplify the "Make" category of the DPP, which makes Indian companies / consortiums compete against each other to develop complex defence systems.

JV Guidelines for DPSUs provide for enhancing fairness and transparency in selection of partner and defining the venture's scope. DPSUs will have first say in key decisions. It includes exit provisions for DPSUs and reporting on and monitoring of functioning of the venture. Framework for JVs between DPSUs and private partners with the objective of increasing self-reliance in defence sector.

We have done studies in defence acquisition. All of which are towards strengthening self-reliance in defence preparedness. Some of these are Vijay Kelkar (2001), Revitalizing DPSUs and Ordnance Factories – Vijay Kelkar (2005), Improving Defence Acquisition Structures in MoD – NS Sisodia (2007), Redefining DRDO – P Rama Rao (2008), Defence Expenditure Review – VK Misra (2009), National Security – Naresh Chandra (2012),

Defence Modernisation and Self-Reliance – Ravindra Gupta (2012), Restructuring of HAL – BK Chaturvedi (2012). Only some of all the studies have been implemented. The number of studies that we have done may not be sufficient.

There are 82 instances of 'Technology' and 52 instances of 'Indigenous' mentioned in DPP- 2011. In DPP-2013 both 'Technology' and 'Indigenous' have been mentioned twice as many times it was in DPP-2011. DPM 2009 is a very valuable document and includes 11 instances of 'Technology', 59 instances of 'Indigenous'.

We will now discuss about some of the models and as eminent statistician George Ball states "All models are wrong; some are useful." Defence Economy Model is built up on dual use economy, low technology sector and high tech civilian sector. Unless you have built the bottom portion of the model there is no way defence economy model will work. Civil military integration is very essential as sophisticated defence economy stands on sophisticated economy and wide supply chain. Here I would like to quote Carl Vinson "There is nothing more costly to the Nation than cheap Armed Forces".

The basis for items requiring industrial license is the Indian Trade Classification (Homogeneous Series) (ITC (HS) of DGCIS, Ministry of Commerce) but the ITC (HS) classification does not include many defence items. The National Industrial Classification (NIC) is an essential statistical standard for developing and maintaining comparable database according to economic activities. Industrial Licenses for defence products are granted by Department of Industrial Policy and Promotion (DIPP). Export of dual-use items and technologies is either prohibited or is only permitted under a license. In Foreign Trade Policy, dual-use items have been given the nomenclature of Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET) and codified. Here we need to see Wassenaar Arrangement which is an International arrangement. Once we join this arrangement it will take us some time and exports related issues will somewhat be eased. It includes Multilateral Export Control Regime (MECR) with 41 participating states and to be admitted a state must be a producer/exporter of arms or sensitive industrial equipment, adherence to non-proliferation policies, control list and, where applicable, guidelines of the Nuclear Suppliers Group, the Missile Technology Control Regime and

the Australia Group; and adherence to the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, the Chemical Weapons Convention and, where applicable, START I, including the Lisbon Protocol; and maintain fully effective export controls.

U.S. has developed Technology Readiness Levels Framework (TRL). We have five categories, 'Buy Indian', 'Buy and Make (Indian)', 'Make, Buy and Make', 'Buy Global.' Out of these 'Buy Indian' is the most preferred. Problem is in finding out which particular technology is in 'Buy Indian' category. So we need some level of classification and codification. Technology Readiness levels need to be assessed and put into that kind of value and be able to map it into a particular kind of categorization. The last TRL is achieved through 'qualified' successful mission operations. Meeting the mission needs requires certain specifications which should be met at any cost.

Hi-tech defence manufacturing is costly, capital intensive and has a few players. We always face the problem of validating the cost of defence technology when it is handled by private sector. Costs of the industry, especially if it is the private sector, needs to be objectively probed. It should be done through an effective government instrument. Think Tanks need to develop and establish some probing methods which can then be recognized by DPP. Government needs to make commitments with Industry through repeat orders, long term and sole-source contracts.

We need to question why we have DRDO doing the R & D and Ordinance factory doing the manufacturing. There is a huge disconnect between design capability and manufacturing capability as production technology is very different from lab technology. The vehicle to take R&D to manufacturing is absent. R&D is done by DRDO while DPSUs, private industries do manufacturing. In order to spur defence manufacturing in India, there needs to be a stronger connection between R&D and manufacturing. DPSUs have D&D which need to be enlarged for upgrades as well.

