



# TRAILBLAZERS

**Shaking up the Skies**

Indian Innovators in Global Aerospace





“

*We have indigenised a lot of things; however, the idea remained elsewhere. With iDEX and the Defence India Startup Challenge, an effort is being made to indigenise everything in defence. It is up to the Startups to literally pound us with all their innovative ideas. You will never have the grievance that they are not being responded to. You have never had it better.*”

**NIRMALA SITHARAMAN**

Raksha Mantri  
Govt. of India



# Foreword

## Message From Secretary, Dept. of Defence Production

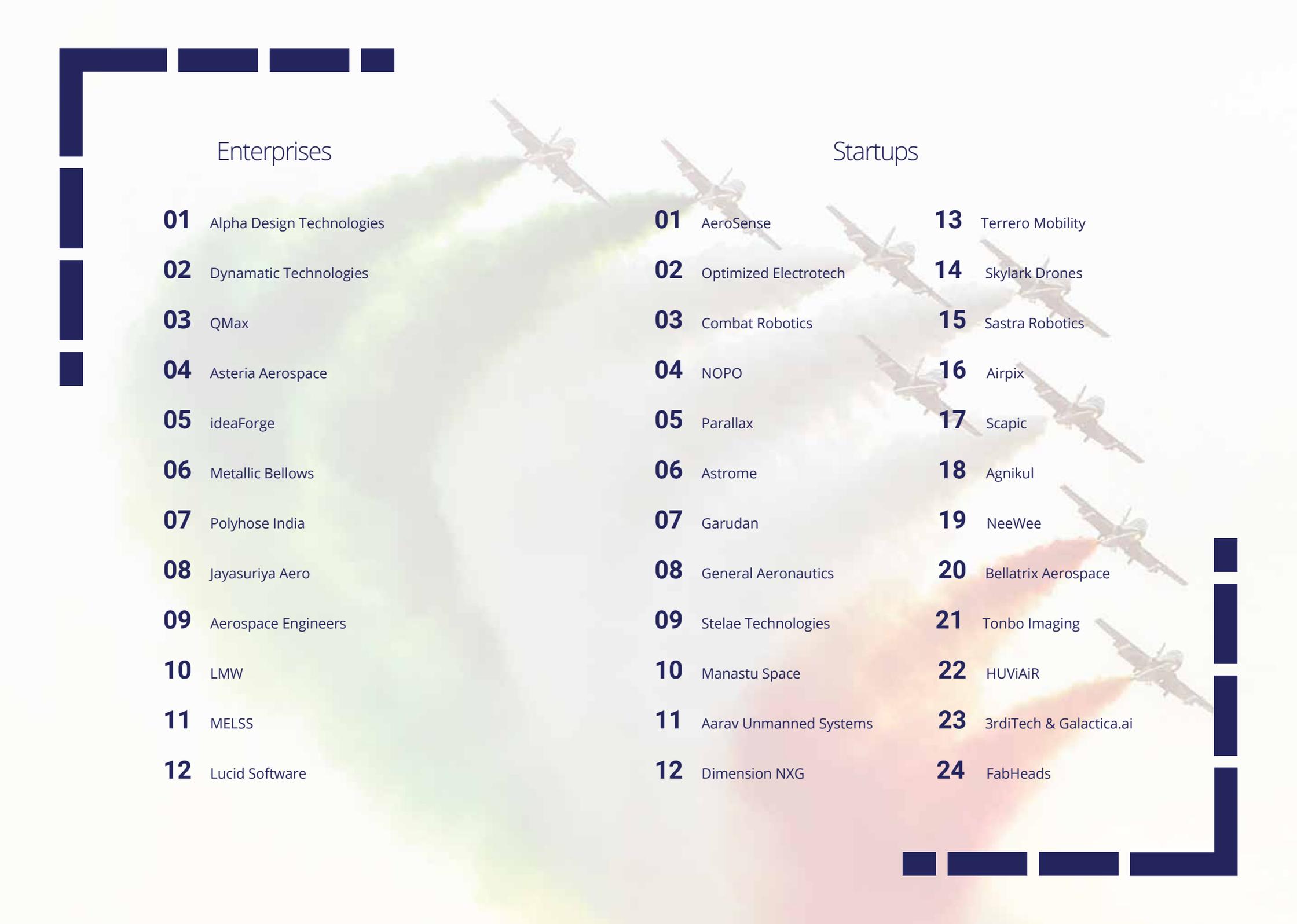
With over 20,000 active startups and nearly USD 10 Billion of funding annually, India is one of the hotspots of startups in the world. These startups have fuelled innovation, development, deployment, and commercialisation of new products, processes and services driven by technology and intellectual property. Defence and Aerospace are areas which have been on the frontier of innovation and it has been Government's effort to bring the vibrant startup ecosystem to work closely with defence and aerospace.

Innovation for Defence Excellence (iDEX), launched by Department of Defence Production in the Ministry of Defence in April 2018, has created huge interest in startup community to work in this reclusive sector. The Defence India Startup Challenges have brought over 500 startups which are today active in this space. The iDEX Partner Incubators have enabled Department of Defence Production to reach out to startups in all nooks and corners of the country. The progress has been extremely heartening and encouraging. I foresee Indian startups marching strongly to occupy a place of pride in the innovation advancement in the global defence and aerospace sector.

On the occasion of Aero India 2019, this Coffee Table Book celebrates the promise of startups dedicated to the Aerospace sector in India.



**DR. AJAY KUMAR, IAS**  
Secretary, Dept. of Defence Production  
Min. of Defence, Govt. of India



## Enterprises

- 01** Alpha Design Technologies
- 02** Dynamatic Technologies
- 03** QMax
- 04** Asteria Aerospace
- 05** ideaForge
- 06** Metallic Bellows
- 07** Polyhose India
- 08** Jayasuriya Aero
- 09** Aerospace Engineers
- 10** LMW
- 11** MELSS
- 12** Lucid Software

## Startups

- 01** AeroSense
- 02** Optimized Electrotech
- 03** Combat Robotics
- 04** NOPO
- 05** Parallax
- 06** Astrome
- 07** Garudan
- 08** General Aeronautics
- 09** Stelae Technologies
- 10** Manastu Space
- 11** Aarav Unmanned Systems
- 12** Dimension NXG
- 13** Terrero Mobility
- 14** Skylark Drones
- 15** Sastra Robotics
- 16** Airpix
- 17** Scapic
- 18** Agnikul
- 19** NeeWee
- 20** Bellatrix Aerospace
- 21** Tonbo Imaging
- 22** HUViAiR
- 23** 3rdiTech & Galactica.ai
- 24** FabHeads

A background image of a bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, creating a sense of depth and light. The overall tone is positive and airy.

**Enterprises**

# India's leading Defence Technologies Provider

with fully integrated R&D,  
design, development,  
manufacturing, and lifecycle  
maintenance services cutting  
across diverse areas of products  
with strong international partner  
network and global market  
presence



## Company Brief

One among the most reputed defence R&D, manufacturing, systems integration and offset management companies in India, ALPHA is a fast growing defence electronics & avionics organisation for design and manufacturing, founded with the vision to support the Make In India initiative.

Leadership and management donned by armed forces veterans with rich expertise in the design, manufacturing, and on-field commissioning and maintenance of RADAR, satellite communication, electro optics, software defined radios, guided missiles systems. Their broad portfolio of core technologies and systems have achieved broad adoption in the Indian defence platforms such as Battle Tanks, Ships, Fighter aircraft, Helicopters, UAVs, Simulators, Avionics equipment, Tactical Communication Eqpt and Satellite Communication.

## Management

Col.(Retd) H.S. Shankar  
Chairman & MD

C.M. Basappa  
Senior Vice President  
(Production)

## Technology/Product Brief

A comprehensive portfolio of defence grade products covering Opto-Electronics (Laser enabled Target Acquisition Systems, Night Vision (II & Thermal) Imaging Systems) Electronics Warfare Systems (Missile Launch Detection Systems & Missile Approach Warning System), Aerospace Assembly (Radar, Fuselage, Antenna systems & Pilon), Software Defined Radios, Satellite communications, and RF/Microwave systems.

### Thermal Imaging Fire Control Systems (TIFCS)

A long range system designed for high accuracy & rapid target engagement in all combat scenarios. It is optimal for both day & night; stationary and on-the-move operations. It is a compact, robust, modular, user friendly Gunner sight of a tank.

### Software Defined Radio (SDR)

SDR is a multi-channel, multi-band, multiple waveform product covering HF & L bands. These radios are compatible for airborne as well as ground platforms and legacy radio systems.

Capt.(Retd.) T.N. Pranesha  
Senior Vice President  
(Software)

R. Ramachandra Murthy  
Senior Vice President  
(Quality Assurance)

## Company Brief

Dynamatic Technologies designs and builds highly engineered products for Automotive, Aeronautic, Hydraulic and Security applications. With futuristic design, engineering and manufacturing facilities in Europe and India, the company is able to deliver products and manufacturing solutions to customers in 6 continents.

A leading vertically integrated supplier to the global defence and aerospace sectors, it has advanced engineering capabilities in areas including Non-Destructive Testing for aero structures, space grade welding, heat treatment of aluminum alloys, fluorescent penetrant inspection, resistant spot welding, and measurement & inspection (CMM, Laser Tracker and Articulated Arm) which are NADCAP accredited and approved by global OEMs like Airbus, Boeing, Bell Helicopter and HAL.

Dynamatic Technologies Research & Development Center, established in Bangalore is a world-class Design Center capable of total product and system design, with advanced capabilities in structural, thermal and dynamic engineering for analysis, design validation and optimization.

## Management

Udayant (Toby) Malhoutra  
CEO & Managing Director

## Technology/Product Brief

### Fuselage

- Manufactured aerospace parts such as the
- › Wing and rear fuselage for India's pilotless target aircraft - LAKSHYA.
  - › The ailerons and wing flaps for the intermediate jet trainer HJT-36.
  - › Major airframe structures for the Sukhoi 30 MKI Fighter Bomber.

### Flap Track Beams

Dynamatic-Oldland Aerospace™ works closely with EADS and Spirit AeroSystems to assemble Flap Track Beams for the Airbus Single Aisle A-320 family of aircrafts on a single source basis. This is the first time that a functional aero-structure of a major commercial jet is being manufactured in the Indian Private Sector.

**Serving  
Defence &  
Aerospace OEs  
in 6 continents  
from right here  
in India**

**with the most advanced  
vertically integrated R&D,  
Design & Manufacturing  
capabilities, coupled with  
strong local presence in  
Europe and US markets**



**DYNAMATIC™  
TECHNOLOGIES**

# Global Leader in Electronic & Semicon Automated Test Equipment & Solutions

with proven track-record as  
top-tier supplier to global  
defence and aerospace  
majors



## Company Brief

QMax, a global leader in offering automated test & diagnostic equipment for electronic & semicon systems, with the widest portfolio of solutions and services. It offers integrated Test Automation solutions, catering to the needs of global OEs and top-tier suppliers in defense, aerospace, power generation & distribution, transportation, bio-medical and manufacturing sectors.

The company's manufacturing facility is equipped with world class BGA\SMD rework systems, automatic optical inspection system, wave soldering, SMD reflow and fully automatic SMD pick and place machines. The facility employs 100+ highly qualified and talented pool of human resources.

## Management

Varun Sabapathi  
Managing Director

Robert Kennedy Manoharan  
Vice-President

## Technology/Product Brief

The line up of ATE solutions from QMax covers a wide range of options including industrial systems for electronics and semicon manufacturing lines, desktop wire harness analysers, handheld devices, testing equipment and tester devices. In addition the company offers a suite of software solutions and professional services in electronic & semicon test automation.

