

November 21, 2018

Listing Department
National Stock Exchange of India Ltd.
Exchange Plaza, C-1, Block G
Bandra Kurla Complex,
Bandra (E),
Mumbai- 400051
BSE Scrip Code : 532395

The Manager
Dptt. of Corporate Services
BSE Limited
Floor 25 Phiroze Jeejeebhoy Towers
Dalal Street, Fort,
Mumbai – 400 051
NSE Symbol: AXISCADES

Dear Sir,

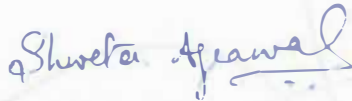
Sub.: Analyst and Investor Event - Presentation

Please find attached the presentation for the Analyst and Investor Event held on November 20, 2018.

This presentation is the information for shareholders on the various product offerings of the Company.

Kindly upload presentation to the terminals.

Yours truly,
For **AXISCADES Engineering Technologies Limited**



Shweta Agrawal
Company Secretary

AXISCADES Engineering Technologies Limited

CIN No.: L72200KA1990PLC084435

D-30, Sector - 3, Noida - 201 301, Uttar Pradesh INDIA Ph: +91 120 451 8200 / 8300 Fax: +91 120 244 2921

Reg. Office: Block C, Second Floor, Kirloskar Business Park, Bengaluru - 560 024 Karnataka INDIA
Ph: +91 80 4193 9000 Fax: +91 80 4193 9099 | Email: info@axiscades.com | www.axiscades.com

AXISCADES Engineering Technologies Limited

Poised for growth

November 20, 2018



AXISCADES

Inspired Solutions. By Design

Certain statements in this communication may be considered as ‘forward looking statements’ within the meaning of applicable laws and regulations. These forward-looking statements involve a number of risks, uncertainties and other factors that could cause actual results to differ materially from those suggested by the forward-looking statements. Important developments that could affect the Company’s operations include changes in the industry structure, significant changes in political and economic environment in India and overseas, tax laws, import duties, litigation and labour relations.

AXISCADES Engineering Technologies Limited (ACETL) will not be in any way responsible for any action taken based on such statements and undertakes no obligation to publicly update these forward-looking statements to reflect subsequent events or circumstances.

Market Outlook – Engineering Services



FY17 Source: Nasscom

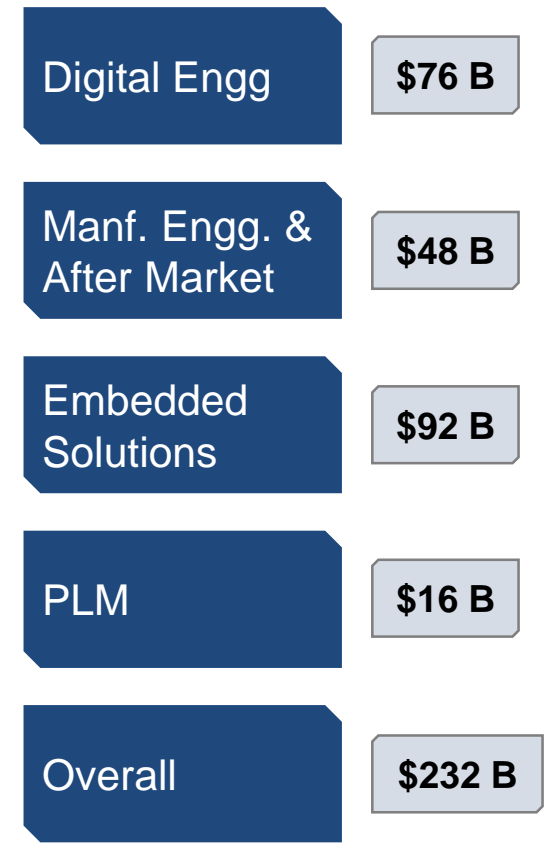
Indian ER&D segment is expected to grow 3X by 2025 to reach anywhere between USD 70-90 billion, a CAGR of 15%.

