<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CII Foreword</td>
<td>1</td>
</tr>
<tr>
<td>Faber Infinite Foreword</td>
<td>2</td>
</tr>
<tr>
<td>Background</td>
<td>4</td>
</tr>
<tr>
<td>Current Scenario</td>
<td>5</td>
</tr>
<tr>
<td>About Defence Sector</td>
<td>7</td>
</tr>
<tr>
<td>About Aerospace Sector</td>
<td>7</td>
</tr>
<tr>
<td>About Defence Conclave: 2018</td>
<td>8</td>
</tr>
<tr>
<td>Inaugural Plenary</td>
<td>10</td>
</tr>
<tr>
<td>Session 1: MSME to transform the vision of “Make in India” to Reality</td>
<td>15</td>
</tr>
<tr>
<td>Session 2: Defence and Aerospace Indigenization: Opportunities for Indian Industry</td>
<td>21</td>
</tr>
<tr>
<td>Way Forward</td>
<td>28</td>
</tr>
<tr>
<td>About CII</td>
<td>30</td>
</tr>
<tr>
<td>About Faber Infinite</td>
<td>31</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>32</td>
</tr>
</tbody>
</table>
CII Foreword

Modernisation and Indigenisation are the Key-words in India's defence manufacturing market, right now. As India gears up to spend USD 130 bn on military modernisation in the next 5 years, achieving self-reliance in defence production is a key target for the Government of India.

In the past 12-15 months, several valuable contracts have been awarded to the Defence Public Sector Undertakings (DPSUs), private players and foreign vendors across different segment. In a major policy move, the government formulated a Strategic Partnership model/policy in May 2017. Under this model, the government will select Indian companies as well as foreign firms who can join forces to make fighter jets, helicopters, armoured vehicles and submarines.

The Ministry of Defence has approved the creation of a Defence Innovation Fund (DIF,) which is an attempt to enhance innovation and technology development in the sector.

Gujarat has emerged as a State with excellent infrastructure facilities and can offer both forward and backward supply chain linkages to the Defence & Aerospace manufacturing sector. The growth drivers for Gujarat include its vast coastline of 1600 km with well-connected ports, the MSME engineering companies proving entire supply chain for defence sector, premier educational institutes in management, engineering, design, R&D and infrastructure planning and world class ship building and repairing facility.

Last but not least, the strategic advantages of creating a vibrant defence domestic sector will walk an extra-miles in accelerating India's manufacturing capability and job creation. It should be highly noted that in addition to the growth in job quantity, increased defence sector exposure is likely to have a larger overall impact on job quality as well.
Faber Infinite Foreword

“The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore, all progress depends on the unreasonable man.” George Bernard Shaw

We are pleased to bring to you this exclusive proceeding report on the Defence and Aerospace conclave organized by Confederation of Indian Industries – Central Gujarat Region.

Change, and the massive opportunities it brings, only increases in pace as time goes by. Ability to drive and manage change lies with the unreasonable ones who aspire to craft a world which is more liveable. This conclave and report intends to provide a platform to all the unreasonable and forward looking people who with the tools – techniques and concepts of defence and aerospace look to maximize their potential.

The opportunity is to construct a coherent and viable future. We must integrate, collaborate, pool resources, share information, and work together with the widest range of partners, to make the most of our opportunities. Here, we set out the ideas on the same which were bounced upon during the event.

The domain of Defence and Aerospace in Gujarat has a great potential with Gujarat government’s Defence and Aerospace policy that host incentives and tax sops. While the last few decades have seen Gujarat turn into ‘auto hub’, next few decades will see Gujarat to aim at Defence and Aerospace Industry.

The world is changing, but the need for impartial, trusted advice from an expert defence community has never been greater. The vision of Defence and Aerospace Sector success will be achieved only with the help of the people that live, study and work here – our universities, schools, communities, third sector partners and busi-
nesses. They bring the innovation, creativity, ideas and ingenuity that will enable us to share a better, more sustainable future.

On behalf of the Team Faber, I would like to express my sincere thanks to the Confederation of Indian Industries for providing this opportunity and all the participants of the summit who have worked closely with us to arrive at this proceeding report. I would welcome your view on the report to help shape future of Defence and Aerospace sector. If you have any comments, I would be keen to hear from you.

Let’s make India evolve more powerful, together!
Background

Since independence, the goal of self-reliance has propelled India to nurture and expand its defence industrial base. In 1947, majority of the defence infrastructure and equipment in India was inherited from her erstwhile colonial ruler, Britain. During the 1950s India focused on its capability to indigenously produce equipment with little technical know-how. Also the revised Industrial Policy Resolution reserved the arms and ammunition industry with the public sector. In 1958, the ordnance factories set up under the British rule became the core group of industries that formed the Defence Research and Development Organization (DRDO). Conflicts with China in 1962 and India’s war with Pakistan in 1965 prompted India’s Aerospace and Defence Industry to increase its expenditure budget. Within the next 15 years, a lion’s share of India’s defence equipment was supplied by the Soviet Union.