We need to have data on our DIB. We need a valuable database for building defence capabilities and readiness, economic health and competitiveness, enable industry and government agencies to monitor trends and benchmark industry performance and raise awareness of diminishing manufacturing and technological capabilities.

While the DPP has given us a number of issues we need certain guidelines too. Cost Estimation needs to be done. Now we don't have any guideline for cost estimation. We all estimate cost as we understand it but that might not work all the time. We need a method for evaluation of category prioritization. When we interact with industry we don't have a formal forum. Formalization of industry interaction with Ministry of Finance, DIPP, MoD and consortium of industries is required. Finally, as recommendations we need to simplify defence product code, adapt Wassenaar norms to bring clarity to defence systems export control list, adapt TRL framework, instruments to probe costs of private industry, system to translate R&D to Manufacture and lastly collate data on defence industry base.

Speaker III: ICT Procurement: Streamlining Procurements, Evaluation –

Dr. Jaijit Bhattacharya, President CDEP

This presentation will focus on issues in terms of procurement that Industry felt exists. Issues from Industry are compiled by C-DEP and CLAWS with support from Catallysts Constellations LLP. At present the industry view is that DPP-2013 is a positive step forward for tuning the defence procurement towards greater local procurement. There continues to be perceptions that the defence procurement process is a disincentive for local industry.

Categorization itself seems to be a very significant issue. The concept of categorisation is a good step forward. There is a need for the categorisation committee to critically examine essential factors like capability of the industry, difficulty in mastering complex high end critical technologies, foreign restrictions on military equipment and the urgency of induction of equipment by the armed forces before carrying out procurement categorisation. The whole question of "What constitutes Indian?" should not hinder the procurement process, but provide simpler processes for evaluating indigenous content. We need to clarify issues related to taxes as taxation seems to be discriminatory from the industries' point of view. The industry requires clarity on industrial licensing, implementation and evaluation of offsets. Point procurement versus roadmaps is important as capability cannot be built up for point procurement unless a roadmap is published. Managing Offsets is a significant issue. There is a need for effective monitoring and accountability in the offset process by enhancing the knowledge and experience of executing offsets, enhanced transparency in offset contracts and increased interaction and cooperation among the stakeholders. There seems to be lack of an institutional process which would develop capability in industry to leverage offsets. There are issues specific to ICT Procurement. DPP appears to be geared for armament and weapon system sector which has got long lifecycle with little or no upgrades and ready product is put through field trials for evaluation. The other is "planned obsolescence" that starts coming in and what is required

is institutional changes as a part of procurement process. In service sector, field trials and "show me before I buy" are not applicable. The role of the System Integrator is limited to ICT installation and system performance of COTS hardware and software. There is limited scope for optimization and leveraging the system integrator's knowledge which could have potentially provided a strategic advantage to the Indian military. The Global OEM's usually work on up-front payment policies thereby not being a party to the risk in case of a failure of a project. We have already discussed procurement process leading to faster obsolescence, the shorter shelf life of ICT assets driven by obsolescence that is accentuated by multiple projects with pilot approach followed by planning for enterprise wide rollout followed by long procurement cycle. This leads to multiplicity of technology platforms and therefore there are issues of having an integrated solution. We need to plan for projects at enterprise level followed by phased implementation if desired and therefore sharing project roadmap is critical. So the piecemeal approach also potentially discourages larger players in ICT technology from participating in systems development and investing in this sector for the long term. Current procurement is product- centric and not roadmap centric. Therefore, implementation of the MoD's declared policy of making relevant parts of the Long Term Integrated Perspective Plan (LTIPP) public needs to be accelerated. As far as the RFP Processes are concerned, RFP team must include experienced officers from the field units of the respective system or domain. The industry does not know how the concepts are being put together, who is putting it together because after the system has been delivered to the user in the military, the user comes back and says this is not what we wanted and asks for many changes. We need to bridge this gap in the backdrop of how these concepts have been put together. Involvement from stage of AoN to the stage when the project is under development would lead to more appropriate identification of the requirements at the field level. It will be useful to have higher implementability of RFPs formulated through an open consultative process that leverages vendor domain knowledge; stakeholder consultation should be limited to vendors from specialized verticals. Final RFP should be created from inputs from each of the consultative processes. The Best Practices need to have a robust and accountable change control mechanism for rapid inclusions/exclusions from the RFP/Expression of Interest (EOI). There is a need of public website where non-mission critical and non-confidential requirements/RFI for defence procurements can

be hosted for solution providers and academicians to propose a solution. Team 'Orlando' of USA can be used as a model for this kind of participative R&D and production. E-procurement should be widely adopted for ICTEC procurement by military. I would like to end the presentation with a quote of Sun Tzu *"Strategy and no tactics will lead to partial success, but only tactics and no strategy is a path to sure failure."*