Industry trends

- Digitization
- Platform Consolidation
- Localization
- Sustainability
- Reverse globalization
- Feature Enhancements
- Cost optimization

Key Technology Drivers

- Internet of Things
- Connected Factory
- Advanced Sensors
- Automation
- Data Analytics



June' 2018 Source: Hfs ER&D Report

Addressable market by Industry and Service

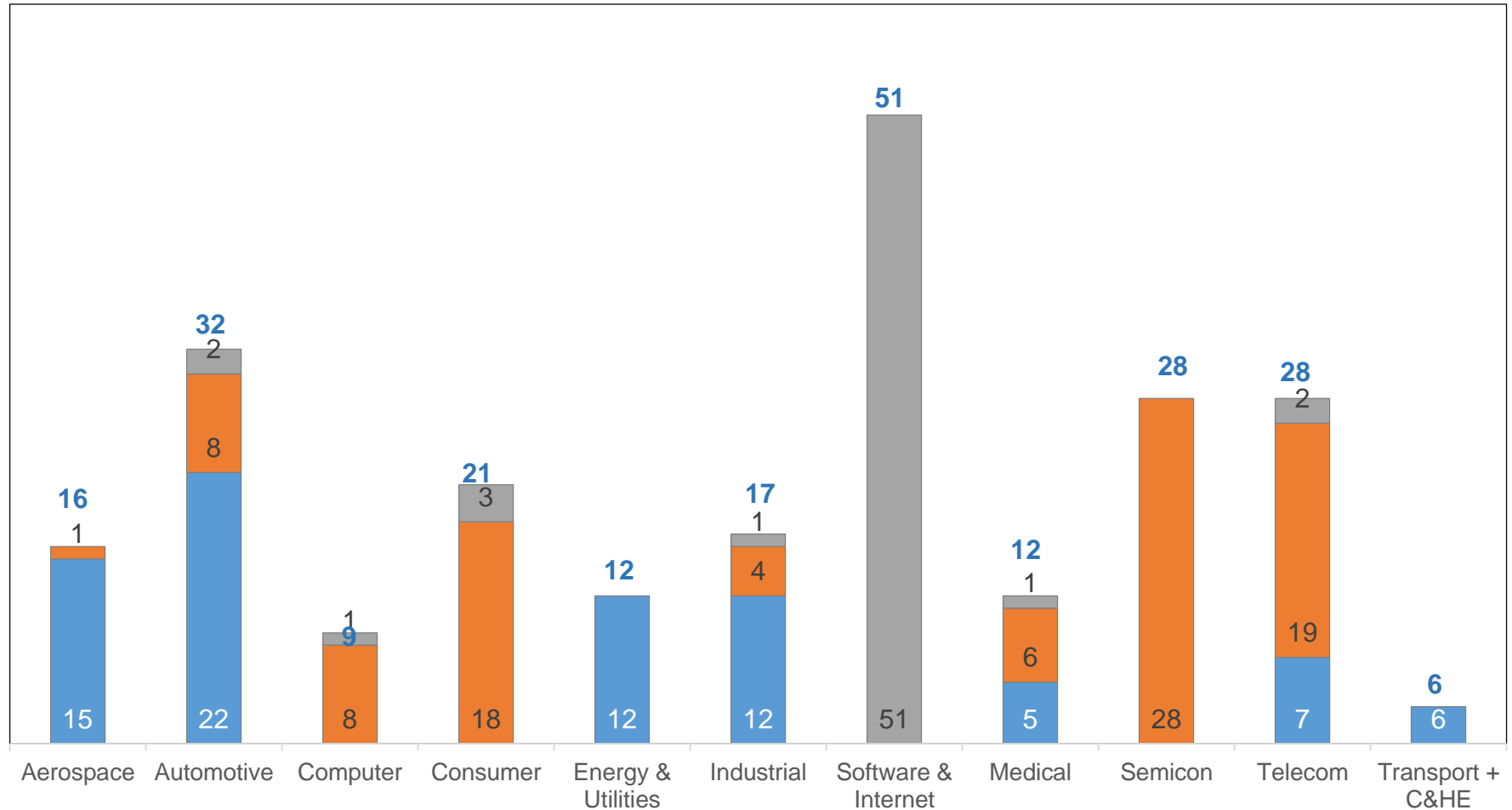
ER&D globalization & services addressable market stands at USD 232 BN with Embedded & Software services constituting ~66% of the total market