In the 1980s, India began a renewed effort to galvanize its domestic defence industry by investing largely into DRDO and development of indigenous missile systems such as ‘Prithvi’, ‘Akash’ and ‘Nag’. Towards the onset of the 21st century, India opened its doors to liberalization and progressive economic reforms. Introduction of the ‘Make’ type of procurement in the Defence Procurement Policy 2006 allowed the industry to develop and produce advanced defence equipment, with government commitment to provide 80% of the development costs. In an attempt to boost domestic procurement, the government changed the order of preference in procurement under the Defence Procurement Policy of 2013- making it a preferred choice to develop, design or manufacture defence equipment indigenously. India has steadily walked towards its objective of self-reliance by becoming one of the few nations to possess and develop advanced weaponry. However, it has continued a long standing policy of working hand-in-hand and deriving support from the technologically advanced nations for its defence capabilities.
Current Scenario

The sector for the first time was opened up to 100 percent Indian private sector participation in 2001. Indian defence industry is dominated by defence public sector undertakings (DPSUs) and ordnance factories (OFs) which contribute about 90% of the total domestic defence manufacturing output. The 41 ordnance factories are spread across 26 different locations and employ close to 1,25,000 people. Combined, the DPSUs and OFs have played a critical role in building a domestic industrial base in this sector as they typically outsource 20 to 25% of their production requirements to private companies.

Larsen & Toubro, Tata group, Pipavav Defence and Offshore Engineering Ltd., Reliance Industries Ltd., Mahindra and Mahindra, Ashok Leyland Defence Systems, Piramal System and Technologies are some of the key Indian players in the defence industry.

The 'Make in India' policy for the defence sector aims to reverse the current imbalance between the import of defence equipment and indigenous manufacture of defence equipment for strategic and economic reasons as well as save precious foreign exchange and address the national security concerns. The Government policy of promoting domestic defence industry is adequately reflected in the Defence Procurement Policy, wherein preferential treatment is given to “Buy (Indian)” and “Buy and Make (Indian)” categories of acquisition over “Buy (Global)". As the Indian Companies may not have adequate capabilities in terms of technology, they are encouraged to partner with foreign companies for joint ventures, technology transfer arrangements and tie-ups.

Gujarat is an industrially progressive state and it is envisaged that a significant amount of investment in the A&D sector is likely to come to the state. In line with the Make in India initiative of the Hon'ble Prime Minister and the call to build its de-
fence capabilities within the country, Government of Gujarat has taken farsighted steps to encourage its growth and is the first state in the country to provide legislative support to the Defence sector through simplification of the procedure of land acquisition.

Speaking at the Vibrant Gujarat Global Summit 2017, Manohar Parrikar said that the centre has approved close to 20 licences for defence production in Gujarat. An investment agreement between Anil Dhirubhai Ambani Group (ADAG)’s Reliance Defence and Engineering and Gujarat government was signed in the presence of the chief minister and defence minister with a proposed investment of Rs2,500 crore in the defence sector in Gujarat. Recently, the Gujarat government has come out with a new aerospace and defence policy, promising a slew of incentives and sops.
About Defence Sector

The Defence industry of India is a strategically important sector in India. With strength of over 1.39 million active personnel, it is world's 2nd largest military force and has the world's largest volunteer army. India has been spending worth nearly $3.5 billion to boost its ageing Soviet era military equipment. It has been pushing for greater indigenisation of the military industry as India imports around 70 per cent of its defence hardware mainly from Russia, Japan, Israel and United States.

The Modi government in its first year cleared 39 capital procurement proposals, of which 32 proposals worth ₹889 billion (US$14 billion) (or 96% of value of total proposals) were categorized as Buy (Indian) and Buy and Make (Indian)—the top two prioritized domestic industry-centric procurement categories as per the defence procurement procedure (DPP).

About Aerospace Sector

India is already a large commercial and defence aircraft market. With rising passenger traffic and increasing military and defence expenditures, the demand for aircrafts is expected to increase further. The Indian aerospace industry is one of the fastest growing sectors. India is expected to become the 3rd largest aerospace industry by 2020. The current government has brought in significant policy reforms over the last three years. The new Defence Procurement Procedure (DPP 2016) and National Civil Aviation Policy (NCAP 2016) highlight the intent of the government to alter the status quo and that’s a positive sign.

There are several factors driving growth in manufacturing in Indian aerospace industry. These include both macro and micro factors - strong economic growth that has resulted in rapidly growing domestic aircraft demand, the liberalization of civil aviation policies, offset requirements, a strong domestic manufacturing base, cost advantages, a well-educated talent pool, the ability to leverage IT competitiveness and a liberal Special Economic Zones law that provides attractive fiscal benefits for developers and manufacturers.
About Defence Conclave: 2018

India is a large commercial defence and aerospace market, experiences significant and progressive change. In the last two years, since the launch of “Make in India” initiative of the Government of India, Defence Sector in India has seen immense activity, evincing interest from Indian private industry as well Foreign Original Equipment Manufacturers (OEMs).