Automated Test Equipment (ATE)  
ATE QT2256-640 PXI system is designed as a combination board tester capable of testing highly complex and PCBs employing various techniques on a single platform.

Pro-Rack is a cost effective ATE System, which comes with Modular Structure provision option to improvise and enhance much instrumentation based on the user's requirements.

Panther4HT Master -Slave DSU  
The Master-Slave DSU based Panther4HT wire harness tester is designed for testing and verifying electrical connections in a cable, harness, backplane or any wired assembly.

## Company Brief

Asteria Aerospace is a robotics and artificial intelligence company that develops drone based solutions. They offer enterprise aerial (UAV/drone) solutions that provide actionable intelligence from aerial data, with a strong track-record and integrated drone technology stack of hardware, software, and analytics.

Their aerial drone/UAV solutions are enhanced with deeply customized aerial remote sensing tools suited for aerial surveillance and border security/control applications for military, paramilitary, and police forces. Their strength is further extended with end-to-end solutions provided for autonomous survey, inspection and monitoring of assets in highly complex environments in oil and gas, mining, construction and agriculture sectors.

## Achievements

Recognized by the Silicon India's StartupCity magazine as 'one of the 10 best startups' providing drone solutions in India in 2017.

## Management

Nihar Vartak  
Founder & Director

Neel Mehta  
Co-Founder & Director

## Technology/Product Brief

### A400

- › Autonomous from takeoff to landing
- › Tool-less assembly and disassembly
- › Asteria's proprietary point-and-click software for command and control
- › Encrypted digital data link for secure transmission of data and video
- › Network enabled ground system architecture
- › Failsafe modes for loss of communication signal, GPS signal and low battery
- › Made in India – Designed, Developed and Made in India

### Cygnus

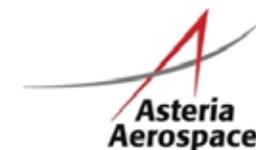
A mini UAS designed from the ground up for surveillance and security operations with best in class endurance, range and payload capabilities, is ideal for military surveillance, industrial security, and powerline/pipeline monitoring applications.

### Genesis

A network platform for drone based surveillance & security operations, designed to be hosted on cloud/on-premise for maximum flexibility, and is future ready for integration into sophisticated security solutions.

# Full stack unmanned aerial solutions enterprise in India

with deep expertise in  
production of unmanned aerial  
vehicles systems, autonomous  
flight/mission control systems,  
compact/rugged  
aerostructures, miniaturized  
avionics, and surveillance  
software engineering



# Partner to DRDO and Market Leaders in compact UAV products

a vertically integrated aerial  
robotics company having  
emerged a winner in both  
defence and commercial  
aerospace sectors



## Company Brief

ideaForge is the largest manufacturer of UAVs, with their portfolio of products ranging from Quadcopters, Fixed Wing UAVs and Drones custom designed for aerial operations in defence, commercial and government sector in India, meeting global aerospace and defence certification standards.

This leading vertically integrated (R&D, design & manufacturing, software, services and training) aerial robotics company-built on a strong foundation of interdisciplinary engineering delivers high-performance, safe, and autonomous unmanned systems for enhancing productivity and security.

The organization was founded in 2007 by a team of enterprising IIT Bombay graduates and has been at the forefront of developing globally unmatched and indigenous technology for drones.

## Achievements

Recognised as R&D partner with Defence Research and Development Organisation (DRDO), Ministry of Defence, India, it has multiple IPs to its credit, including one for World's Smallest Autopilot.

## Management

Ankit Mehta  
Co-Founder & CEO

Rahul Singh  
Co-Founder & CTO

## Technology/Product Brief

### Q Series

Smallest short range VTOL quadcopter, is the most efficient drone and very economical, built with tried and tested military design principles. The product has gained rapid adoption in defence, industrial, and commercial aerospace sector catering to high performance needs in security & surveillance, aerial inspection, photogrammetry, traffic management, crowd management & disaster relief applications.

### NETRA V

NETRA V Series is a fully autonomous, man-portable small UAV. The UAV is equipped with fail-safe modes. Salient features of the UAV include image stabilization, autonomous target tracking and day-night cameras which are programmed to provide real-time footage in the daytime as well as pitch dark conditions.

### Switch Hybrid

Switch Hybrid is a first-of-its-kind VTOL and fixed wing UAV. It is used for long range, long endurance security and GIS applications. It is also used for security & surveillance, inspection photogrammetry.

Ashish Bhat  
Co-Founder & CTO

Vipul Joshi  
Chief Operating Officer

## Company Brief

Founded in 1980, this R&D led company is a leading manufacturer of Bellows and Expansion Joints catering to a wide clientele across several industrial, aerospace and defence sectors.

The strong focus in R&D backed by deep domain expertise in design and engineering, and unparalleled reliability, have made this company the only indigenous supplier to ISRO (space) and HAL (military and commercial aerospace), and a strong partner to the Indian defence services in realising their vision of indigenisation.

## Achievements

Metallic Bellows has contributed immensely to the indigenization drives of the Indian defence production through its design, development, engineering and manufacturing services to HAL with the supply of Gimbal bellows of Dia 32, 50, 63 & Gimbal Venturi Assembly for the LCA products of HAL. It has gained the rare reputation and status as being the only Indian supplier of metallic bellows and hoses for the PSLV and GSLV launch vehicles of ISRO, and recently completed the delivery of components to LPSC, Trivandrum.

## Management

R. Gopalakrishnan  
Founder

G. Shankar  
Director

## Technology/Product Brief

### Bellows For Tejas

Gimbal Joints are used in Environmental Control Systems of LCA to ensure flexibility in the Bleed air ducts operating at high temperature. These are manufactured from high temperature resistance alloy inconel 625 . These bellows will take movements in all 3 axes.

### Hydroformed T-joint – For BrahMos

Hydroforming is a metal fabricating and forming process. This process is cost effective. Specialized type of die moulding that utilizes highly pressurized fluid to form metal. Here the wall thinning is very minimal. Hydraulic pressure of the order of 2500 to 4000 bar is applied to form these Joints. Received Award for Excellence from SIATI for Indigenization of T-joint.

### Relief Valve For Jaguar

Bellows used in pressure regulating valve which is a part of liquid oxygen system of Jaguar aircraft.

**Making 'Make  
In India for the  
World' a reality  
for 4 decades  
now**

**Design and Engineering  
partner for ISRO and HAL, and  
Indigenisation partner for the  
Indian Defence Forces (Army,  
Navy & Airforce)**



# Asia's #1 Supplier of Thermoplastic Hoses for Defence & Aerospace

with the most  
comprehensive Aerospace  
standards certifications and  
product accreditations

**Polyhose**<sup>®</sup>  
Providing Flexible Solutions Globally

## Company Brief

A multinational conglomerate focussed on design, development, manufacturing, and distribution of fluid conveyance products like aero-grade polymer/elastomer hoses and fluid connectors. A fully indigenous supplier serving domestic and export markets with modern state of art facilities with highly trained and skilled expertise to deliver premium quality, reliable, and high performing products.

The fluid connector division has been accredited with AS9100D to manufacture and supply of metal end fittings and other machined components for aerospace applications to both commercial and defence sector OEMs. The company has established special Aerospace assembly line and Testing lab facilities for meeting international standards.

## Achievements

First Indian supplier and only one in Asia to have complete Aerospace certifications including, AS9100D Accreditation for design, manufacture and supply of PTFE hose and hose assembly, metal end fittings and other machined components;

NADCAP AC7112 (Fluid Distribution system), AC7112/1 (Hose manufacturing), AC7112/2 (End fitting manufacturing) & AC7112/4 (Hose Assembly);

## Founding Team

Shabbir YJ  
Managing Director

Ali Asger  
Director

## Technology/Product Brief

Most comprehensive suite of thermoplastic hoses, and hose assemblies for aerospace systems

Fluid Conveyance System  
Flexible composite Hoses and Hose assemblies in widest variety of materials for PTFE, Thermoplastic, Hydraulic Rubber, Industrial, Stainless steel material.

### Fluid Connectors

- › High/Medium pressure hydraulic and pneumatic hose and hose assemblies
- › Aviation Fueling & Defueling hose
- › Oxygen hose
- › Convoluted PTFE hoses
- › Metal end fittings in different materials such as Stainless Steel, Titanium, Mild steel, Aluminum and Brass

## Company Brief

Manufacturer of airworthy products and standardized parts and assemblies compliant with various International standards, and proven supplier to aviation and aerospace OEMs, both private sector multinationals and public sector majors.

The company has indigenized over 15000 individual parts for the Indian Airforce and HAL, having achieved certification from CEMILAC (Center for Military Airworthiness and Certification) for aerospace, and acceptance from DRDO (Defence Research and Development Organisation) for space.

## Achievements

Excellence Award in indigenisation of aerospace fasteners & standard parts in the year 2016 by Padma Shri Dr. A.S. Kiran Kumar, Former Chairman ISRO and Secretary Dept of Space.

## Technology/Product Brief

High quality aerospace engineering parts and assemblies developed for a variety of defence and aerospace, and satellite products including:

- › Light Combat Aircraft (LCH)
- › Light Combat Helicopter(LCH)
- › Light Utility Helicopter(LUH)
- › Advanced Light Helicopters (ALH)
- › Jaguar Aircraft
- › BrahMos Missiles
- › Airborne Missiles developed by DRDL, RCI, & DRDO
- › Missiles and Munitions manufactured by BDL
- › Launch vehicles and satellites of ISRO
- › Utility Helicopters of Indian, Russian and Western Cheetah

**15000+ parts  
indigenised for  
Indian defence,  
aerospace, and  
space sector**

**with Certification from  
CEMILAC, DRDO, ISRO and  
all DPSUs, covering missiles  
systems, combat and utility  
aircraft platforms, launch  
vehicles and satellites**

## Founding Team

Kalaiarasu Subramaniyam  
Director

Jayanthi Desappan  
Director



# ZED GOLD rated metal and non-metal based component supplier

developing components for  
combat aircrafts and  
helicopter engines.

AEROSPACE™ ENGINEERS Pvt. Ltd.

## Company Brief

Aerospace Engineers are ZED GOLD rated company focused towards design and development of aerospace and defence grade oil pumps, gasket and fasteners. As one of the leading organizations in indigenously design and manufacture both metallic and non metallic precision aeronautical components they are the tier-1 supplier for aerospace OEMs. CEMILAC certified company supplies with manufacturing standards on-par with the global suppliers and also exports to global markets.

The company has indigenously developed about 15,000 parts that goes into helicopters, missiles, combat aircrafts and also for civilian aircrafts.

## Achievements

- › Awarded FIRST PRIZE in QUALITY PRODUCTS-2015 by Ministry of MSME in 2015;
- › Recognised as the most Innovative MSME in the country and awarded by Hon'ble Prime Minister of India in 2014;
- › Received DRDO Excellence Award for Defence Technology Absorption, awarded by the Hon'ble Prime Minister of India in the presence of Defence and Finance Minister;

## Management

Sundaram Ramaswamy  
Founder & Managing Director

## Technology/Product Brief

Deemed Long Term suppliers for engine projects like Sukhoi-30, Shakthi, Artouste, Garrett, Orpheus, Dart, Adour, PTAE through Hindustan Aeronautics Ltd., Bangalore and Sukhoi Engine Division, Koraput manufacturing,

- › Lubricating Oil Pump for Main Gear Box for ALH & LUH
- › Dual Pumps
- › Metallic Braided Hose Assemblies
- › Tail Cone Assembly
- › Roller Lifter Assembly
- › Pilot Control Column & Throttle Handle
- › Canopy Inflatable Seal
- › Tungsten & Graphite Machining
- › Composite components
- › Lock Nut & Washers
- › Kover Material machining
- › Harness Clamps
- › Metal Bonded
- › Vibration Isolators
- › Sealing Rings
- › Conductive Bellows
- › Oxygen Mask Hose Assembly

Ramachandran R  
Executive Director

Jawaharlal R K  
General Manager

## Company Brief

Founded in 1962, for manufacturing Textile Machinery, LMW has over years become one among the three manufacturers of the entire range of textile machines in the global market. LMW later diversified into CNC Machine Tools and Foundry Equipment, making High Precision Castings and is today a global supplier.