Speaker IV: ICT Procurement: Procurement Challenges and Remedies –

Lt Gen SP Kochhar, AVSM, SM, VSM, (Retd), former SO-in-C**

The DPP has been made on the premise that one size fits all. We need to expand ICT to ICTEC. ICT without electronics and cyber is incomplete and all of them have to go hand in hand to make any meaning to this industry. The major problem is that DPP is structured for defence procurements and when we talk of defence procurement we talk of large scale items which will live for twenty to twenty five years such as tanks, guns etc. From services side we should be careful what we ask for. We often start making procedures which are utopian and when we sit down for staff work we ask for requirements which cannot be met. Now that the commercial market is leading research, we can see the number of products and innovations coming out are mind-boggling. These days technology is changing every three months. For defence services to adopt every new technology without testing it on ground will be foolish. The time frame often tends to get expanded. Our equipment procedures should change with the change in doctrines in conformity with our time period. The other problem comes up with selection of the equipment which is decided on only one criteria, that is finance. According to DPP, we encourage Indian vendors but DPP does not work in isolation. It works with rest of the country's regulation. Why is it that the tax regime does not support Indian manufacture? The Indian ecosystem is known for good policies but when it comes to applicability and implementation the problem arises. As a user we need to question why the Indian Military mindset is besotted with the desire to own our own systems only. To my mind there are two types of ICTEC procurements. One is current and the other is futuristic for which we need to start with R & D now. Again, R& D alone will not be sufficient. We will require knowledge, wisdom, research and development separately. In India we have this knowledge and wisdom in pockets. Research flows out of wisdom and it will come out as plans, prototypes or lab models. About thirty percent of research in ICTEC happens in India (not for India) by Indians. Almost twenty percent of production happens in India. Sadly, zero percent of development happens in India. For the same reason we

need to set up our own development labs. From Industries point of view, the general feeling of being discriminated against is justified to some extent but the demands of industries too are atrocious. The industry take is that we will invest in R& D only if it is ensured that all purchases are made from Indian vendors only. A level playing field only means that you will be made to participate. Indian industries should compete with world class players and they should not be given orders on plate, they should be made to compete with the rest of the ecosystem. Problem of Indian industries is not of funds or infrastructure, but of marketability. They are being negatively discriminated against foreign vendors due to unfair tax regime. Change is required in the environment, user, policy makers and vendors.

Discussion

From last five years MoD has been talking about thrust in privatisation effort. We were informed that there are offsets to the value of eight to ten billions available and lastly the issue of delays which go up to two to three years. Keeping all these issues in mind, what are the institutional changes that authorities in MoD are contemplating to accelerate the whole process.

A committee has been set up to simplify 'Make Procedure' and it will be a part of DPP as chapter two. In addition, a committee for reviewing the offset guidelines has been constituted for which suggestions have been invited from stakeholders and industries. We are aware of problems in implementation and evaluation and we will be able to come out with more implementable and user friendly guidelines. We are also looking into mechanisms of price recovery so that overloaded PSU's can offload to private sector through Joint Ventures. In DPP 2013 apart from 'Hierarchy of Categorisation', we are working on defining and measuring of what constitutes indigenous. There needs to be a phased manufacturing program to reach complete indigenous platform. To reach that level we need 'volumes'. In defence we don't have volumes as armed forces are the only recipient of the products. This problem can be solved if we start exporting so that indigenous content goes up. ICT can be made more indigenous content as it is a dual-use technology. ICT has market for both defence and civil. DPP has got parameters but the problem is in adherence. There is also a need for differentiating between very large procurements and small procurements. There seems to be no provision in DPP on capturing innovation. In some countries' DPP there is a chapter on 'Unsolicited Innovation' which does solve problems. Some provision on same lines needs to be included in our DPP.

Closing Remarks by Chair: Lt Gen SP Kochhar, AVSM**, SM, VSM, (Retd), former SO-in-C

The intentions with which the offsets have been put into the DPP are very noble but the way offsets are being implemented is not what was desired. The papers for this seminar have brought out a very good idea that we should have an organization in place where representatives of sectors sit in place, discuss and deliver on all these issues and lastly advice respective stakeholders in what directions to go. The stakeholders should see in their own departments that these suggestions have been instituted. We need to get into the mode where it is ownership of all and not just of the user.