Indian Defence & Aerospace sector is at the core of ‘Make in India’ campaign of the Government of India. With increasing military and defence expenditures and demands for aircrafts, ‘Make in India’ should target encouraging and incentivizing Micro, Small and Medium Enterprises’ (MSMEs) participation in the defence manufacturing, to bring out best outcome of this synergy and to make India Self-Reliance in production.

By keeping this point of India’s core sector in mind, Confederation of Indian Industry (CII) had organized its 2nd Conclave on defence and aerospace manufacturing on 11th of the May at Ahmedabad, for boosting the equipment production sector at the state level for the realization of nation goal.

Following Key Points were focused and discussed throughout conclave:
1. Make in India - Vision to Reality: Building a global hub for Defence Manufacturing
2. Business regulatory framework for Defence & Aerospace Manufacturing
3. Defence Production Policy & Defence Procurement Procedure
4. Skill development and accreditation in Defence & Aerospace industry
5. Ease off the government – private sector collaboration
6. Building a sustainable ecosystem for Defence & Aerospace industry
7. Defence Manufacturing and Challenges in Self Reliance
Organizations like Society of Indian Defence Manufacturers (SIDM), Society of Defence Technologist (SODET), Indian Air Force, Indian Navy, Indian Army Design Bureau, Bharat Electronics Limited, Bharat Dynamics Limited, Ordnance Factory Board, Dholera Industrial City Development Limited, L&T Limited, Adani Defence and Aerospace participated in this conclave.

This conclave had deliberately conveyed the message that, indigenous manufacturing has opened up the defence industry for private sector participation and simultaneously paving the way for foreign original equipment manufacturers to enter into strategic partnerships with Indian companies. The key challenges were addressed and growth opportunities were identified with the base of a collective pool of thoughts of the best in this sector.

It witnessed participation from select group of CEO's & MD's, Policy Makers, Unit/Plant Heads, Engineers, Professionals, Executives, Leaders, Corporate Representative, Practicing Managers & Executives from a wide range of Industry.
Inaugural Plenary

The Government of Gujarat is promoting the Dholera Special Investment Region (SIR) as an ideal destination for investments in the defence manufacturing sector. In the support of the statement, Mr Shivahare said that Dholera is capable of providing huge land parcels that are required for defence manufacturing facilities. He further continued that such facilities need 400-500 hectares of land and such large land parcels are not available anywhere in India at a current stage.

Chief Minister Vijay Rupani has said that Vibrant Gujarat Summit 2019, will project as a key Investment Destination. Few International players like American defence and aerospace giant Lockheed Martin and Airbus have expressed an interest in establishing manufacturing facilities at Dholera Special Investment Region (SIR). Reason behind being the centre of foreign investors’ attraction is the unique advantages that Dholera provides to its investors, like World class Infrastructure based on International Benchmarking, Large land Parcels, External Connectivity, Incentives like land price discounts to early comers, social infrastructure, sustainability, Ease of business and Technology.

Jai Prakash Shivahare, IAS
Managing Director,
Dholera Industrial City Development Limited,
Government of Gujarat
Urbanization in India began to take pace after the Independence, after the country’s adoption of a mixed economy, which gave rise to country’s private sectors. Though, Urbanization is taking place speedily, instead of becoming modern and luxurious concept, it has become the necessity, considering the growth of the country. Hence, “Smart city” has taken place of it. Concept of “Smart City” has been in the top of the list, as building cities with world class infrastructure creates employment and gives contribution to the growth of GDP.

Defence is one of the top 10 sectors of India and India is among the top importers of Defence weapons in the world. Defence and aerospace sector always welcomes the new suggestions for better growth of it, new joint ventures, policies, feedback facilities, involvement of MSMEs, to make India self-sustain and self-reliance for manufacturing of defence and aerospace equipment.
As Prime Minister quoted “We have diamonds, we have steel. We have Satellite to Submarine” His last line was addressed to Defence and Aerospace industry in India. The Defence expo 2018 that was held in Chennai India witnessed that it was not a platform for foreign companies to showcase their products but Indian companies to showcase their products to the world. We all are aware of our situation in the Northern borders, hence it is expected from India be security provider and hence become self-reliant.

We think of bullets, guns, fire, and bombs when we think of defence but in reality, it also includes Food, land, construction, textile, etc hence there is a wide opportunity when it comes to business in Defence and Aerospace Industry.

Coming to Gujarat, this state has to offer a lot to Defence and Aerospace Industry. We should take advantage of the fact that we are in close proximity to the border hence we have a better understanding and can provide a solution than someone from different state.