Overall
\$ 232 B

64
PLM + MFG

92
Embedded

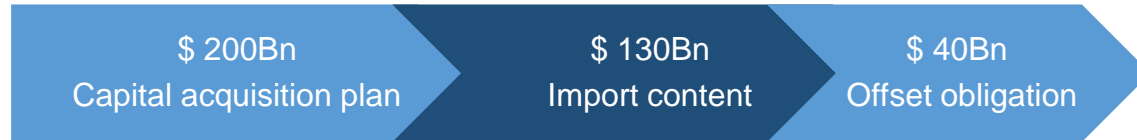
76
Digital Engg



Source: Zinnov Report 2017

Market Outlook – Product & Solutions & Offsets

Make In India and Offsets



Source: FICCI

The offset opportunity can grow to over **USD 8 billion** per annum in the next few years based on the current capital purchase requirements of Buy Global.

Key Drivers

- Modernization
- Indigenous product development
- Manufacturing support
- Offsets
- Global supply chain partner

Defence R&D – DRDO Labs

FY19 – ₹ 9600 Cr

Source: Secondary Online Research

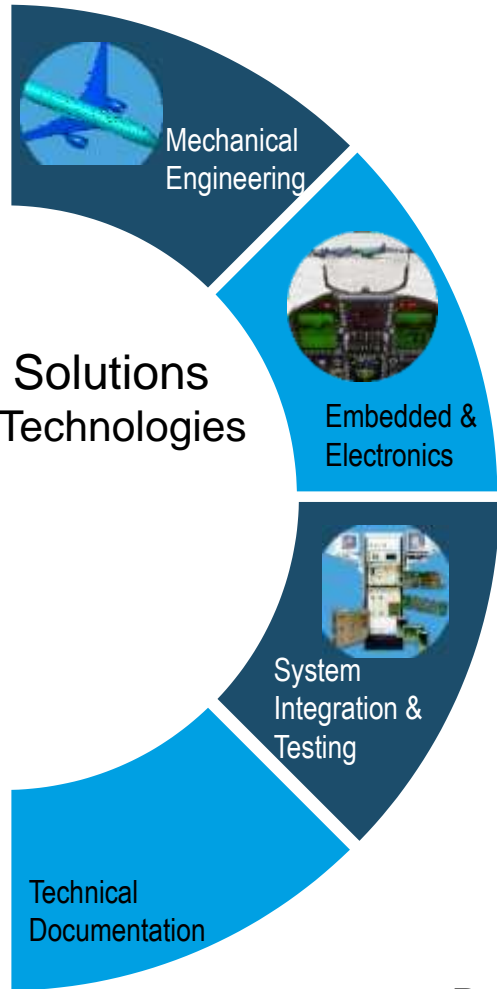
Key Drivers

- Modernization
- Indigenous product development

AXISCADES is a leading Product Engineering & Defense Company



Product Engineering Solutions enabled by Digital Technologies



Concept Design | Structures Engineering
Avionics | Manf Support

Aerospace



System Integration | Systems Engineering
Electronic Warfare Systems | SCM

Defence
& Homeland Security



Design and Analysis | NPD
Telematics | HMI

Automotive



Vehicle Engineering | Telematics |
ADAS | AUTOSAR

Heavy Engg.



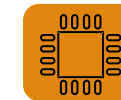
Mechanical & Electrical Engineering |
Automation | IoT