In 2010, LMW added to their formidable engineering manufacturing portfolio, the LMW Advanced Technology Centre (ATC) to produce components for the Aerospace OEMs mainly focused on engine, structural, sheet metal components and subassemblies. The company has set up world class manufacturing unit with NADCAP and AS9100D certified manufacturing process and technicians, manufacturing metal and composite aerospace structures.

## Achievements

- › Awarded by DRDO as the best Defence Technology Absorption company in 2017;
- › Received Best Performance Award for 2017 given by HAL, Engine Division;
- › Recognised as the Best Sheet Metal Partner by HAL, Engine Division in 2015;

## Management

Sanjay Jayavarthanavelu  
Chairman & Managing Director

## Technology/Product Brief

### Aero Structure Components

Wing skins, panels, brackets, stiffeners, ribs, fuselage, frames, spars including assemblies and sub-assemblies, structures for RADAR domes on aircraft.

### Aero Engine Components

Casing, shaft, housing, nozzle guide vanes, turbine discs, impellers, compressor discs includes assemblies and sub-assemblies.

### Precision Machine Components

Actuator, landing gear components and gear box components.

### Sheet Metal Fabrication

Aero engine & structural components, seal segment, rings, heat shield, cover plate, including assemblies and subassemblies for helicopters.

### Composite Structures and Components

Spacecrafts, Aircrafts and Helicopters.

Soundhar Rajhan K  
Director – Operations  
(LMW-MTD, Foundry & ATC)

# One-Stop Design & Engineering Solutions Partner for Global Aerospace OEMs

offering custom design,  
machining, and manufacturing  
services for components,  
systems and assemblies ranging  
from Aero engine parts, Aero  
structures & assemblies, and  
Aero composites



# Leading Strategic Electronics supplier Serving over 15 Air force Stations in India

offering comprehensive portfolio of products, custom design and engineering services, and major indigenisation partner to Indian defence services

The logo for MELSS, featuring the word "MELSS" in a bold, blue, sans-serif font with a white outline, set against a white rectangular background.

## Company Brief

A leading supplier of high technology electronic products since 1982, with three major divisions focused on Strategic Electronics, Automation & Control, and Test & Measurement. The Strategic Electronics Division specialises in training and maintenance simulators, custom ATEs, data acquisition systems, MIL standard product design including Airborne LRUs, obsolescence management projects, ruggedisation to MIL standards and software development.

The multidisciplinary capabilities and expertise possessed by the company coupled with comprehensive approvals and certifications from DGQA, CEMILAC etc. is an advantage in being recognised as one among the leading suppliers to the defence electronics in the domestic and global supply chains.

## Achievements

- Major indigenisation projects undertaken for Indian Defence Forces and the Defence PSUs are:
- › Revamping of the Submarine Simulator for the Indian Navy, saving tens of crores of training costs;
  - › Development of Airborne Video Recorder for the fighter aircrafts;
  - › Development of Data Distribution Unit for the first Aircraft Carrier built by India;
  - › Ruggedisation of COTS communication Equipment to MIL Standards;

## Management

N Ramachandran  
Managing Director

T Srinivasan  
President

## Technology/Product Brief

### TERADYNE

Teradyne's fully integrated functional test systems verify and calibrate the most complex electronics in the defense and aerospace industry. Their systems are tough, and can deliver high- performance digital, analog, mixed-signal and serial bus testing. This meets the demanding environment of military depots, factories, commercial maintenance, and overhaul facilities.

### MX-5210

Dual port simultaneous soldering and rework system which is highly effective for soldering applications including: lead-free, high mass components or boards, thermally sensitive components that require low operating temperature, high volume production soldering and touch-up soldering operations. In addition, the MX-5210 can be used for conduction rework of SMDs when using SMT series soldering cartridges simultaneously.

## Company Brief

Lucid is a software solutions company with expertise in a range of NDT techniques including Ultrasound (UT), X-ray, eddy current, ground penetrating RADAR and Impact Echo. Services extended include licensing of the Kovid suite of software platforms (like Kovid UT, Kovid RT, Kovid CT and Kovid iMaV) and delivering custom software development.

Their customer base covers leading OEMs and manufacturers in the aerospace, energy (thermal, nuclear and renewables), oil and gas sectors. The company has built a network of strong global partners with NDT Hardware suppliers and system integrators, and have worked in joint development projects with renowned R&D organizations such as EPRI in the US, and the Fraunhofer Society in Germany.

## Achievements

- › Developed & implemented an Assisted Defect Recognition (ADR) algorithm for Digital X ray inspection for Swage Joints for Boeing;
- › Developed and qualified ADR algorithms for Digital X ray inspection of Aerospace Castings. This was a Materials Affordability Initiative of the US Air Force and program managed by PCC;
- › Developed Acoustic Mouse Technology in cooperation with EPRI;

## Management

Krishna Mohan Reddy  
Co-Founder & CEO

C P Madhusudan  
Director

## Technology/Product Brief

### Kovid RT

Kovid RT is a decision support system for radiography data analysis. Kovid RT supports a variety of x ray equipment including digitizers, computed radiography (CR) hardware and digital radiography (DR) Flat panels and LDAs. The software incorporates over 100 filters which aid in analysis and support the development of Assisted or Automated Defect Recognition (ADR) algorithms.

### Kovid UT

Kovid UT is a UT data acquisition and analysis software. It supports both conventional multi-channel and Phased Array systems. Kovid UT has modules for controlling scanners and advanced features such as delay law calculators. A number of custom applications such as for composite inspection, weld inspection etc have been developed on top of the standard software.

# Nuclear grade Non-Destructive Testing Solutions Provider

collaborating with global R&D organizations and system integrators to deliver world-class Assisted or Automated Defect Detection solutions for Aerospace and Defence sector OEMs





**Startups**

## Company Brief

Design, development and assembly of innovative unmanned aerial systems ranging from micro drones to UAV drone transport services, suited for a wide array of applications in industrial, defence, and agricultural sectors. The company offers the widest portfolio of indigenously designed UAVs, having a team of one of the most experienced designers and engineers in India.

## Achievements

- › Over 17 patents in this domain and has designed, developed and deployed more than 18 unmanned terrestrial and aerial systems including micro/mini UAVs, hybrid UAVs (rotor/wing crafts), loitering munitions (combat UAVs), remotely operated vehicles, throwable robots, EOD Robots, CBRNE robot etc. which are currently in service with the Indian Armed Forces;
- › Trained and certified more than 1000 operators of unmanned systems in around 80 defence/paramilitary units across the world, and has earned Appreciation Certificates;
- › Developed Navigation Control System for Project Mantra (CVRDE-BMP-II Teleoperation);

## Technology/Product Brief

### Hawk Eye Cargo Delivery Drone

- › Endurance - 60 minutes
- › Weight - 120 Kg
- › Range - 20 km
- › Payload - 50 kg User Defined
- › Flight Modes - Fully Autonomous
- › MIL - STD 461E , JSS55555

## Founding Team

Sushant Gupta  
MD & CEO

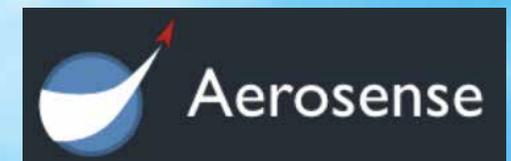
Sushant Gupta (Co-Founder) is the 1st Indian to design, develop and fly an unmanned aerial vehicle for US Army at Fort Benning's, Georgia USA, with the experience of having developed UAVs for South Korea Aerospace, and having designed Unmanned aerial and ground systems for defence applications for Indian Army, Canadian Army, and US marines.

### Hawk Eye Agriculture Drone

- 60 minutes
- 60 Kg
- 20 km
- 20 kg User Defined
- Fully Autonomous
- STD 461E , JSS55555

# 17+ Patents in Terrestrial & Aerial Robotics Systems Design

Widest portfolio of indigenously developed aerial vehicles ranging from micro Drones to Transportation UAVs, with Training/Certification services for defence/paramilitary forces.



# Human Detection at 20 kms & Identification at 1 km distance

Indigenous design and  
manufacturing of defence  
and aerospace grade  
Electro-Optics hardware  
systems and software  
platforms



## Company Brief

Electro-Optics design, engineering and manufacturing services company focused in the Indigenous Design, Development and Manufacture (IDDM) of imaging, vision, camera and surveillance products with software image processing and analytics solutions catering to multiple applications in commercial aerospace, maritime, industrial, and defence sectors.

The surveillance system engineered to deliver advanced vision in air traffic control for military/commercial aviation, border patrol, critical infrastructure inspection and aerial survey.

Supported by SINE IIT-Bombay & Intel India under PlugIn accelerator program, and TiE Pune under Nurture 7.0 program.

## Achievements

- › Over 30+ patents filed/published and 30+ publications published in the fields of Electronics and Optics;

## Founding Team

Sandeep Shah  
MD & CEO

Kuldeep Saxena  
Executive Director

Dharin Shah  
Executive Director

Anil Yekkala  
Executive Director

## Technology/Product Brief

### Surveillance Systems

- › Human detection upto 20 kms distance and identification upto 1 km;
- › Ruggedised systems suitable for military, aerial, and cross-border deployments;
- › High contrast images suited for accurate image processing and analytics;
- › High quality imaging even in low/fluctuating light conditions;
- › Friend vs Foe detection + Narrow Field of View capabilities;
- › Proven for air traffic control applications for military and commercial aviation;

## Company Brief

Design and development of rugged and all-terrain UGVs, specialising in highly innovative designs suitable for combat and intelligence purposes, also integrated with autonomous driving and navigation, advanced battery management systems, suited for various applications in military, disaster relief, coastal marine operations.

Supported by SINE IIT-Bombay & Intel India under PlugIn accelerator program, and TiE Pune under Nurture 7.0 program.

## Achievements

- › Selected amongst the top 10 defence startups in India by FICCI;
- › Most Innovative Start-up at Fourth World Congress on Disaster Management held at IIT Bombay;

## Founding Team

Ganesh Pandit Suryawanshi  
Founder & CEO

Arjun Singh Rathore

Yuvaraj Karoshi

Sandeep Bhole

Nitesh Ambare

## Technology/Product Brief

Arishta

- › World's First Chassis Less Amphibious Ground Vehicle
- › All Terrain Remote Controlled multi-utility robot
- › Detect & Monitor Mines
- › Transmit live feed from inaccessible terrain
- › Modular Grip Attachments for Plug & Play usability
- › Design with minimum components for Zero Failures
- › Magnet arrangement for deployment and recovery from height
- › Modular Attachments for easy Plug and Play
- › Endurance: 3 Hr

# World's first chassis less Amphibious Ground Vehicle

Autonomous, combat ready  
and surveillance enabled UGVs  
for ultra-long endurance and  
rugged and inaccessible  
all-terrain applications



# Single Walled Carbon Nanotubes

An advanced light, strong,  
conduction and radiation  
resistant, ideally suited for  
aerospace and defence  
applications



## Company Brief

Research and fabrication of single walled carbon nanotubes (an advanced light, strong material that is conduction and radiation resistant) based aero materials which can be used for aerospace and defence products, with multiple spinoff applications in biotechnology, water, automobiles and other industrial segments.

NoPo's grand vision is to enable the transition of humanity into space faring species-by making this space material accessible to all.