Hence, Vicinity of border and vicinity of coastline is to our advantage. CII has created societies and has invited members from 12 industries. The society is involved in Policy advocacy, progress advocacy, discharging offsets, consultancy services to entre Defence and Aerospace industry, create a fellowship for start-ups etc.
Gujarat and other states are leading players and can form key link in defence supply chain. The ratio of capital budget has decreased and revenue budget has increased over 10 years. The advantages that we have are DRDO, DPSUs, Talented scientist and R&D available. But we also have some disadvantages like not able to retain people in R&D, technical know-how.

With processes made transparent and licence policy made easier, few suggestions would be:
• Stress should not be on a capital budget.
• Supporting industries like special maintenance tools, special test equipment, a special part that can be indigenized should be encouraged.
• There is a need to develop skill development consulting agencies.

Hence there is a huge opportunity in Defence and Aerospace that is left unexplored and everything can be achieved with synergy and active interaction between end-users and manufacturers.
Gujarat offers the coastline, MSMEs, infrastructure and reputed educational institutions to defence sector. Gujarat's fundamental strength exists in form of a large number of MSME's, who are transforming themselves into major players and will play a critical role in the entire supply chain execution for Defence and Aerospace sector. With skilled intensive manufacturing capabilities and a robust infrastructure, Gujarat has the right ingredients to become a key link in the Indian defence & aerospace supply chain. Collaboration of DPSU – OEM – IOP with Gujarat's MSME's, can help transform defence & aerospace ecosystem in Gujarat.

There is huge opportunity and clear vision of Central Government which will drive the growth of defence sector, not only for large companies but MSMEs and allied industries. Many countries including US, UK, Israel, and Sweden etc are already in discussion with India and keen to extend their business enterprises to enter into arrangements for co-development and co-production of commercial aviation and defence equipment in India, including transfer of know-how and technologies. It is in this context that the Government’s policy of promoting indigenisation of the Defence Industry by leveraging the ‘Make in India’ opportunity is a step in the right direction. India is in an unusual and perhaps unique position to build a vibrant local defence-industry ecosystem that could support both domestic and export demand, yielding materials benefits to the industry and the nation and I feel Gujarat can play a crucial role in the same.

Dinesh Yadav
Chairman- CII Gujarat State Council & Director, Arvind Envisol Limited
Session 1: MSME to transform the vision of “Make in India” to Reality

Ordnance Factories Board (OFB) is an industrial organisation of the Indian Ordnance Factories functioning under the Department of Defence Production of Ministry of Defence, Government of India. It is engaged in research, development, production, testing, marketing and logistics of a comprehensive product range in the areas of air, land and sea systems. It’s the oldest organisation run by Government of India.

Indian Ordnance Factories is directly linked with the British reign in India. In 1775, the British East India Company accepted the establishment of the Board of Ordnance at Fort William, Calcutta. This marks the official beginning of the Army Ordnance in India. There were 18 ordnance factories before India became independent in 1947 and 23 have been established after independence.

There are 2 fundamental elements Defence Procurement Policy (DPP) 2016, unveiled by the Union Government: Indigenisation and MSMEs. ‘Buy Scheme’ of policy Buy (India-IDDM) seeks to boost indigenous production and procurements under it should 40% sourced locally in terms of the content. This 40% Indigenous content is provided by large industries by integration with subsystems and by middle order industries by integrating subsystems out of components. Hence large part of industries comes from MSMEs, and this is the biggest opportunity for any MSME to enter in the defence and aerospace industry.

Apart from the development through DRDO, under the reservation scheme of DPP: 2016 policy, there is MAKE-II policy that’s only for small systems and subsystems. All these policies are driven to more opportunities for MSMEs, but along with it, there should be Actualization of these opportunities, as Defence itself is the integration of several disciplines, components, subsystems and systems.

Lt. General Subrata Saha PVSM, UYSM, YSM, VSM (Retd)
Director General,
Society of Indian Defence Manufacturers
Entrepreneurs in Gujarat should focus on entering the defence manufacturing sector. India received some of the parts of the tanks it manufactures about 30 years ago from Russia. Still, we have to import some items. Simple items like parachute cloth is still not available in our country to meet the full requirement. India still imports 50 per cent of its total defence requirements.

Our comfort zone is readily available technology and infrastructure. That segment is considered getting attention. But the segment for which the country is still importing is not being considered sometimes. As a result, the percentage of imports is not reducing. This leads to over-competition as technology is available and we have many players. And where technology is not available, there is under-competition. As a result, we have to import.

Hence we believe in you and you believe in us and with continuous efforts to align with government policies, indigenization will grow.
In a boost to the “Make in India” programme for the Indian defence forces, the first batch of “Made in Gujarat”, Howitzer artillery guns, christened “K9 Vajra-T”, is ready to be delivered to the Indian Army next month.

The gun is a variant of K9 Thunder, currently being used by the South Korean army. “These self-propelled Howitzer guns are being developed under the “Buy global” programme where foreign companies are allowed to participate, they are being made with the help of South Korean Hanwha Techwin (earlier Samsung) as technology partner.