Energy



Assistive Technology | Wearable
Electronics | Remediation | System
Engineering

Medical & Healthcare

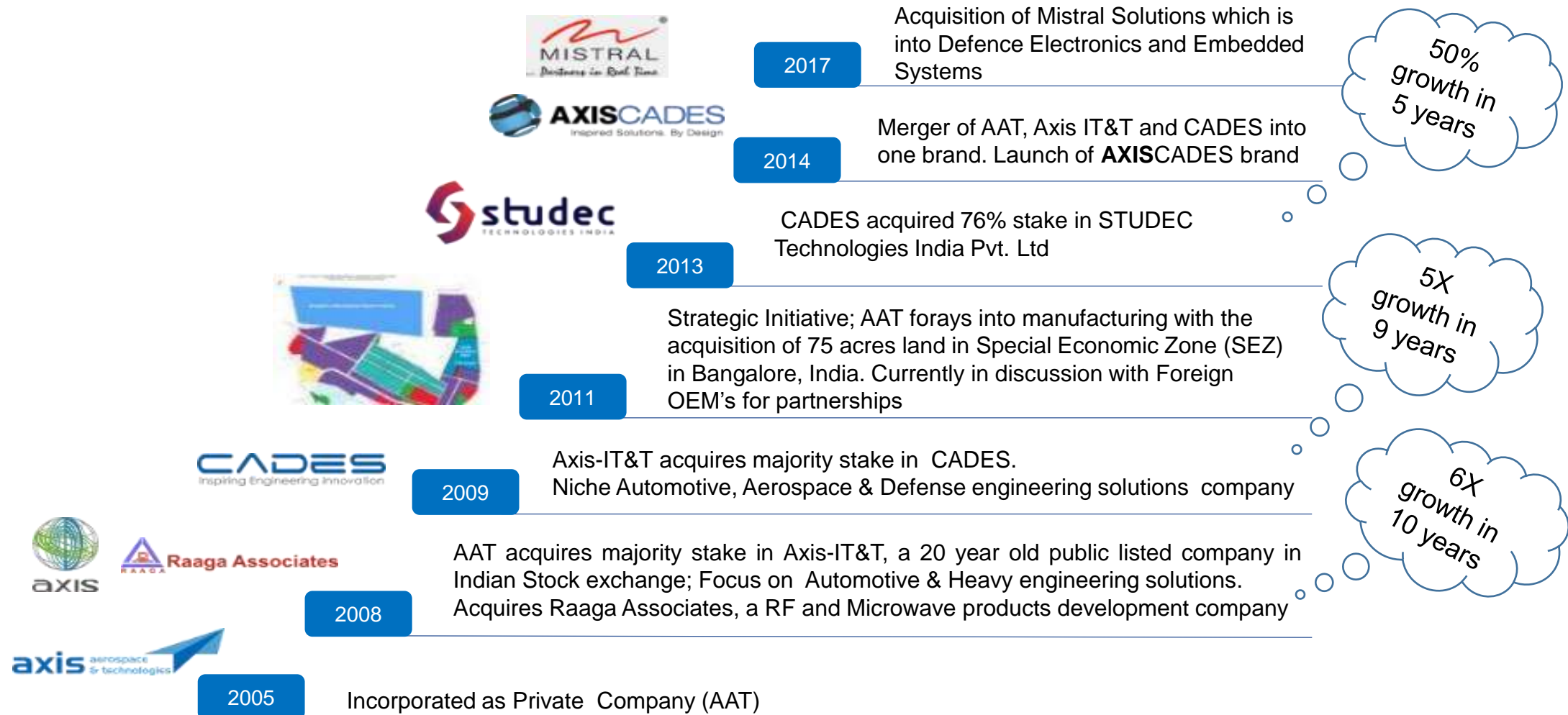


Platform Development | Design |