## Achievements

- › Winner of IIGP Grant in 2018, sponsored by DST, Lockheed Martin and Tata Trusts;
- › Selected for the Grant under the ELEVATE 100 program of Dept. of IT, Govt. of Karnataka;

## Founding Team

Gadhadar Reddy  
Founder & CEO

Dr. Robert Kelley Bradley  
Co-Founder, Co-Inventor - HiPCO

Dr. Rajat Rakkhit  
Co-Founder, Head-strategy

Changalaraya Reddy  
Angel Investor

## Technology/Product Brief

NoPo carbon nanotubes have been applied in the development of various products:

- › Superblack Optical Coating for Spacecraft, capable of improving performance of star tracker equipment and optical components;
- › High strength Silk, 5 times tougher than Kevlar;
- › Molecular Water Transport Membrane 1000x faster than other Bio Membranes;
- › New class of CFRP Composite suitable for Aerostructures with 30% higher modulus and stiffness, capable of self sensing;

## Company Brief

Design and development of platforms and systems for delivering enterprise grade solutions in immersive technologies. Building on commercially popular software, hardware and computing systems in virtual, augmented and mixed reality, the company caters to manufacturing, pharma, automotive, aerospace, and defence verticals. With a team of competent professionals in mechatronics, computer science, software engineering, and user experience and interaction design, they offer end-to-end fully integrated content design, development and delivery solutions of the company is proven to offer increased operational effectiveness and boost profitability.

## Achievements

- › Over 40+ projects completed successfully serving a diverse portfolio of clients across several industry verticals;
- › Established 5 VR/AR labs in Europe and USA for leading automotive manufacturers, suppliers, and vendors;
- › Commenced overseas operations from their UK office in 2019;

## Founding Team

Krupalu H. Mehta  
Co-Founder

Vivek Surve  
Co-Founder

Jayesh Kolte  
Co-Founder

## Technology/Product Brief

### Aerospace

Gamified training modules with immersive and interactive Virtual Reality content for routine aircraft inspection and maintenance operations, with assessment report and recommendations for rectification/improvement.

### Defence

Developed mixed/virtual reality based training centre for paramedic staff in Indian Navy for effective procedural training at lowest costs, creating multiple emergency scenarios and simulation of highly critical on-field situations.

### Satellite Terrestrial Imaging

A 3D mapping and modeling tool to generate high quality terrestrial maps based on input satellite planetary data, with visualisation and annotation features to facilitate collaboration and analytics.

# AR/VR/MR Hardware & Software solutions for Aerospace

for aerospace,  
manufacturing, pharma,  
and automotive verticals

---

PARALLAX

# Lowest cost wireless connectivity using mmWave satellite communications

Powered by 200+ low-earth orbit satellites with indigenous ultra high capacity transponders



## Company Brief

Research and development focussed satellite communication company with a vision of mmWave ubiquitous and affordable wireless connectivity brought to reality. Incubated at Indian Institute of Science, and powered by indigenous V/W-Band wireless technology, Astrome is building SpaceNnet - a constellation of 200 low-earth orbit satellites, each carrying their in-house developed ultra high capacity transponders that provides broadband internet services to consumers, industrial sectors, and armed forces.

Astrome has also developed GigaMesh - a multi-Gbps, multi point-to-point wireless communication device that extends the range of 4G/5G infrastructure by providing fibre-like capacity wirelessly.

## Achievements

- › Winner of IIGP Grant in 2018, sponsored by DST, Lockheed Martin and Tata Trusts;
- › Selected for the Grant under the ELEVATE 100 program of Dept. of IT, Govt. of Karnataka;
- › Received the National Award in 'Technology Startups' category (2018) by the President of India. [Technology Development Board, Dept of Science & Technology, Govt of India];
- › Most Promising Aerospace and Defense Startup Award by NASSCOM and IESA;

## Founding Team

Dr. Neha Satak  
Founder & CEO

Dr. Prasad HI Bhat  
Co-Founder & CTO

## Technology/Product Brief

### SpaceNet

SpaceNet provides high speed internet to ships and outposts in remote areas. Upto 400Mbps per device (user equipment) specifically designed for moving platforms like aircraft and ships. Each SpaceNet transponder forms thousands of spot-beams over its footprint which can be configured remotely by software, while offering 12X more than conventional satellites.

### GigaMesh

GigaMesh extends the range of fiber by distributing capacity wirelessly. Upto 80+ Gbps per device, ideal for providing 4G/5G connectivity to outposts in remote areas. GigaMesh forms multiple point-to-point links with narrow electronically steerable beams, resulting in additive capacity and very high frequency reuse, which reduces OpEx and multiplies returns on CapEx.

## Company Brief

Manufacturing indigenously designed and developed portfolio of UAVs for diverse surveillance and imaging applications with a combination of rotorcrafts, fixed wings crafts, customised camera and image processing payloads for medium to long range, high accuracy, and high performance missions.

With UAV, UAS, GCS (Ground Control Station), ISR systems, Anti-drone systems designed for defence and combat sector, their mission goes beyond design and development of innovative aerial vehicles, systems, and surveillance equipment. Building on their technologies and products, they offer integrated solutions for disaster management & relief, search & rescue operations for law enforcement agencies and security forces, perimeter security & ISR missions with the help of their proprietary "EYE ON SKY" hardware and software capabilities.

## Founding Team

Nandakumar Muruganatham  
Director

## Technology/Product Brief

Unmanned Aerial Vehicles/Systems (UAV/UAS) custom designed to suit various types of surveillance, mapping, and inspection missions with integrated autonomous capabilities, advanced processors and sensors for onboard data processing and analytics.

The Vaanvili series of UAVs designed and operated by the company cover a range of high accuracy autonomous and compact aerial vehicles suited for long range to ultra long range ISR missions meeting the ruggedness and reliability standards of defence, naval, and border security applications.

- › Low to Medium Altitude
- › Medium to Very Long Endurance
- › VTOL capable with Fixedwing designs
- › Integrated Ground Control Station
- › Autonomous flight/mission controllers

Kalpana Muruganatham  
Director

# Wide array of indigenous UAVs

with integrated software  
platforms for Autonomous  
flight/mission control,  
Ground Control Station,  
and customised  
intelligence and  
surveillance missions



# 100+ years of UAV design and engineering experience

delivering lowest cost advanced and compact unmanned aerial systems and vehicles with different payloads to serve various use cases including precision agriculture, GIS surveying and surveillance.

**General**  
**Aeronautics**

## Company Brief

Aircraft Design and Engineering services for building highly customised UAS, UAVs and drones for various commercial airlines, agricultural, industrial and defence applications, for humanitarian aid, disaster relief and surveillance/intelligence missions. The engineering team, backed with several hundred man-years of experience in design and development of aerial systems, are at par with global standards of talent in aircraft design and engineering.

## Achievements

- › Only CEMILAC approved design unit for the development of compact UAV systems and platforms in India;
- › Attained R&D Certification from DSIR;

## Founding Team

Dr. Kota Harinarayana  
Chairman

Dr. Anutosh Moitra  
Founder Director

## Technology/Product Brief

### GA-3

Versatile UAV platform with open payload architecture and more than 60 mins of flight time.

### GA-3T

Endurance in excess of 6 hrs with up to 2 kg payload with up to 6 km range. Drone is capable of HD quality video transmission and has been aerodynamically designed to be stable to maneuver in high head winds.

### GA-3H

Designed for high-altitude/high-payload (15 kg) capabilities, custom designed for HALE operation. The design variant for precision agriculture operations has 15 ltr payload carrying capacity with advanced crop specific nozzles and ample endurance to cover a range of more than three acres in a single flight.

## Company Brief

Enterprise IT Solutions company pioneering Data Management software systems aerospace and defence sectors, providing standard NLP based aircraft maintenance digitisation software system.

The AI software Khemeia™ is a content acquisition engine for all data applications which detects and extracts content elements in unstructured documents, meta-data, structures content (paragraphs, images, tables, footnotes, multi-column text). Currently implemented at major enterprise and public sector entities across many verticals.

## Achievements

Stelae Technologies, has won multiple awards – IBM Global Entrepreneur winner for India & APAC in 2014, CIO Asia Magazine Top 20 Product Companies in 2015, Nasscom's Emerge 10 companies in 2015 and more recently, UKTI's Global Entrepreneur Program (2015) and London & Partner's India Emerging 20 in 2016.

## Founding Team

Aruna Schwarz  
Founder & CEO

Pierre Fraisse  
Co-Founder & CTO

Sandeep Raizada  
Co-Founder & VP-Engg

## Technology/Product Brief

Khemeia™ Transforms Unstructured Documents to Structured Outputs in S1000D, DITA, Json, XML standardised formats

- › S1000dD is the Information Exchange standard in Aerospace & Defence to enable the Digital Transformation of the industry.
- › Stelae Technologies with its software Khemeia™ has been one of the pioneers in this space since 2012, to transform technical publications to S1000D– creating an automated, scalable and cost effective solution to transform large data volumes.

**AI powered  
Documentation  
Management  
System  
incubated by  
AirBus**

**Strong track-record of  
customer acquisition and  
systems integration with  
leading Aerospace OEMs  
and gaining rapid  
acceptance within the  
armed forces**



# Green Propulsion system for satellite launch vehicles

reducing significantly satellite size/volume, lower production and operating costs, less toxic and non-fatal.

**MANASTU SPACE**

## Company Brief

Research and development of indigenous propulsion technology, including innovative thrusters for satellites, rockets and landers. Their propulsion systems are non carcinogenic, less toxic and available for a lower cost compared to conventional systems.

In partnership with IIT Bombay, the company has achieved significant progress in the development and trials of their green propulsion systems with significant size, cost, and performance benefits for satellite launch vehicles.

## Achievements

- › Worlds top 10 start up to pitch to global investors like Airbus, Lockheed, Boeing, NASA at IAC 2018, Germany, world leading conference;
- › Winner of the IIGP, solving problems of tomorrow by DST, Lockheed and Tata;

## Founding Team

Tushar Jadhav  
Co-Founder & CEO

Ashtesh Kumar  
Co-Founder & CTO

## Technology/Product Brief

Green propulsion system for satellite launch vehicles using hydrogen peroxide based propellant offering significant benefits:

- › Non toxic propellant avoids fatal accidents during the handling of propulsion systems, and high-risk exposure to carcinogenic hydrazine based propellants;
- › Innovative engine designed for propulsion system catalyses satellite launch vehicle performance with reduced satellite size/volume, 40% less toxicity, 25% higher performance, and 30% cost savings;

## Credentials

Founding Team comprises of ex-DRDO scientists with decades of combined experience in the space and satellite systems, developed a satellite launched by ISRO still live and was built in IIT Bombay.

## Company Brief

Delivery of Drone/UAV enabled aerial survey & inspection services covering custom flight missions combined with proprietary cloud platform for data acquisition, visualization, and analytics capabilities catering to multiple industrial sectors, with a strong track-record of winning several government contracts.

User friendly, fully autonomous drones that can be used in industries for survey and mapping, inspection and precision agriculture. The company strives to provide a high-value enterprise drone solutions across GIS survey/map, industry inspection and precision agriculture.

## Achievements

- › Over 12 Lakh acres area mapped in last 12 months;
- › Empanelled with 6 state governments in India;
- › Among the Top 10 AgriTech companies of 2018;
- › Capacity to cover more than 90 sq.km per day;
- › 250+ villages mapped in Rajasthan for watershed development;

## Founding Team

Nikhil Upadhye  
Founder & CEO

Vipul Singh  
CEO

Suhas Banishwala  
CTO

Yeshwanth Reddy  
COO

## Technology/Product Brief

### Insight PPK

Insight PPK eliminates the requirement of Ground Control Points (GCPs) with advanced data visualization and analytics used for survey and mapping. It saves 10x time and effort as compared to any other conventional drone technology.