This is a flagship programme for us and all those in Gujarat. We are doing more than 50 per cent indigenisation for this Howtizer. The base technology came from Korea. But it was not suitable to meet the requirements of the RFP. We put in many of our systems, and are indigenising a lot of equipment.

Similarly, L&T and France’s Nexter Systems have jointly developed a 155mm/52 calibre towed gun system called “Tajran”. It is currently under “user evaluation” by the Indian Army. While L&T is responsible for development of the mobility system of the gun, Nexter will provide the ordnance system.

At Hazira, L&T is also manufacturing interceptor boats. “We have already delivered 20 interceptor boats, and we have a total order of 58 boats. All of them are ready, waiting for the customer to take possession,” Mulgaonkar said, adding that the company has so far delivered over 300 systems to the Defence Ministry.
We were framing our Defence and Aerospace policy and kept in mind how we can position Gujarat as a destination for big players to come for MSMEs because once the government gives contracts to big companies, as far as procurement is concerned definitely there will be lots of openings for MSMEs. We thought that now Gujarat is quite positioned to make a mark.

- We have highest fund budget allocation for MSMEs in the entire country.
- We have moved from 1 or 2 industry to regional special development like Dholera-Special Investment Region (SIR)
- We have great Infrastructure and Logistics which are crucial for any industry, especially for Defence and Aerospace because of security and other reasons.

In 2016 we came up with our own policy with the discussion with various industries. We can give specialized packages to Defence and Aerospace industry irrespective of the investment criteria. Few things MSMEs should take care in order to become part of a global supply chain is:

- It is important for them to have the right technology and be updated with the technology.
- It is important for OEMs and government to hand hold MSMEs in the right manner by training, R&D, Lab facilities, etc.
- MSMEs need to come out of their comfort zones too and take a risk.
Government is looking for the suppliers of aerospace and defence parts. Defence Metallurgical Research Laboratories (DMRL) and Defence Research and Development Organization (DRDO) are ready to give Technology of Transfer (TOT) with required terms and conditions. It is the process of transferring (disseminating) technology from the places and in groups of its origination to wider distribution among more people and places. TOT occurs among universities, from universities to businesses, from large businesses to smaller ones, from governments to businesses, across borders, both formally and informally, and both openly and surreptitiously. In addition to it, Defence Offset Policy 2016 also contributes to provide opportunity for MSMEs.

For the Aerospace sector, high investment and waiting period of 2-3 years are required, but the advantage is that once the organization enters in industry, there would be a good marginable profit for it, as high investment leads to high return.

Apart from it, taskforce of Defence and Aerospace sector of CII, is going to approach all the MSME suppliers, who want to take part in this industry, Hence, there are many opportunities for MSMEs to transform the vision “Make in India” to reality, only if they are passionate for it.
There are 15 Lakh MSMEs in our country, out of which 6 to 8 thousand are serving in the defence industry. This number has to grow in order for India to become self-reliant or indigenized. India's growth story is just starting in this sector. Its history has been divided into pre-independence post-independence and current scenario. The current scenario would be when Mr. Modi became the Prime Minister of India in 2014 but I believe it started in 2015 when policies were made. Post-independence British were the head of arm forces and it took decades for India to balance itself in this industry.

However there have been some game-changing reforms and only if they are rolled in can help MSMEs, Industry and our country as a whole. One of them is IDDM - Indigenously Designed Developed and Manufactured and other is Strategic Partnership model. With 49 to 100% FDI, the foreign investor is going to require a specialized skill set that resides in MSMEs.

Adani’s strategy believes that large players have to move up the value chain and DPSU’s need to subcontract to MSMEs. One of our pillar at Adani is to grow with MSMEs. Adani has made a strategic investment in 2 MSME one in Hyderabad and other in Bangalore. There are several MSME who are our strategic suppliers. We do not intend to duplicate capability and competencies which already exists in MSMEs and this will always continue to be Adani’s strategy.

Hence policy and industry should have synergy with each other or the ecosystem land space will be elusive if there is no synergy.
Session 2: Defence and Aerospace Indigenization: Opportunities for Indian Industry

India is in the top 10 importers of defence equipment and this translates into a great business opportunity for those building domestic capabilities in defence. It is the reason why Prime Minister Narendra Modi wants local defence production to be at the heart of the government’s Make in India campaign that seeks to promote manufacturing and attract foreign investment.

Indian Navy is the pioneer of Indigenization process, as the concept of forming a team for development of any project, was instituted by Navy first. Indian Army and Army Design Bureau (ADR) have also designed single window system, for the progress of Indian industry. There is also a fusion of relevance of technology for designing defence equipment of army, out of which 30% is legacy technology, 40% current technology and rest 30% is state-of-the-are technology and the portion of legacy and current technology needs up gradation, which would be the largest way of revenue for Indian industry and businesses.

There is also a suggestion for CII to push the Government and service headquarters for the hard negotiation with Original Equipment Manufacturers (OEMs), at the stage of acquisition, for getting the details about items and making it easy to indigenization. As, without technical details, indigenization would be difficult.