Testing

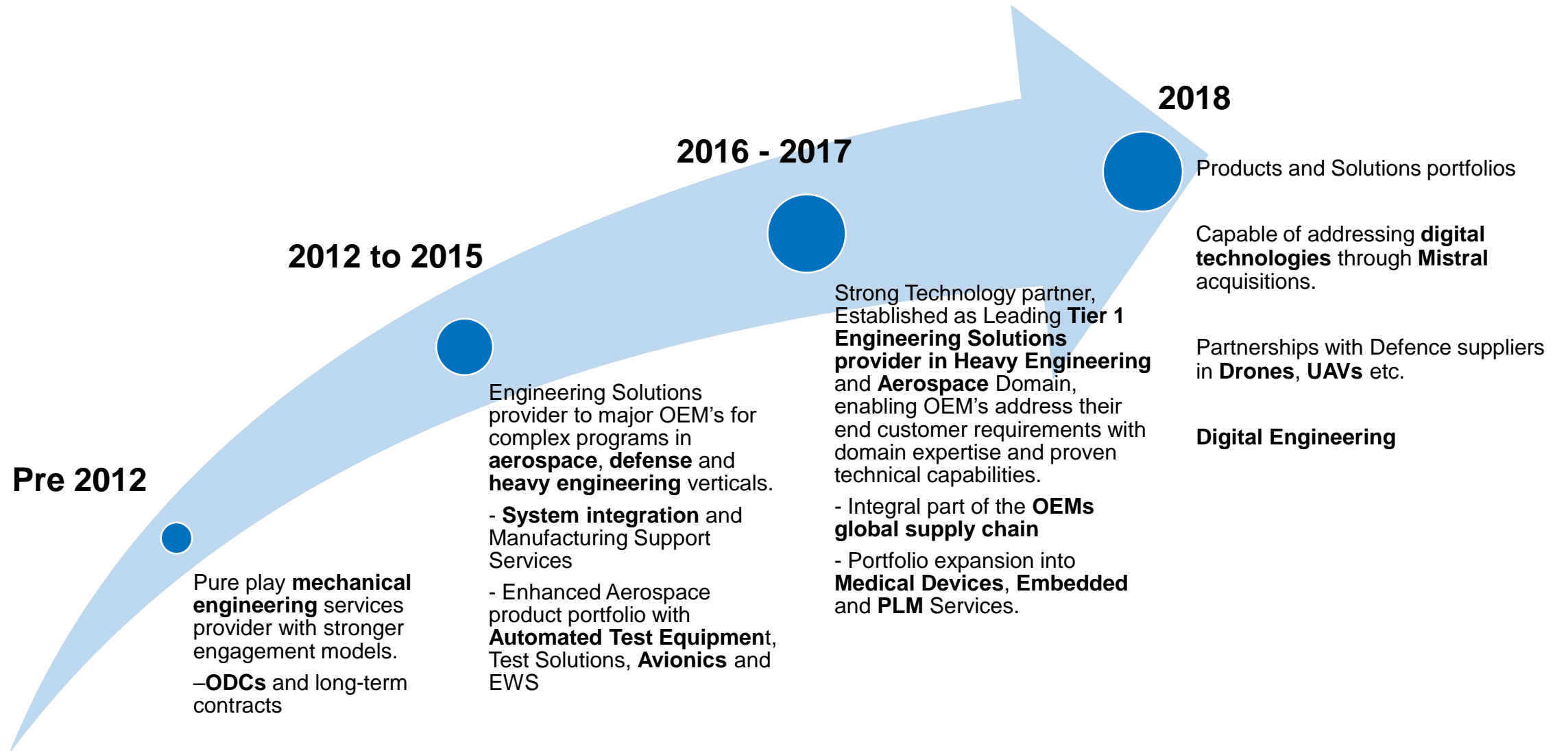
Semiconductor

Public Listed Company (NSE: AXISCADES & BSE: 532395)
Strategic partner to global OEMs for innovative, & smarter product.