Special Address

Special Address: Defence Acquisition Challenges and Road Ahead for Technological Sovereignty –

Mr SB Agnihotri, DG Acquisition

It is not possible for me to work in a world that is completely just, but as long as we identify and agree on the removable injustices and remove it, we, move closer to a just society.

- Idea of Justice, Amartya Sen

We should take that approach in defence acquisition as well: identify those agreed points, which are perceived as incongruous or unjust, and then strive towards removing them. How do you, from the acquisition point of view, do this with the issue of technology sovereignty. To me, a chain is only as strong as its weakest link; whereas we always keep making the mistake of burrowing at the strong links of the chain and keep wondering why it isn't snapping.

When we talk in terms of sovereignty: I should be able to innovate, make a working prototype and be able to produce. Once produced the next question is whether the prototype is shackled or unshackled? There is a huge hiatus in our own system between the thinker and the doer. We have no dearth of consultancies and designs by the thinker, but it doesn't get translated into the doer's language. Our service base workshops follow methodisation. The methodisation booklet is the answer to bridging the gap between the thinker and the doer. But our scientist looks down upon methodisation as too pedestrian a work, and our doer doesn't have the courage to tell the scientist to create the methodisation.

The next question in your prototype-making, is whether it is shacked or unshackled? If you are lucky and your innovation is unshackled, your prototype making is unshackled.

Multi-vendor vs Sovereignty

Classic 'Make' case: where we dictate and the developer and the producer

is the same. We are looking at a possibility where a developer who wants to make his own profit out of his IPR and might be in a position to sell his technology to vendors, he then gets a mandatory equity in the share. This is one way in which innovation by a private individual or entity can be brought about. The issue of competing versus sovereignty needs to be tackled. There is this problem today that if I am an innovator cum producer, how are you going to handle my case without attracting charges of me getting a windfall profit? This is an anomaly in defence and does not have similar repercussions in the other sectors.

My second worry: I don't consider licensed production is pejorative as long as I start getting cost reduction over time. But once the economies of scale in production have been achieved the cost difference between the indigenized product and imported version is important. If there is a sizeable gap the question is where is the sovereignty? Even if we are prepared to pay the price for indigenisation, but I want sovereignty, I don't get it.

Third worry: If I am able to do licensed production, materials is one major worry. As a foreign vendor I have a choice of squeezing you either on the horse-shoe or extracting much more money in the technology transfer. The third choice is that of materials. And I think we will seriously have to work on all three.

What are we doing in terms of DPP? As we start more and more competition to the DPSUs, this particular pattern of the marked down pieces becoming costlier, that is precisely where the private sectors ability to innovate and its ability to keep the cost down comes into play.

Someone raised this question of why is 'buy Indian' your preferred category number 1? The issue today is not which is one, two three. The issue today is one, two, three grouped together, vis-a-vis four and vis-a-vis five, that is the last.

Earlier in all our procurement cases we had to justify why we are having a particular categorization. Today we are having to justify why the other category are being excluded. And it's a very strong qualitative difference. When I say I want to 'Buy Global' I have to have four specific paragraphs: justifying why it's not possible to 'Buy (Indian)', Make (Indian)', Buy and

Make (Indian)' and why can't I have 'Buy with ToT'. Within this silo of 'Buy (Indian)', Make (Indian)', Buy and Make (Indian)', I am prepared to let it pan out. Individual lobbies' legitimate impatience notwithstanding, I need to first let this toddler walk small steps and then start sprinting. DPP graduations happen every two years.

Today if I have a product, that product can either be a substitute, an upgrade or it can be completely new. Today DPP does allow, under paragraph 21, induction of these of any of the three categories (in the window of below 150 crores). Net project would take care of some of those above 150 crores. But there is also an opportunity that is available that we can have an intermediate window where an amendment to paragraph 21 that will take care of this particular aspect where an un-inducted equipment will also be looked at and brought in.

In terms of cutting short the procedural delays, ICT chapters and small versus large, the more we grapple with ICT-related items we are realizing that here is a technology that changes practically every month. That is all the more reason that a separate ICT chapter should be introduced.

Finally, when we talk in terms of sovereignty I must saturate the extent to which I can be independent. We must therefore increase indigenisation content. A lot of people have criticized that our 30 percent is not adequate. We have also taken a stand that in specific cases the Services Capital Acquisition Plans (SCAP) can raise the bar.