Lastly, 15 Base repair depots (BRDs) of Indian Air-force are associated with L.D college of Engineering, located at Ahmedabad, as a Nodal Technology Centre, in order to provide all the required details of BRDs and Indian Air-force.
Deputy Director General of Army Design Bureau (ADB), Mr. Brig Vikram Singh, emphasised harmonisation between the Indian Army needs and Indigenous Industrial Power. Role of ADB is “to be the facilitator for Research & Development efforts and also for the initiation of procurements of weapons and equipment required by the Indian Army.” The future Battle space will be shaped by Technology, as Technology superiority will determine the outcomes of battles. Armed forces have initiated to utilize Technological and Intellectual potential of the nation.

Needs of precise and advance technology are generated due to the challenges compounded by climatic conditions, diverse weather and sensitive situations like ongoing wars and future wars. It’s highly important that, developed superior technology should be into affordable and critical Military capability within decided timeline.

Hence, ADB has energised Academia (Technology Provider) and Industry (Production Agency) by conducting workshops, engaging them with discussing live proposals, cases and its solutions, familiarising them with army equipment by displays. The bureau has also energised DRDO (Defence Research and Development Organization) and foreign cooperation. He ended up with explaining the requirements of Investment in defence, Technology Readiness Level (TRL), Technology Development Fund (TDF), 'MAKE' Scheme and 'MAKE' process.
Indigenisation in Indian Navy will be pool of opportunities for private sectors. Indian Navy has witnessed a transition from “Buyer Navy” to “Builder Navy” from 1970s to 2010. But on the other hand, it has also witnessed the percentage decrement in indigenous content compared to Import content, in Navy ship’s functional groups like Float, Move and Fight, and that generates the specific needs of Indian Navy. To tackle this, Indian Naval Indigenous Plan: 2015-30 has designed with the aim to enable indigenous development of equipment and systems in coming years.

Just like Indian Army, Indian Navy has also supported ‘MAKE ‘scheme with the aim to promote self-reliance in defence manufacturing and to develop long-term indigenous defence capabilities. Scheme includes two policies MAKE-I (Funded by Government) and MAKE-II (Funded by Industry). Out of which, MAKE-II was briefly explained including its procedure, feasibility study, constitution of Project Facilitation Team (PFT), role of PFT, Expression of Interest (EOI), and MAKE-II projects.

It's important to know that Quality Assurance plans, Test plans including type of test, Drawings and documentation, Life cycle support are the important aspects of development in Indian Navy and Research and Development (R&D), Metallurgy, Quality Assurance plans, Paper particulars for repeatability, Quality and Reliability are the main concerns in indigenisation in Indian Navy. Apart from it, there are remarkable success stories of indigenisation in functional groups Float, Move and Fight, revenue projects of Indian Navy, healthy order book of defence shipyards, mid-life upgrades and replacement facilities for obsolete equipment.
Basically, organization structure of Indian Air force includes Air Headquarters, followed by Operation commands, Training commands and Maintenance commands and Maintenance commands further followed by Base repair depots (BRDs). BRDs are the centres of all Maintenance, Repair and Overhaul (MRO) operations, with well-established facilities and expertise.

Indigenisation in Indian Air Force are based on the decisions of Operational requirements, Quantum of future arising and Cost and Gestation Period. Indigenisation arises new acquisitions, supported by Air Head Quarters, 49% Foreign Direct Investment (FDI), 30% off set clause and Make in India policies as well as maintenance of existing equipment supported by Maintenance command headquarters and Base Repair depots. BRDs have been undertaking indigenisation since the early 1990s. Nearly 1000 Firms registered with various BRDs and more than 48,000 lines indigenised, till date. Each BRD has an Indigenisation & Substitution Cell (ISC). Indigenisation includes refurbishment, repair and reclamation, life-extension, up gradation, substitution and outsourcing. Needs of this indigenisation are several electrical/electronic items and its basic challenges are balancing Minimum Order Quantity (MOQ) and Economic Order Quantity (EOQ), aviation grade raw material, manufacturing technology, stringent qualification and certification requirements.

Nodal Technology Centres (NTC) have been established at all BRDs, in order to exploit the resources available in the Nation optimally for executing technologically complex projects, towards enhanced availability of weapon delivery platforms and systems. They connect BRDs with R&D organisation, academia and industry. With the addition to this, the basic functions of NTCs are to create and utilise state-of-the-art facilities for undertaking innovative Make in India projects and to review ongoing projects and identification of new projects.

Apart from these, other Make In India initiatives by Indian Air Force are outsourcing of Repair and Overhaul (ROH) activities, personal visits of BRDs to Maintenance, Repair and Overhaul (MRO)/Industrial facilities and hosting of “IAF: Indigenisation Roadmap 2016-2015”.