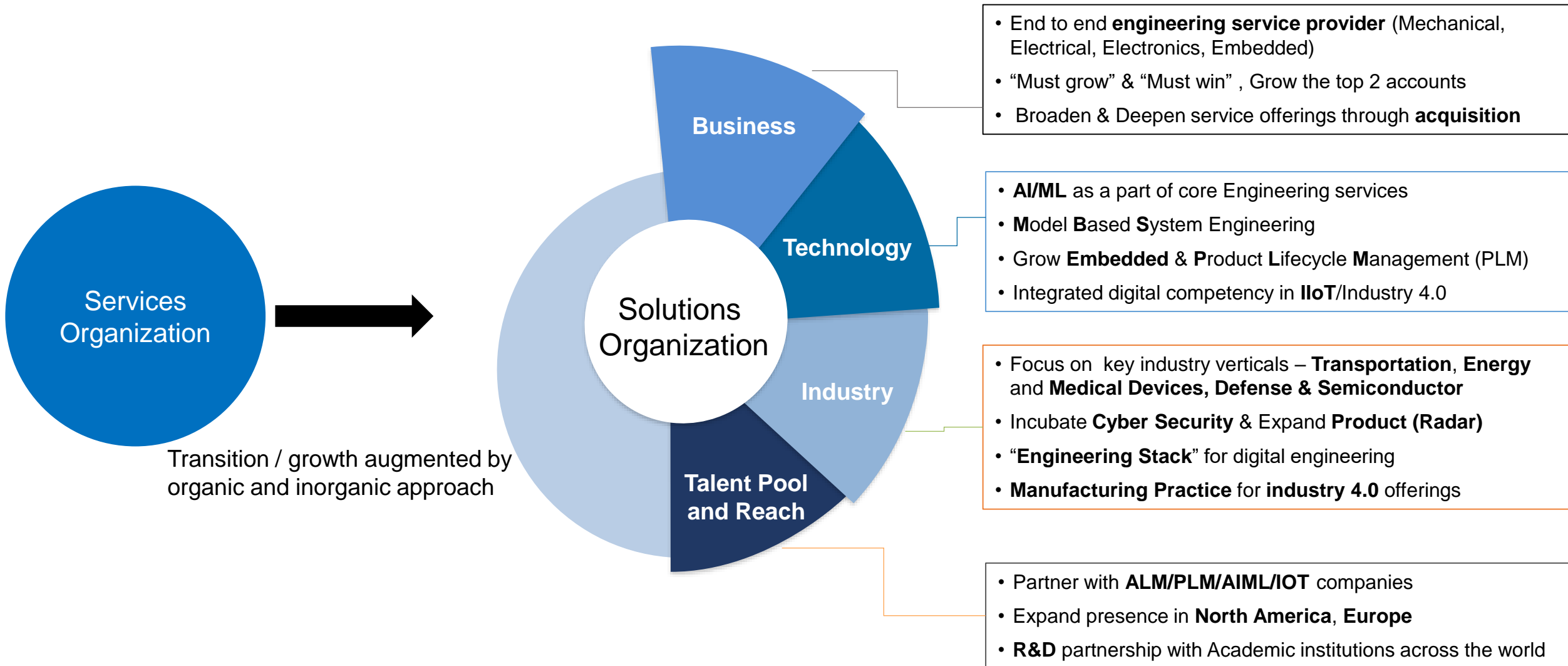
Strategic acquisition gave us diverse service & product portfolio



Built on a strong foundation of engineering poised for growth



Strategy aligned with transformation in industry



Focused vertical Transportation (Auto, Aerospace, Heavy engineering), Energy, Medical Devices & Defense



Automotive

- Preferred partner for EU and NA Auto OEMs
- Commercial vehicles, Trucks, Buses, Cars & SUVs
- Engineering Solutions in BIW/CIW, Chassis, Powertrain, Interiors, Plastics, Localization, Prototyping and SCM
- Body control & display electronics, Advanced Driver Assistance, Telematics and Infotainment, Active and Passive safety systems, After market solutions – like TPM

Heavy Engineering

- Largest ESP to NA OEM
- Commercial, Forestry, Construction, Turf, Agricultural, Engines
- Engineering Solutions in Structures, Lube system, Hydraulic, Mfg. Engg.
- Machine control and Off board systems, Telematics and Fleet management, Active and Passive safety systems

Aerospace & Defence

- Strategic partner to top 3 of 10 OEMs of Commercial, Business, Military and Special purpose aircrafts
- CoC's in Structures, Interiors, Avionics, Systems & Mfg. Engg.
- Design, Analysis, Simulation, Mfg Engg, In service support, Tech pub
- AP1020 design approval authorisation
- Technology products & solutions for Air, Land, Naval, & HLS
- EWS, Simulations, C4I2, ATEs, GHE, GSE, Mfg support, SCM
- Licensed to undertake defence manufacturing & India Offset Partner (IOP)
- Defence & Homeland Security
- Radar , Sonar and RF Design

Energy

- Dedicated Offshore Development Center for European OEM
- Mechanical Engineering, Electrical Engineering and Technical Publications
- Tower, Generator, Rotor Hub, Spinner, Nacelle, Yaw, Blade Tooling, TeamCenter Reuse Library
- JV with Assystem for Nuclear Energy