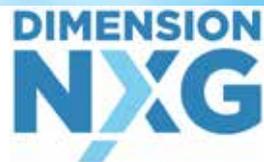
**10x Time &  
Effort saved  
than  
conventional  
Drones**

**in delivering full-spectrum  
enterprise aerial solutions  
powered by advanced data  
storage, analytics and  
visualization platform for  
wide ranging applications in  
several industrial sectors**



# Mixed Reality Headset with 95° Field Of View

combined with software platforms for high quality content generation and delivery for a plethora of training and maintenance operations applications in aerospace, defence, healthcare, automobile, and manufacturing sectors



## Company Brief

Augmented, Virtual and Mixed Reality solutions using disruptive technology to empower automobile, aerospace, healthcare, education, manufacturing, and real estate sectors by providing cost cutting, error reduction and increasing productivity.

Combining the power of custom designed hardware with immersive AR/VR content generation software systems, they offer significant value through the aerospace maintenance assistance platform bringing features such as instant skill mastery, holographic teleportation, x-ray vision, clairvoyance among a few.

## Achievements

- › #1 Innovation across India
- › Graham Bell Innovation Award - Breakthrough low-cost Technology;
- › Technology Innovation Leadership Award in AR Headset;
- › India's #1 Disruptive startup - India TiECon 2016;
- › Top 15 Hardware Wearables - Qualcomm QDIC, 2018;

## Founding Team

Pankaj Raut  
CEO

Abhishek Tomar  
CTO

## Technology/Product Brief

### AjnaLens

The Dimension NXG AjnaLens is a mixed reality headset with this 95° FOV.

Compatible with many MR applications: users may access many work applications such as AjnaSurge, for the medical industry, or MR Builder, for construction and design.

Detailed holograms: the computing system provides world-sensing holograms that integrate with the surrounding environment.

Gesture, gaze, and voice control: users can control the AjnaLens headset easily and intuitively thanks to built-in sensors.

### Ajnaassist

AjnaAssist allows your company to connect remote experts and field technicians in real time to collaborate on a task in AR. Both users have the ability to manipulate augmented content and add annotations that 'lock' onto real-world objects in the technician's field of view. This allows companies to reduce downtime and increase safety, giving technicians the power to make repairs, and decisions that they would otherwise be unable to do so.

Abhijit Patil  
COO

## Company Brief

Founded by IIT Madras alumni, the startup incubated at IIT Madras Incubation Cell is developing unmanned ground vehicles for aircraft ground support operations with an aim to reduce fuel consumption, flight delays and downtimes in civil as well as military aviation.

In situations of large scale natural disasters or in rescue operations in remote locations, and off base military encampments, limited airfield, damaged infrastructure, lack of adequate ground handling equipment and manpower availability are methodically and systematically address with their innovative fully automated Cargo Ground Buildup System (CGBS).

## Achievements

- › Selected as Grant Winner (2018) in the University Innovation Challenge track of the IIGP 2.0 program organised by Dept. of Science and Technology, Lockheed Martin, and Tata Trusts;

## Founding Team

Anupam Chandra  
Founder & CEO

Vishwajeet  
COO

## Technology/Product Brief

### CGBS

This pioneering product, CGBS (Cargo Ground Buildup System) is an unmanned, air-transportable, material handling vehicle platform for military transport aircrafts operating at austere locations, bringing great value to humanitarian aid, and disaster relief missions.

Being developed for Lockheed Martin's Hercules C-130 aircraft, CGBS eliminates the need to rely on the availability of equipment at remote and disaster relief mission site as well as reduce the downtime during loading/unloading from 4-6 hours to less than 1.5 hours.

# Fully Automated Cargo Ground Operations Solutions

developed for Lockheed Martin's Hercules C-130 aircraft, CGBS is a cargo material handling platform developed for military transport airports

**TERERO**  
MOBILITY

# Leaders in delivering Enterprise Aerial (Drone) Solutions

covering custom flight missions combined with proprietary cloud platform for data acquisition, visualization, and analytics capabilities.



## Company Brief

Delivery of Drone/UAV enabled aerial survey & inspection services covering custom flight missions combined with proprietary cloud platform for data acquisition, visualization, and analytics capabilities catering to needs in the agriculture, mining, utilities, and infrastructure sectors.

End-to-end services that shed light on ground reality through thematic drone based maps and geo tagged videos for enterprises. The company features to provides a glimpse into the perspective that aerial intelligence can bring about to terrestrial applications. Along with aerial survey services, data visualization & analytics, they provide enterprise IT solutions.

## Achievements

- › Awarded by Economic Times as 'Best on Campus' Startup in the ET Awards 2018;

## Founding Team

Mugilan Thiru Ramasamy  
Founder

Mrinal Pai  
Co-Founder

## Technology/Product Brief

### Mining

A holistic view of the mine lifecycle with the help of drone solutions allow for cm. level planning, monitoring and inspection of stockpile, hauls roads, lease boundaries and safety blocks.

### Agriculture

Solutions that are aimed at improving the yield estimation. Also focuses on improving the due diligence System and performance management in the agricultural sector.

## Company Brief

Design and development of integrated automated test systems for testing HMI controls in aircraft flight controls (Dashboard controls) test system.

Exhaustive and extensive testing methods that ensure rigorous testing beyond the human capacity and capability. Sastra Robotics builds and delivers Robotic solutions for human-like automated functional testing of real physical devices. Their business solutions are used by OEMs and Service Providers to expedite test cycles and reduce the time-to-market for various products.

## Achievements

- › Selected as Grant Winner (2018) in the Industrial Innovation track of the IIGP 2.0 program organised by Dept. of Science and Technology, Lockheed Martin, and Tata Trusts;

## Founding Team

Aronin Ponnappan  
Founder & CEO

Akhila A  
Co-Founder & COO

Achu Wilson  
Co-Founder & CTO

## Technology/Product Brief

### SR-Dimenzio-MG

Testing tool for various stages of Product Development and Production, including the end-of-line testing, that can work non-stop for 365 days a year. It uses the highest quality components which ensures that the performance is maintained throughout its lifetime. It has a compact form factor which makes it easy for integration into the existing production lines or stacking into server rack enclosures in SaaS companies.

# HMI Test Automation Platform with Honeywell & BOSCH

as early adopters of robotic testing platforms to realise human-like functional testing of industrial systems and devices with human-machine interface (HMI) panels



# Visual, Thermal and NearIR spectrum High Resolution Aerial Imaging

solutions delivered in the UAV-as-a-Service model for surveillance, GIS remote sensing, asset inspection, and precision agriculture applications

The logo for AIRPIX, featuring the word "AIRPIX" in a bold, white, sans-serif font on a black rectangular background.

## Company Brief

Delivery of enterprise drone solutions for security & surveillance, GIS surveying & terrain mapping, disaster management, farming, asset inspection, events and consumer services applications. Provides data processing and analytics solutions from UAV-as-a-service for Government bodies, mining, railways, agriculture, resources, oil and gas industries.

High resolution aerial imagery in visual, thermal, and near infrared spectrum, to generate high density point clouds, 2D & 3D outputs like orthophoto, digital surface models, asset inspection reports for planimetric, volumetric analyses, change tracking, defect identification, etc.

## Achievements

- › Selected as Grant Winner (2017) in the Industrial Innovation track of the IIGP 2.0 program organised by Dept. of Science and Technology, Lockheed Martin, and Tata Trusts;

## Founding Team

Aniket Tatipamula  
Founder

Shinil Shekhar  
Founder

## Technology/Product Brief

### UAV Surveying, Photogrammetry and Remote Sensing

Our UAV systems autonomously cover large areas to capture high resolution data as high as upto 1 cm/pixel in visible or Near infrared (NIR) spectrum for producing highly detailed and accurate orthophotos, 3D Digital Elevation Models, topographic data, NDVI maps. The data provides valuable insights to our clients in terms of assessment, planning, site design and maintenance.

### UAV Inspection and Monitoring

Deploying UAVs for collecting data in situations potentially hazardous to human life by eliminating health and safety risks posed while inspecting critical infrastructure or scouting remote/disaster struck areas. Reducing overall costs and improving safety, our services facilitate fast acquisition of high quality data to provide valuable insights to industries and government bodies in terms of preventive maintenance and emergency response planning.

## Company Brief

Building mixed reality based software solutions which augments added information with the real life video stream, along with aerospace maintenance assistance software. The platform allows users to build, explore, share virtual and augmented reality experiences from their personal web browsers. They have rapidly built a clientele of many top corporates in multiple sectors including online retail, real estate, healthcare, education, sports, and media & entertainment.

## Achievements

- › Innovative startup by Karnataka government under their Elevate-100 programme;
- › Recognition by the Wharton India Economic forum as one of the top 20 innovative startups in India;
- › Recognized by Crunchbase as one of the top 5 startups in 2018 with seed capital;

## Founding Team

Ajay PV  
Founder

Sai Krishna VK  
Co-Founder

## Technology/Product Brief

Scapic is a cloud-based content collaboration tool which has no end app installation necessary to view these AR/VR experiences. A simple to use drag and drop editor to create stunning Virtual Reality experiences that can be shared across browsers, social media and VR headsets with the help of a single link no additional app downloads necessary.

Mixed Reality Remote Support Solution which allows on-ground technicians to collaborate with any remote expert providing in-context troubleshooting.

# Bringing the power of AR/VR experience to Desktop Computing

A software cloud platform to create, edit, and share immersive AR, VR, 3D content



# Launching small satellites at lowest cost, in a week

pioneering a launch-on-demand model enabled by orbital class nano launch vehicles developed with modular design and additive manufacturing



## Company Brief

Research, design and development of orbital class nano satellite launch vehicle catering to the ignored commercial satellite market in the areas of remote sensing, agriculture, marine & maritime, disaster management etc. with their mission to enabling the launch of rockets (satellites) anywhere, anytime and affordably.

Conventional satellite launch missions take over a year to build a small satellite, but it takes 3-4 years to launch, and the cost of launch is \$35,000/KG while the cost of production is merely \$10,000/KG. The reason being the lack of adequate launch vehicles for small satellites. Agnikul is pioneering a launch-on-demand model with a 1 week lead time and at one third the launch cost.

## Achievements

- › Qualified for the DARPA Launch Challenge, after successfully completing engine tests and system level design of the vehicle;

## Founding Team

R V Perumal  
EX-ISRO GSLV Project Director

Srinath Ravichandran  
Co-Founder & CEO

Prof. S R Chakravarthy  
NCCRD, IIT Madras

Moin SPM  
Co-Founder & COO

## Technology/Product Brief

### Agnibaan

Our first product is a three stage launch vehicle, with each stage of the vehicle is powered by liquid propulsion systems that burn kerosene in liquid oxygen to produce the required thrust. We focus on modular design and additive manufacturing to be able to have a "launch-on-demand" business model to take small satellites to space. The launch vehicle can carry upto 100kg payload and reach orbits upto 700 kms.

Indigenous facility for thrust testing has been constructed at IIT Madras.

## Company Brief

Delivery of Industry 4.0 solutions to different verticals in the manufacturing sector with a specific focus in aerospace, offering AI-ML enabled tools and techniques for machine/production/process monitoring, predictive maintenance, process simulation and visualization in the Platform-as-a-Service model.

The simulation, analytics and visualization platforms and solutions developed by NeeWee combined with aerial drone operations deliver high performance and increased efficiency in remote sensing, aerial surveillance, asset inspection applications.

## Technology/Product Brief

### Bodhee

An industrial analytics software platform capable of analysing vast amounts of manufacturing data to produce valuable and actionable insights for effective decision making. The platform enables and accelerates the transition to Connected Manufacturing by enabling condition monitoring and predictive manufacturing/production control for each line within 6-8 weeks.