Interactive Session

Offset has a green, amber and red channel. When a foreign vendor comes in, he gets into this temptation of flirting with the red channel, rather than sticking to the green channel and coming out of customs quickly. What we find is that for particular countries there are no offsets. Then, there is another category where half don't have problems and others do.

Q. There is a need to put down rules, regulations and guidelines etc for identifying the industry.

R. You are worried about Indian vendors not being defined? It's a work in progress. Watch this space and SMS by the 15th December. You are right, there is an ambiguity which we are trying to remove it.

Q. No formal training on the acquisition process leading to suffering on the part of agencies. Acquisition process is not a legal document but a guideline. I feel that there is a need for training all the people involved. In the last 8 years 7 versions of the DPP have come out.

R. It's a two way street. If it happens in two years, you say we are too slow and when amended than you say it's too fast. Point on training taken. You are essentially talking about the acquisition literacy among the acquisition wing itself.

Q. DPP is supposed to be transparent. One way of defining transparency is assigning and evaluating the scope of capacity. There is no transparency in DPP- as I find, who will convey what to whom, in what time frame, is not stated. The response to this question is usually- it is confidential. Therefore the General Staff Qualitative Requirements (GSQR) only comes out with the RFP. I would prefer that the GSQR be publicized well before the RFP is issued so that the prospective vendors get a head start. Furthermore, we can reduce the time cycle with greater transparency. If at each stage you are able to give more information earlier your time cycle will considerably reduce.

R. I am not too sure. I talk in terms of the absence of an institutionalized dialogue forum... If you are talking in terms of practical methods of reducing

time-lines by increasing transparency or by increasing specificity in the DPP process, this itself can become one of the themes of Saturday discussions (Reference to Saturday Q&A sessions with industrial for a like CII, FICCI etc being held by the DG Acquisition in collaboration with IDSA). But my point is that every time you say this, my first worry is- which lobby will have an advantage with this? And we always have to worry about that. The moment we make any particular change in good faith... a set of people get busy in working how to bypass this. Therefore our processes will keep improving in a very conservative manner.

Q. Training to the effect of advice is amiss.

R. Are you saying there is an absence of a standardised FAQ booklet that results in files moving up and down? Would you help me with a draft of an FAQ booklet? Based on your experience list 5 topics that require to be in the FAQ and ask others to add and forward it to me by the 15th of December.

Q. May we request for a Saturday meeting dedicated to SME interactions coordinated by National Small Industries Corporation (NSIC) or MSME. We find that our issues are different from big players.

R. I can't do NSIC's work. You must as soon as possible get out an MSME directory for defence.

Q. Defence volumes are small and therefore it is difficult to invest in systems.

R. The tragedy is that in this high stake game called defence, any leeway can be exploited by another.

Concluding Remarks: Maj Gen Dhruv C Katoch, SM, VSM (Retd)

This was a take-off from what we did last year and I think we will be holding another one of these in the next six months. We will have specific people coming in from the government, armed forces and the corporate world.

Valedictory Session

Valedictory Address: Lt Gen SP Kochhar, AVSM**, SM, VSM, (Retd), former SO-in-C

Today's proceedings show that this series of seminar is acceptable all across the bureaucrats and the industry. While the concept is acceptable they each have a different view in looking at it. This is something we need to grapple with and come out with a way to go forward. We need to set up an organization that takes us towards technological sovereignty. If we handle this well from the industry side and the CLAWS side than I don't think there should be a problem in making them understand what we want to do. Especially DG Acquisition has been very forthright and he has accepted and panned out reasons why there can be no deviation as far as defence is concerned. How to go about it, is something we will have to sit and find out solutions to. This valedictory should not be a farewell but it should only spur us on to the next session and see that we write down actual operation documents which are acceptable to the government.

Vote of Thanks: Jaideep Bhattacharya, President C-DEP

I want to begin by thanking General SP Kochhar who gave the impetus for this concept to be taken forward. While last year many were asking what technological sovereignty is, this year it has been taken for granted. This reminds me of Gandhi's statement that if we come up with a new idea then "first they ridicule you, then they are afraid of you, then they fight you, then they endorse you." I think we have crossed the first stage where they ridicule you. Now is the stage of being afraid of what we have in hand and therefore it's a long way forward from here. I will also like to thank Maj. General Kochhar for actually anchoring this seminar here and making it a reality.