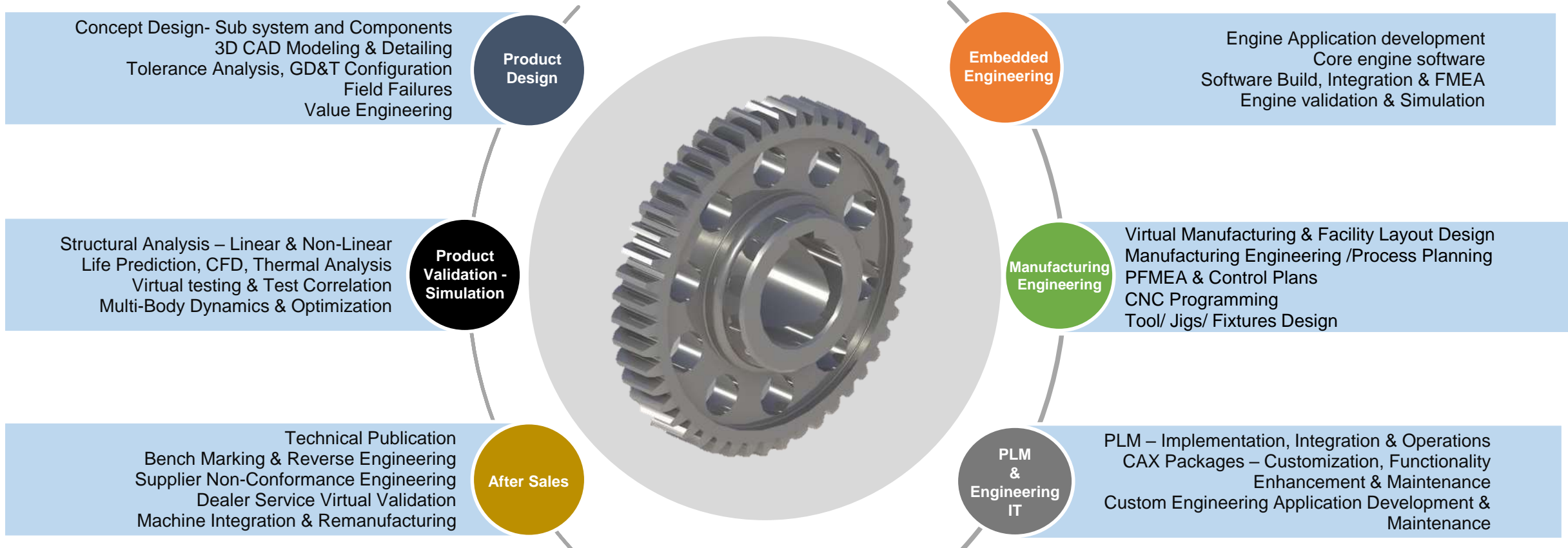
Medical Device

- ISO13485 Certification
- Engaged in Orthopedic, Patient Monitoring Systems & Lab / Hospital Equipment Segments
- Product development with Electro Mechanical Packaging
- Value Engineering with Localization for existing/emerging markets
- Regulatory compliance Services

All pictures are indicative

An end to end engineering services provider..

End to End Engineering solutions provider - Concept → Assembly → After sales product support