# Accelerating AI/IoT powered Manufacturing Analytics in Aerospace

with integrated simulation,  
analytics, and visualization  
solutions for realizing  
Industry 4.0 delivered in the  
Platform-as-a-Service model

## Founding Team

Suyog Joshi  
Founder & CEO

Nataraj Soorkod  
Co-Founder & CTO

Harsimrat Bhasin  
Co-Founder & COO



# Patented Electric Propulsion systems for low cost satellite launch vehicles

Design and development of indigenous propulsion systems, new generation propellants, and orbital launch vehicles (rockets).

**BELLATRIX**  
AEROSPACE 

## Company Brief

Research and development company specializing in the design and development of orbital launch vehicles (rockets), new generation propellants, and electric propulsion systems for satellites. They work closely with ISRO on the development of electric propulsion systems.

## Achievements

- › Indigenously developed and patented Microwave Plasma Thruster, a novel and efficient type of electric propulsion system that runs on water as propellant;
- › Received TDB National Award 2017 from the Hon'ble President of India for 'Development of technology with potential for commercialization';

## Founding Team

Rohan M Ganapathy  
Founder & CEO

Yashas Karanam  
Co-Founder & COO

## Technology/Product Brief

### Satellite Propulsion

Bellatrix is engaged in the design and development of different satellite propulsion systems including:

- › Microwave Plasma Thrusters, water powered satellite propulsion for heavy satellites
- › Green Monopropellant Thrusters, greener and high performance alternative to Hydrazine
- › Nano Thrusters, propulsion system designed for nano satellite constellations

### Chetak

Bellatrix offers a simple and reliable dedicated nano-satellite launch vehicle with an aim to make nano-satellite launches more affordable than ever before. Chetak is a two stage vehicle, with first stage designed for reuse. Chetak features an all-carbon composite construction and uses liquid methane as propellant.

## Company Brief

Indigenously designs, builds and deploys advanced imaging and sensor systems to sense, understand and control complex environments. Tonbo Imaging offers a suite of solutions that address critical market needs in military reconnaissance, critical infrastructure security and transportation safety, with effective visualisation in challenging environments like modern day battlefields, critical infrastructure, unmanned reconnaissance, driving in the dark, despite environment obscurants like smoke, dust, fog and camouflage.

The company's offerings consist of sophisticated imaging products, custom design applications and intellectual property cores that can be licensed by aerospace OEMs and systems integrators.

## Achievements

- › First company to have won the Certificate of Accord under the Make II procedure via the suo moto proposal for the Night Fire Control System for AGS-30;
- › Among the earliest Defence startups to have raised VC funding and is backed by Artiman Ventures, Qualcomm Ventures, and Walden Riverhood Ventures;

## Founding Team

Arvind Lakshmikumar  
Founder & CEO

Ankit Kumar  
Co-Founder & CTO

Sudeep George  
Co-Founder & VP

Cecilia D'Souza  
Co-Founder & CFO

## Technology/Product Brief

Tonbo leverages innovative designs in multi-sensor imaging, low power electronics and real-time vision processing to build imaging products for real-world applications.

### Avenger S

Avenger-S is a family of multi axis stabilised electro optical system for aerial surveillance and reconnaissance. It is designed as a modular but integrated system with a cooled MWIR thermal imager, short wave infrared imager, color HD imager, low light TV and spotter, IR pointer, IR illuminator, laser range finder, and GPS & compass for very long range surveillance, reconnaissance and targeting applications.

# Indigenous Advanced Electro Optics for Defence & Aerospace

pioneering a widest portfolio  
of innovative designs in  
micro-optics, lower power  
electronics and real-time  
vision processing systems



# Boeing Invested enterprise aerial solutions company

Delivering full-stack enterprise aerial solutions and services specializing in GIS surveying and mapping, and AI enabled analytics and visualization software tools and systems



## Company Brief

Delivers enterprise drone solutions combining custom drone flight missions with an integrated platform for drone data storage, processing, analytics, and visualization, catering to large industrial clients in the construction, infrastructure, smart cities, insurance, renewable energy and natural resource management sectors.

HUVIAiR is aiming to deliver aerial solutions for inspection and survey more than 5 times faster when compared to conventional workflows, saving thousands of dollars by avoiding unwarranted change orders. The integrated full-spectrum hardware + software + services capabilities achieve 99.9% accuracy using high resolution 3D measurement tools and enhance safety of projects by 40%.

## Achievements

- › Winner of the first ever Boeing HorizonX challenge, held by Boeing in partnership with T-Hub, leading to Boeing becoming a major investor in the company;
- › Selected for the ESRI's Geo-Innovation program, an Acceleration Platform for GIS Startuppreneurs, leading to becoming official business partner of ESRI;
- › Selected as part of Yes Bank's cohort of start ups for smart cities accelerator and investments program;

## Founding Team

Vikshut Mundkur  
Co-Founder & CEO

Arjun P Janananda  
Co-Founder & CTO

## Technology/Product Brief

HUVIAiR suite offers complete end to end workflows for:

- › Processing of aerial surveying, mapping and imaging data.
- › Visualizing high resolution 2D and 3D GIS maps (Orthomosaic, DSM, DTM, 3D model, Contours of required intervals) with map tools such as distance, area, volumetrics, elevation profile, 3D coordinates, layer control, user generated maps, annotations and digitization.
- › Performing AI enabled analytics for applications in surface water modeling, roof-top solar pv yield, object identification and counting, demarcation of buildings, change detection and many more.
- › Processing videos and images with custom analytics for aerial surveying and inspection in industrial asset management.

## Galactica.ai

Founded with the vision to solve real world remote sensing problems through, the Galactica.AI platform is designed and engineered by bringing the best minds in research and academia along with strategic industry partnerships. The data analytics platform offers cutting-edge, powerful Computer Vision & AI algorithms to extract insights from satellite and aerial systems surveillance, mapping, and asset inspection data.

The Galactica cloud analytics platform is a one-stop-shop to manage your geospatial data. Our platform has been optimized for storing and running large-scale compute jobs on geospatial data. You can create custom dashboards to visualize your data or combine results from multiple sources in order get a complete picture.

## Founding Team

Dr. Mukul Sarkar

Vinayak Dalmia

Vrinda Kapoor

Based in Silicon Valley and Indian Institute of Technology Delhi (IIT-Delhi), they are a group of researchers and entrepreneurs with a fondness for all things deep tech and sci-fi.

## 3rdiTech

India's first custom camera developers for large format cameras. The use of synchronised multiple cameras to create an image with unprecedented detail, involves using many micro cameras to capture the image and precisely combining high resolution digital images as a mosaic based on pre-defined parameters.

Leveraging their expertise lies in image sensors, sensor electronics, custom optics & processing algorithms, they aim to create custom cameras from 5 megapixel onwards with a road map to become the first Made in India Gigapixel Camera. Applications of this product include surveillance, defence and homeland security. A Gigapixel based video surveillance platform can potentially resolve details as small as six inches and observe an area of 25-50 square kilometres from an altitude of 10- 20,000 feet.

# Mission to launch India's very own Gigapixel Camera

to realise high quality video surveillance systems for aerial surveying, defence, homeland security and border patrol applications combined with deep-tech AI powered cloud analytics platform

**Galactica.AI**  
**3rdiTech**

# Advanced composite fabrication with innovative 3D printers

for printing structures with composites and carbon fibre



## Company Brief

Composite product fabrication company with highly qualified team, developing innovative solutions for effectively manufacturing complex composite parts. With a host of different technology and material to synergise with each other, the company manufactures high performance 3D printers for composite materials.

## Achievements

- › First in India to indigenously develop and commercialise Carbon Fiber 3D Printer;
- › First in India to demonstrate indigenously developed Fiber Placement Apparatus;
- › Awarded for 'Outstanding Innovation in Composites' at ICERP 2019 (International Conference and Exhibition on Reinforced Plastics);
- › Awarded the 'Top Startup in Manufacturing' in Startpreneurs 2018 by CII;

## Founding Team

Dhinesh Kanagaraj  
Founder & CEO

Sreedhar Venugopal  
Head of Materials & Tech

## Technology/Product Brief

### 3D Printing Carbon Fiber Parts

The company has indigenously developed the technology to 3D print Carbon fiber reinforced thermoplastics for the first time in India. Besides Carbon, the printer is also capable of printing Glass and Kevlar fiber products.

### Hybrid Fabrication and Mold-Free Production

The Hybrid fabrication technique includes Fabheads 3D printing along with existing traditional fabrication process like resin infusion, layup, etc. This concept allows for very fast production of higher volumes even without a requirement of a mold, saving both time and cost.

The background of the image is a clear, bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, creating a sense of depth and lightness. The overall tone is positive and airy.

**Ecosystem**



## Innovations for Defence Excellence

**(iDEX)** framework, launched in April 2018 at DefExpo, by the Prime Minister of India, primarily aims at creation of an ecosystem to foster innovation and technology development in Defence and Aerospace by engaging industries including MSMEs, Start-ups, Individual Innovators, R&D Institutes & Academia, and provide them grants/funding and other support to create product and services for future adoption for Indian defence and aerospace needs.

iDEX is also the executive arm of the Defence Innovation Organisation (DIO), which is the legal entity created by the defence PSUs HAL & BEL - to support the MoD in building the entrepreneurship and innovation ecosystem in Defence in India.

## Objectives

- › Rapid adoption of new technologies for indigenous defence production and commercialization
- › Create a platform for Defence Services and DPSUs to engage with innovators/startups, seeding the culture of Open Defence Innovation
- › Empowered culture to "Fail Fast and Recover Faster" in technology/product co-creation between innovators and users

## Initiatives & Programs

- › Set up and manage iDEX network – Partner Incubators & Independent Defence Innovation Hubs
- › Communicate with innovators/startups regarding defence needs
- › Design and manage challenges tailored to specific innovation needs
- › Evaluate technologies and products in terms of their utility and impact on the Indian defence setup
- › Facilitate advanced QA and testing for military level compliance
- › Enable and fund pilots, using innovation funds dedicated to the purpose
- › Facilitate rapid adoption, and manufacturing partnerships for scale



**Defence India Startup Challenge** is an initiative under the iDEX framework launched by Defence Innovation Organization (DIO) in partnership with Atal Innovation Mission (AIM) aimed at supporting innovators to create prototypes and/or to commercialise products/solutions based on advanced technologies in areas of national security.

**SPARK** (Support for Prototype and Research Kickstart) framework is with the twin vision: (a) help create functional prototypes of products/technologies relevant for national security (prototyping), and spur fast-moving innovation in the Indian defence sector; (b) help new tech products/technologies find a market and early customer (commercialization) within the Indian Defence Services or the Defence PSUs.

Applicants showing capability, intent, and promise to be able to produce functional prototypes or to productize existing technologies will be awarded grants of up to Rs. 1.5 crores, strictly on a milestone basis and starting, in the form of grant/equity/debt/other relevant structures.



## DISC Challenges 1



Individual Protection System with built-in sensors



See Through Armour



Carbon Fibre Winding (CFW)



Active Protection System (APS)



Secure hardware based offline Encryptor Device for Graded Security



Development of 4G/LTE based Tactical Local Area Network



Development of Advanced Technology Based Desalination System and Bilge Oily Water Separation System



Artificial Intelligence in Logistics & SCM



Unmanned Surface and Underwater Vehicles



Remotely Piloted Airborne Vehicles



Laser Weaponry

## DISC Challenges 2



GPS Anti Jam Device



Data Analytics for Air Trajectory



Illegal usage of Drones



RADAR - IQ Signal Generator



[aim.gov.in](http://aim.gov.in)

**Atal Innovation Mission (AIM)** is Government of India's flagship initiative to promote a culture of innovation and entrepreneurship in the country. AIM's objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platform and collaboration opportunities for different stakeholders, create awareness and create an umbrella structure to oversee innovation ecosystem of the country.