Air Commodore S. Anandan
Air-force commanding, 9 Base Repair Depot, Indian Air-Force
OFB is an industrial organisation, functioning under the Department of Defence Production of Ministry of Defence, Government of India. It is engaged in research, development, production, testing, marketing and logistics of a comprehensive product range in the areas of air, land and sea systems. OFB comprises 41 Ordnance Factories, 9 Training Institutes and 3 Regional Marketing Centres which are spread all across the country. It has State of the Art facilities for complete spectrum of defence products manufacturing since 2 centuries.

The type of ordnance material produced is very diverse, ranging from Small, Medium and Large Calibre Ammunition, Mortar Bombs, Night & Day Vision Sights & Instruments, Brake Parachutes, Man dropping & Supply dropping Parachutes. Indian Ordnance Factories have been Procuring Raw Materials, Components, Assembly and Sub-Assembly worth about Rs. 6000 crores out of which about 40% is from MSEs. More Than 10000 Vendors are available at present across OFs, about 400 new vendors developed & added in 2017-18.

We identify and outsource non-core and imported items and plan to increase the outsourcing in next 3 years from 36% to 42%. We also plan to reduce imports at the rate of 3% per year. Hence there is a huge opportunity to enter the Defence and Aerospace Industry. We have developed vendor development cells and items for indigenization in available at OFB website.
Defence production, in general, is categorized based on design, who makes it. At Bharat Dynamics Limited, our products are 80% indigenized and 20% imported. Thanks to the support given by DRDO Lads, Academia, MSMEs, etc. In Case of AKASH we are proud to say that only 2 items are imported, this is the success rate and it took time to achieve this success rate. Over a period of time government policies have changed, earlier we had a customs duty excise tax. Engagement of production outsourcing when we started our production was 50% in-house and now it is 80% outsourced.

The focus is going towards exports and it is beneficial to an industry because they become dependent on us and they look for long-term orders and relationship. We recently took orders from Myanmar. This will help DPSUs and MSMEs. Over the years we have developed new products which were not available before and this we did it with the support from vendors. We support them by providing raw materials and production equipment. Apart from this, we have a unique policy of approved vendor, they are a part of our family as long as that product is required and based on competition.

Talking about Bharat Dynamics Limited, we have 3 units located at Kanchanbagh, Hyderabad, Telangana; Bhanur, Medak district, Telangana and Visakhapatnam, Andhra Pradesh. We come in the mini Ratna category. Coming to Gujarat, we have procured precision casting, investment casting, etc. We still have products that are to be indigenized and they are available on our website.
BEL is owned by the Indian Government and primarily manufactures advanced electronic products for the Indian Armed Forces. BEL is one of nine PSUs under the Ministry of Defence of India. It has been accorded Navratna status by the Government of India.

BEL has 9 manufacturing plants with over 9500 plus employees. BEL designs, develops and manufactures products like Electronic voting machines, Voter-verified paper audit trail, Traffic signals, Radars, BEL Weapon Locating Radar, BEL Battle Field Surveillance Radar, Indian Doppler Radar, etc. 80% of our revenue comes from Defence industry. BEL have come up with various policies for Make in India initiatives like

- 60% of material is sourced from Indian private industries.
- Increased trust and preference on MSMEs in procurement.
- MSEs contribute to 30% of procurement.

Various Initiatives to enhance MSME Procurement are:
- Implemented the Public Procurement Policy for MSMEs.
- Collaborative R&D mode including 96 MSME partners.
- Free trainings to MSME partners.
Way Forward

60% defence requirements of the third largest armed force in the world, are met by importing from other countries. The Indian defence and aerospace sector has grabbed the attention of not only the big players but also Micro, Small and Medium sized players, who want to be a part of Defence and Aerospace sector, by giving their contribution in making India self-reliant in manufacturing equipment.

Government’s policy of promoting indigenisation of the Defence Industry by leveraging the ‘Make in India’ opportunity, is a step in the right direction. The entry of MSMEs into defence sector would be a game changer for defence and aerospace industry ecosystem of India. As the challenges of defence and aerospace sector increase, the opportunities for MSMEs would also increase and thus they can play crucial and positive role for the development of this industry.

There are several factors driving growth in manufacturing in Indian defence and aerospace industry. These include both macro and micro factors - strong economic growth that has resulted in rapidly growing domestic demand, the liberalization of policies, offset requirements, a strong domestic manufacturing base, cost advantages, a well-educated talent pool, the ability to leverage IT competitiveness and a liberal Special Economic Zones law that provide attractive fiscal benefits for developers and manufacturers. The Indigenization in manufacturing of this industry will require enabling policy framework, focus and commitment. Apart from it, nothing can replace the strategic research and development and it can be achieved only by involving the right talent and knowledge from the sector.

Apart from providing opportunities, however to achieve self-reliance and robust ecosystem that can address the capacity and capability requirements for the industry, some necessary steps should be adopted, like key strategic partnerships with foreign OEMs that add value across the entire length and breadth of R&D, manufactu-
ring and supply chain for bright success and building and training the pool of talents for being ready for future opportunities.