AIM's flagship schemes include establishing Atal Tinkering Labs in schools and Atal Incubation Centers in partnership with the private sector, providing scaling up support to Established Incubation Centers, and funding ultra-low cost solution to India's most intractable problems through Atal New India Challenges and Atal Grand Challenges.

**5000+ schools in India supported with the setting up of Atal Tinkering Labs**

**100+ institutions and foundations supported with the establishment of Atal Incubation Centres**

AIM's objectives are to create and promote an ecosystem of innovation and entrepreneurship across the length and breadth of the country at school, university, research institutions, MSME and corporate industry levels. The Mission has been set up under NITI Aayog, in accordance with the Hon'ble Finance Minister's declaration in the 2015 Budget Speech.

AIM has multiple programs to encourage and support innovation in the country. Currently, state of the art **Atal Tinkering Labs (ATLs)** are being established in thousands of schools, world class **Atal Incubation Centres (AIC)**, and **Atal Community Innovation Centers (ACIC)** are being established for universities and industry, and promotion of product development in areas of national relevance and social importance is being supported through **Atal New India Challenges (ANICs)**. Many other programs under AIM establish connections between networks and centres of excellence in the Indian innovation ecosystem.

Under the ATL program, more than 10,000 schools are expected to establish these labs by 2020. More than 100 Atal Incubation Centres (AICs) are likely to be established around the country, supporting at least 50-60 startups each over the first five years. More than 100 innovators/startups are expected to receive some support for productizing their innovations. Other programs being supported through ministries will have even more beneficiaries. Till date, 5441 Atal Tinkering Labs have been selected across the country, out of which 2171 ATLs from 623 districts have already received the first tranche of grant-in-aid for establishment of the labs in their respective schools.

## iDEX Partner Incubators



[www.forgeforward.in/idx](http://www.forgeforward.in/idx)

iDEX envisages to work with India's leading incubators, which would help in discovery and exploration of Startups/MSMEs that can perform the function of co-creation. iDEX would work with these incubators closely, tracking upcoming Startups/MSMEs and Innovators, and investing in them opportunistically, from the Defence Innovation Fund.

The Defence Innovation Organisation has signed MoUs with five incubators nominated as **iDEX Partner Incubators** to mentor entrepreneurs and MSMEs to create, deploy and commercialise technologies and products for the Indian military and defence PSUs.



[www.ciie.co](http://www.ciie.co)

Centre for Innovation Incubation and Entrepreneurship (CIIE) at IIT Ahmedabad helps entrepreneurs turn ideas into viable businesses. In partnership with their mentors, corporates, development agencies, IIMA community and investors, CIIE cultivates a rare breed of entrepreneurs by incubating, accelerating, mentoring and funding innovative startups.

CIIE has, over the years, played a multi-dimensional role in the entrepreneurial landscape of India through its incubators, accelerators, seed-investments and publications. Its deep understanding of the evolving gaps, needs, and opportunities in the markets and the entrepreneurial ecosystem has enabled it to design initiatives that have attracted and supported the best entrepreneurs in various sectors.



[www.forgeforward.in](http://www.forgeforward.in)

FORGE, Coimbatore offers holistic incubation services covering innovation labs, incubation grant, product & business acceleration, and seed capital investment to transform innovative hardware products/systems into successful enterprises with potential for growth, impacts and profits.

FORGE aims to create a world-class Centre of Excellence for Defence & Aerospace Innovations, bringing advanced technology labs, 360D expert-mentoring, managed product innovation and business acceleration programs.



[www.sineiitb.org](http://www.sineiitb.org)

Society for Innovation and Entrepreneurship (SINE), established in 2004 at IIT Bombay, is among of the earliest incubators in academia with proven track-record of creating economic growth, strategic value and social relevance.

Over 140+ startups and 380+ innovators supported by SINE have created 3600+ jobs. SINE is actively participating in many new programs in collaboration with Government, Institutions, Industry and Academia, and serves as a role model for several incubators.



[www.incubation.iit.ac.in](http://www.incubation.iit.ac.in)

IITM Incubation Cell (IITMIC) coordinates and leverages the synergies in various strands of excellence driving innovation and entrepreneurship at IIT Madras, consisting of cutting edge research, industrial interactions, India's first university-driven Research Park and a stellar record of incubation in rural, social and industrial technologies.

Registered as a not-for-profit Section 8 Company, IITMIC is recognised as a Technology Business Incubator by Startup India, DIPP and NSTEDB, Dept of Science & Technology, Government of India. IITMIC supports Students, Faculty, staff & Alumni of IIT-Madras and External entrepreneurs (or R&D partners to IITM) in creating successful deep tech startups, disrupting industries & translating benefits to the society at large.



[www.t-hub.co](http://www.t-hub.co)

T-Hub is a unique public/private partnership between the government of Telangana, 3 of India's premier academic institutes (IIIT-H, ISB & NALSAR) and key private sector leaders. It stands at the intersection of the start-up, academic, corporate, research and government sectors.

We are anchoring the entire Hyderabad startup ecosystem with a state-of-the-art 70,000 square foot building called CatalystT, the largest building in India to be entirely dedicated to entrepreneurship.



[www.investindia.gov.in](http://www.investindia.gov.in)

## Company Brief

Invest India is the National Investment Promotion and Facilitation Agency of India and acts as the first point of reference for investors in India. Invest India focuses on:

- › Sector-specific investor targeting and development of new partnerships
- › Partnering with substantial investment promotion agencies and multilateral organizations
- › Actively working with several Indian states to build capacity and bring in global best practices

Invest India has a specific Defence and Aerospace team, which does considerable work with foreign Aviation and Defence players

## Achievements

- › 154,611 Business Requests
- › \$115.31B Investments in Pipeline
- › 1,834,803 Potential Jobs

## Leadership

Deepak Bagla  
MD & CEO





[www.startupindia.gov.in](http://www.startupindia.gov.in)

## Company Brief

Startup India is a flagship initiative of the Government of India, intended to build a strong ecosystem that is conducive for the growth of startup businesses, to drive sustainable economic growth and generate large scale employment opportunities. The scheme has 3 objectives:

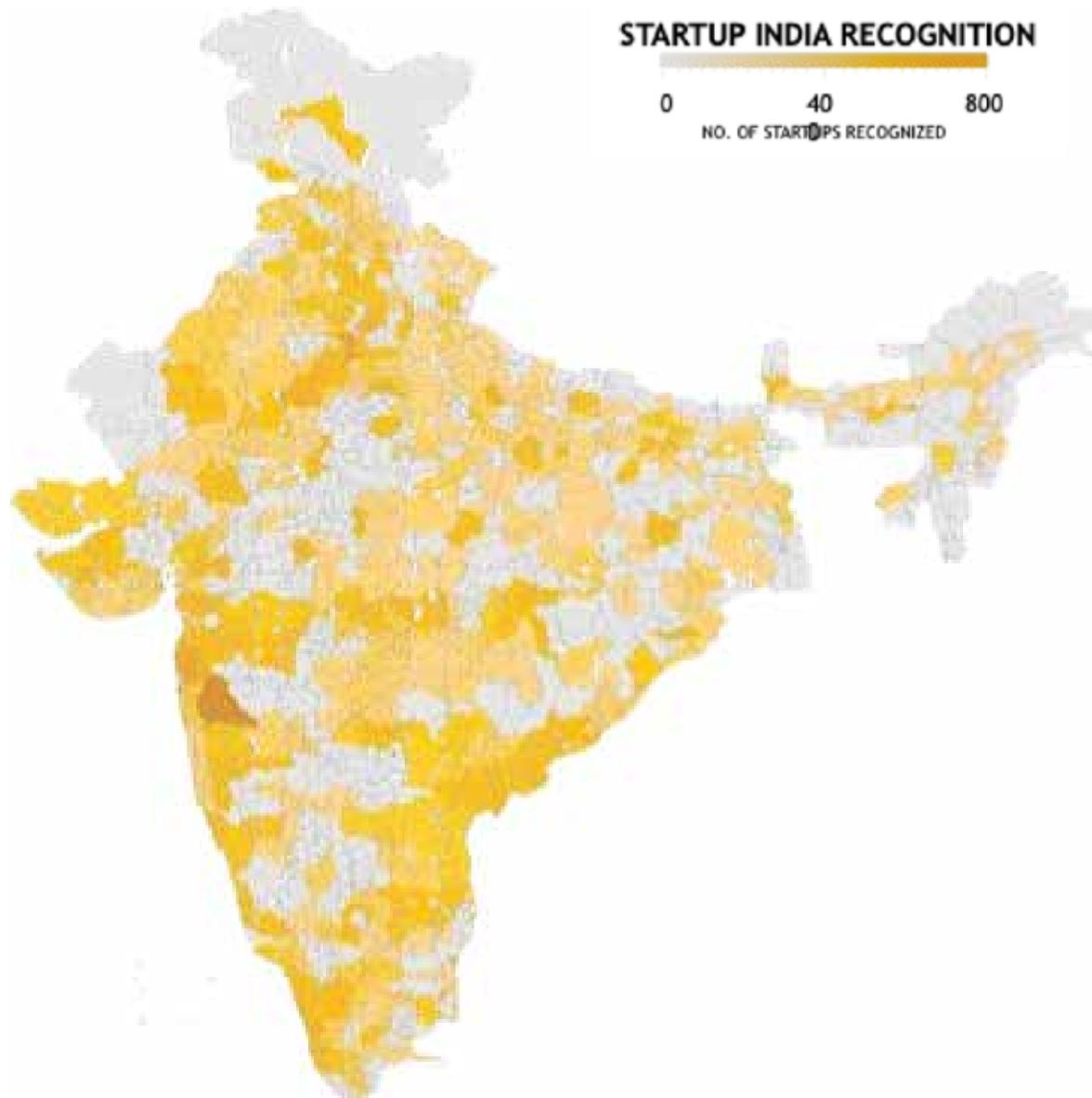
- › Consolidate the current ecosystem by bringing all stakeholders to a common platform
- › Grow the ecosystem by connecting with the global ecosystem and stimulating others to join the ecosystem
- › Facilitate the stakeholders by providing access to information, knowledge, and handholding support

## Aerospace Engagements

- › Startup India has worked extensively with the Airports Authority of India (AAI) through the AAI Startup Initiative
- › The AAI Startup Initiative allows startups to work with AAI to develop customized airport-relevant innovations across 7 sectors
- › Selected startups will be able to pilot test their innovations and receive funding and mentorship by the Airports Authority of India

## Leadership

Ramesh Abhishek  
Secretary, Department for Promotion of Industry and Internal Trade



A large group of military personnel, likely pilots and ground crew, are posed for a group photo on an airfield. They are wearing flight suits and are standing in several rows in front of a fighter jet. The jet is a modern, single-engine aircraft with a delta-wing configuration and a canards configuration. It has a white base paint with various markings, including a red and white insignia on the nose and a red and white insignia on the tail. The background shows a clear sky and the airfield environment.