Lastly, developing self-sustained Defence and Aerospace sector needs efforts of not only government, but also collective efforts, of big players, MSMEs and academia. As a result of these, vision of ‘Make in India’ along with ‘Create in India’ will be a reality.
About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India’s development process. Founded in 1895, India’s premier business association has around 9000 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from around 265 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

As a developmental institution working towards India’s overall growth with a special focus on India@75 in 2022, the CII theme for 2018-19, India RISE : Responsible. Inclusive. Sustainable. Entrepreneurial emphasizes Industry’s role in partnering Government to accelerate India’s growth and development. The focus will be on key enablers such as job creation; skill development; financing growth; promoting next gen manufacturing; sustainability; corporate social responsibility and governance and transparency.

With 65 offices, including 9 Centres of Excellence, in India, and 11 overseas offices in Australia, Bahrain, China, Egypt, France, Germany, Iran, Singapore, South Africa, UK, and USA, as well as institutional partnerships with 355 counterpart organizations in 126 countries, CII serves as a reference point for Indian industry and the international business community.
Faber Infinite Consulting (part of Faber Infinite Creative Solutions Pvt Ltd (www.faberinfinite.com)) is a management consulting and training organization aimed to support transformation journey to improve profitability, across organizations across Asia Pacific, Africa & Middle East.

Its novel methodology of building alignment and tailor-made implementation approach for each organization helps clients to achieve sustained benefits and customer delight through continual improvement.

Our delivery is focuses on the real place of action approach with real people and real problems in real time. Focus is always on ACTION. We take pride in calling ourselves as ‘implementers -blue collared consultants’ and not mere boardroom consultants.

Faber Infinite Consulting and Technology Solutions are supporting clients in various industry segments & verticals including Automotive, Engineering, Plastics & Packaging, Textile, Industrial Manufacturing, Pharmaceuticals, Chemical, Construction, FMCG, Food and Beverages, Transportation & Logistics, Commercial Farms, Retail, Health Care and more.

The huge client list of the company envelops more than hundred organizations including giants as well as medium scale organizations namely Inox CVA, Atlas Copco, Amneal Pharmaceuticals, WILO Mather and Platt, Adani Hazira Ports, Mahindra CIE Automotive, Larsen and Toubro (L&T) - Heavy Engineering, Jindal Rail Infrastructure, Bombardier, Wipro Enterprises, Alliance Polysacks, Banco Products and many more.

Faber’s plush portfolio encompasses a wide range of innovative and futuristic services that are dispensed through four platforms namely Consulting, Technology, Training & Development and Benchmarking.

Team Faber Infinite supports enterprises to discover ways to ‘unlock hidden value in the businesses’ by improving revenue and profit maximization. Team Faber Infinite brings in hands on implementation experience in designing innovative strategies and improving operations for organizational transformation projects across different sectors and geographies.

We strongly believes that organizational success is primarily driven by the ‘People' with focus on aspects of Strategy, Operations and Design. Faber Infinite strives towards the sole purpose of ‘Crafting Growth Opportunities!' Faber Infinite enables clients to achieve exponential value growth by leveraging the Organizational Transformation Framework©, with key focus on Operations and Strategy solutions
Acknowledgement

We would sincerely like to express our gratitude and acknowledge the following for providing their valuable inputs for the report (In Alphabetical Order):

1. **Air Commodore S Anandan** Air Officer Commanding, 9 Base Repair Depot Indian Air Force.
2. **Air Marshal PK Desai** PVSM AVSM VSM (Retd), President Air Force Association
3. **Air Marshal R K Dhir** PVSM AVSM VM ADC Air Officer Commanding-in-Chief, South Western Air Command.
5. **Atul Gupta**, Deputy Director General, Ordnance Factory Board.
7. **Commodore R K Kamboj**, Principal Director – II, Directorate of Indigenisation Indian Navy.
8. **Dinesh Yadav** Chairman, CII Gujarat State Council & Director, Arvind Envisol Limited.
9. **Group Captain Jetendra Gavankar** (retd) Associate Vice President-Strategy & BD Adani Defence and Aerospace.
11. **Lt General Subrata Saha**, PVSM UYSM YSM VSM (Retd) Director General Society of Indian Defence Manufacturers.
14. **Piruz Khambatta**, Chairman - CII Western Regional Council & Chairman and Managing Director, Rasna Pvt Ltd.
15. **Rajeev Kumar**, Senior Deputy General Manager, Bharat Electronics Limited.
17. **Sanjiv Mulgaonkar**, Head - Defence Manufacturing Facility, Hazira L&T Limited.

This report would also not have been possible without the contribution and commitment of certain individuals within Faber Infinite. The initiative for this report is led by Jui Shah, Jinal Lad, supported by Mayuri Pandya and designed by Sambh rant Kumar Singh. Special thanks to CII Central Gujarat Zone Team for sharing all the information required for the report.