# Directory

## Enterprise Aerial Solutions

### Asteria

Bengaluru, Karnataka

### Aarav

Bengaluru, Karnataka

### Aerizone Creative Labs

Nagpur, Maharashtra

### Aerowhizz Technologies

Ranchi, Jharkhand

### Airpix

Mumbai, Maharashtra

### Airserve Initiatives

Hyderabad, Telangana

### Ajaba Aerobotics

Chennai, Tamil Nadu

### AMX Innovation

Bengaluru, Karnataka

### Artificial Intelligence and Robotics

Pune, Maharashtra

### Asatrobe Technologies

Bengaluru, Karnataka

### Atom Aviation Services

New Delhi, New Delhi

### AutoMicroUAS

Dehradun, Uttarakhand

### Aviorone Technologies

Raipur, Chhattisgarh

### Basit Aerotech

Mumbai, Maharashtra

### Dronix Technologies

Chennai, Tamil Nadu

### GarudOculus

Bengaluru, Karnataka

### Huviair Technologies Private Limited

Bengaluru, Karnataka

### INDrone Aero Systems

Bengaluru, Karnataka

### Indshine Energy

Mohali, Punjab

### IOTechWorld Avigation

Gurugram, Haryana

### Pigeon Innovative Solutions

Mumbai, Maharashtra

### Quidich

Mumbai, Maharashtra

### Redbay Technologies

Hyderabad, Telangana

### Redwing Aerospace Laboratories

Bengaluru, Karnataka

### Samiksha Aerospace

Bengaluru, Karnataka

### Sensebird Solutions

Noida, Uttar Pradesh

### Skykeeper

Pune, Maharashtra

### Skykrafts Aerospace

Hubli, Karnataka

### Skylark Drones

Bengaluru, Karnataka

### Terra Drone India

Hyderabad, Telangana

### Thanos Technologies

Hyderabad, Telangana

### UAV Innovations

New Delhi, New Delhi

### Vyoman Aviation

Pune, Maharashtra

### Windhawk Innovations

New Delhi, New Delhi

### xLayer Technologies Pvt Ltd

Bengaluru, Karnataka

### Deccan Airsports

Mangaluru, Karnataka

## Enterprise Aerial Solutions

**Flotanomers R&D**  
Mangaluru

---

**Hella Infratech**  
Thane, Maharashtra

---

**iSpAgro Robotics**  
Bengaluru, Karnataka

---

**Linkites**  
Indore, Madhya Pradesh

---

**Meissa Technologies**  
Noida , Uttar Pradesh

---

**Tardid Technologies**  
Bengaluru, Karnataka

---

**UbiFly Technologies**  
Chennai, Tamil Nadu

---

## Aerospace Design & Engineering Services

**Aerospace Engineers**  
Salem, Tamil Nadu

---

**Dynamic Technologies**  
Bengaluru, Karnataka

---

**MEL Systems**  
Chennai, Tamil Nadu

---

**Metallic Bellows**  
Chennai, Tamil Nadu

---

**Zeus Numerix**  
Pune, Maharashtra

---

**Accreate labs**  
Bengaluru, Karnataka

---

**Aerotek Sika Aviosystems**  
Bengaluru, Karnataka

---

**ALpha Optical Technologies**  
Mumbai, Maharashtra

---

**General Aeronautics**  
Bengaluru, Karnataka

---

**Orxa**  
Bengaluru, Karnataka

---

**Pranavam Aerospace**  
Bengaluru, Karnataka

---

**Aadyaanveshan Private Limited**  
Bengaluru, Karnataka

---

## Aerospace Structures & Materials

**Jayasuriya Aero**  
Chennai, Tamil Nadu

---

**LMW**  
Coimbatore, Tamil Nadu

---

**Polyhose India**  
Chennai, Tamil Nadu

---

**Fabheads**  
Chennai, Tamil Nadu

---

**NoPo**  
Bengaluru, Karnataka

---

**Thermovac Aerospace**  
Bengaluru, Karnataka

---

**Aries Alloys**  
Mumbai, Maharashtra

---

**VaramRakshak Designs**  
Bengaluru, Karnataka

---

## Aerospace Infrastructure Solutions & Services

**Acumen Aviation**  
Bengaluru, Karnataka

---

**Virgo Aerospace**  
Hyderabad, Telangana

---

## Avionics, Communication & Payload

### Alpha Design Technologies

Bengaluru, Karnataka

### MMRFIC Technology

Bengaluru, Karnataka

### D-Espat

Chennai, Tamil Nadu

### CeleSphere Technologies

Bengaluru, Karnataka

### Optimized Electrotech

Bengaluru, Karnataka

### Sirab

Bengaluru, Karnataka

### Tonbo Imaging

Bengaluru, Karnataka

### Innosapien

Thane, Maharashtra

### Aadyah Aerospace

Bengaluru, Karnataka

### Aeroics Aviations

Mumbai, Maharashtra

### Avignaa Techworks

Chennai, Tamil Nadu

### Constelli Signals

Hydrebad, Telangana

## Avionics, Communication & Payload

### Elcomponics Aerob Technologies

Noida, Uttar Pradesh

### Gensys Solutions

Bhilwara, Rajasthan

### iSenses Incorporation

Bengaluru, Karnataka

### MAK Controls

Coimbatore, Tamil Nadu

### Quikproto Research Labs

Kanpur, Uttar Pradesh

## Aerospace Enterprise Systems & Solutions

### Data Patterns

Chennai, Tamil Nadu

### QMax

Chennai, Tamil Nadu

### Celestian Technologies

Bengaluru, Karnataka

### Dimension NXG

Mumbai, Maharashtra

### NeeWee

Bengaluru, Karnataka

### Parallax

Mumbai, Maharashtra

### Sastra Robotics

Kochi, Kerala

### Scapic

Bengaluru, Karnataka

### Simyog Technology

Bengaluru, Karnataka

### Stelae

Bengaluru, Karnataka

### Tarsha Systems

Bengaluru, Karnataka

### AI Labs

Trivandrum, Kerala

### Lucid Software

Chennai, Tamil Nadu

### Perspectiv Labs

Bengaluru, Karnataka

## Space/Satellite Vehicles & Systems

### Agnikul

Chennai, Tamil Nadu

### Astrome

Bengaluru, Karnataka

### Bellatrix Aerospace

Bengaluru, Karnataka

### Manastu Space

Mumbai, Maharashtra

### Dhruva Space

Bengaluru, Karnataka

### Astrosoc

Secunderabad, Telangana

### BotLab Dynamics

New Delhi, New Delhi

### Buteos Aerobotics

New Delhi, New Delhi

### DN Aerospace

New Delhi, New Delhi

### Drona Aviation

Mumbai, Maharashtra

### Dronobotics Aviation Developers

Gwalior, Madhya Pradesh

### Empyrean Robotic Technologies

Allahabad, Uttar Pradesh

### Featherdyn

Trivandrum, Kerala

### Garudan

Coimbatore, Tamil Nadu

### Gyrox Aviation

Gurgaon, Haryana

### Johnette Technologies

Prakasam, Andhra Pradesh

### Lycan Drones

Bengaluru, Karnataka

### Maruthsakha Aerospace & Aviation

Bengaluru, Karnataka

### Protonium Technologies

Chennai, Tamil Nadu

### Stork

Bengaluru, Karnataka

### Throttle Aerospace Systems

Bengaluru, Karnataka

### Unmanned Dynamics

Chennai, Tamil Nadu

### Vimanika Aerospace

Gurugram, Haryana

### Vinveli Automated Systems

Chennai, Tamil Nadu

### Z-Axis Unmanned Machines

Ahmedabad, Gujarat

### Big Bang Boom Solutions

Chennai, Tamil Nadu

### Combat Robotics

Pune, Maharashtra

### Kinetix

Bengaluru, Karnataka

### BSS Materials

Dehradun, Uttarakhand

## Innovative Aerial Vehicles/Systems

### ideaForge

Mumbai, Maharashtra

### 3F Advanced Systems

Hyderabad, Telangana

### Aero2Astro

Chennai, Tamil Nadu

### Aerosense Technologies

New Delhi, New Delhi

### Aethrone Aerospace

Pune, Maharashtra

## Innovative Aerial Vehicles/Systems

### Continental Defence Solutions

New Delhi, New Delhi

### Jet Aerospace Aviation Research Center

Kochi, Kerela

### Subram Technologies

New Delhi, New Delhi

### Valles Marineris International

Bengaluru, Karnataka

### Zen Aerologiks

Bengaluru, Karnataka

## Category

## #

### Enterprise Aerial Solutions

43

### Aerospace Design & Engineering Services

12

### Aerospace Structures & Materials

8

### Aerospace Infrastructure Solutions & Services

2

### Avionics, Communication & Payload

17

### Aerospace Enterprise Systems & Solutions

14

### Space/Satellite Vehicles & Systems

5

### Innovative Aerial Vehicles/Systems

34

## Editorial

The global tech sector - specifically the high octane segment of tech startups and venture capitalists, in the post world-wars era and during the cold war regime and its aftermath, rose to dizzying heights fuelled primarily by the government funded defence research and innovation programs of USA, Europe, and Israel. The rise of Israel as a global powerhouse in the field of high tech innovation and entrepreneurship, can be solely credited to its defence forces, creating thousands of high-growth enterprises, generating employment for the largest pool of the most highly skilled technology workforce, and building world-class universities engaged in pioneering research on par with the best.

The defence sector has been the cradle of the most impactful and transformative technologies, which not only strengthened the armed forces with world-class products but also revolutionised many of the civilian sectors including aerospace, automobiles, healthcare, space, telecom, digital-media-internet, manufacturing & logistics etc., with the most disruptive industrial products and consumer services.

The launch of iDEX is therefore a major milestone for not only the tech startups entrepreneurship ecosystem in India, but for fuelling the transformation of the innovation capacity and output of our nation. The added advantage being that we can fully exploit the rapidly rising startup ecosystem that has gained global salience in tech startups and VC investments, riding the highly capable talent base we are endowed with.

Over the past few months as we stepped up our efforts to bring together the different stakeholders of the defence ecosystem, we collected and studied data to map out the current state of technology oriented innovation and entrepreneurship activities. In doing so we came up with the idea to undertake a more organised effort to catalog the innovative companies in the form of a directory - both enterprises (companies older than 5 years) and startups (companies younger than 5 years), engaged in cutting edge technology/product development serving the needs of the defence and aerospace sectors. On the occasion of the Aero India 2019, we decided to deliver the first outcome of this process, a directory of innovative companies engaged in different technology and product segments of the aerospace sector both defence and civilian. On date, the count is nearing the 200 mark, and will be further expanded when we include those companies engaged in serving homeland security, terrestrial, naval, and marine applications within the armed forces.

Going one step further, we decided to launch a coffee table book to recognise some of the winning champions (enterprises) and rising stars (startups) to serve as role models that inspire the next generation of innovators and entrepreneurs. As to the title of the book TRAILBLAZERS, well it is but most befitting.

The selection of 12 Enterprises and 24 Startups was a tough call with respect to choosing from among the 150+ options available, as recommendations poured in from global aerospace majors (AirBus, Lockheed, Boeing), ecosystem enablers (DST, Atal Innovation Mission, NASSCOM), defence services & DPSUs, iDEX partner incubators, and industry associations, which in itself is a strong indicator of the health of the ecosystem that iDEX aims to galvanise. The chosen ones represent a diverse mix covering innovative tech powered business models delivering commercial aerial solutions, advanced aerostructures and materials, satellite communications, indigenously designed autonomous aircrafts and payloads etc., another important consideration that influenced our selection. The exacting time constraints within which this project was executed, meant that we could only come up with an indicative list of companies featured as role models and included in the directory. However, the project has enormously invigorated us both to publish a sequel in the near future and an exhaustive version of the directory even sooner.

We thank the many persons and partners, who supported us in the realization of the first edition of TRAILBLAZERS.

*\* Information about Enterprises and Startups presented in the book is based on specific inputs received from the companies, combined with information sourced from their webpages only, and edited to read consistently and to normalise the terms;*



**Sanjay Jaju, IAS**  
Joint Secretary, Dept of Defence Production  
Min. of Defence, Govt. of India  
CEO, iDEX (DIO)



**Vish Sahasranamam**  
Co-Founder & CEO, FORGE  
iDEX Partner Incubator





सत्यमेव जयते

रक्षा मंत्रालय  
MINISTRY OF  
DEFENCE



Concept & Design



iDEX Partner Incubator