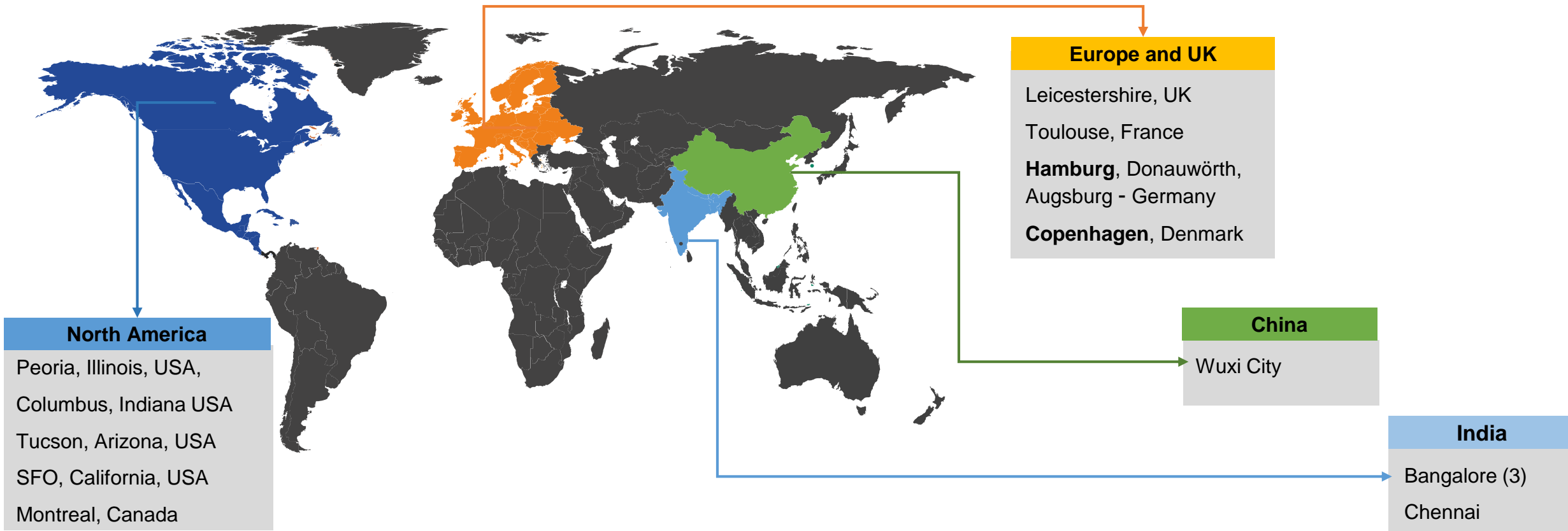


Multi-program & Multiple OEM Experience in Engines:

- Close to 3 decades of experience in serving the Engines industry
- Established ecosystem of partners across industry
- Axiscades tie up with engine service centers for associate training & competitor bench marking.
- Co-partnered with customer for 15 patents in recent past.

All pictures are indicative

..With global footprint with local engineering capabilities



Multinational teams

2300
+

Engineers delivering customer delight

Global Engineering Centers

15

State of art Global Engineering Centers to reduce the program risk & time to market

..and in partnership with industry leaders and innovative companies



Partner of choice for tier 1 OEMs and innovative engineering companies

Preferred strategic partner



8 ODCs
Deep-rooted relationships with industry leaders

Enabling customers across transnational locations


Skilled Multinational teams



2300+
Engineers delivering customer delight

7 yrs of avg experience
PhD, Mtech and BE graduates


Process & Best practices



Industry specific certifications and best practises addressing customer requirements

ISO, ISO/IEC, AS9100C
ISO 13485, AUTOSAR
DO 178B, CEMILAC


Domain Expertise



6 verticals
Deep domain expertise and proven capabilities

Technology intensive industries - Aero, Def, Auto, HE, Energy, Medical & Healthcare

Global Footprint – Closer to customer



15 Global Engineering Centers across North America, Europe and APAC

Proximity centres at Toulouse, Hamburg, Augsburg, Peoria, and Denmark

Partner eco-system



18 partners

Reliable ecosystem delivering one stop solution

..built on long term partnership with deep engineering capabilities

5 years contract
for 250 enggrs.

- **May 12, 2011: CADES awarded Aerospace OEM Strategic ODC 1.0 Partnership**

“CADES (an AAT group company), a leading Engineering services company has added another feather in their cap by winning an Aerospace OEM Strategic ODC partnership.”

3 years contract
for 100 enggrs

- **September 24, 2015: AXISCADES signs contract with European Wind Power Company**

“The Bengaluru-based engineering and designing services company AXISCADES Engineering Technologies Limited today announced the signing of a long-term strategic contract with European Wind Power major, a global manufacturer of wind turbines.

As part of the contract AXISCADES will set up a dedicated overseas development center(ODC) at Hyderabad with 50 engineers to serve European Wind Power Company”

3 years contract
for 300 enggrs.

- **December 1, 2016: AXISCADES fortifies their leadership position in Aerospace Engineering - wins European Aerospace OEM ODC 2.0 contract**

“European Aerospace OEM has signed a strategic agreement with AXISCADES to provide a range of critical engineering services for product development and manufacturing support for all European Aerospace aircraft programs.”

AXISCADES has proved to be a reliable partner for long-term relationship.

Board of Directors



Dr. Vivek Mansingh
Independent Director
(Chairman)

An innovator and highly accomplished global thought leader with excellent blend of business, technical & leadership skills Ex. Vice President, at Cisco Systems India



Mritunjay Singh
Chief Executive Officer and
Executive Director

Ex. Executive Director and President of Persistent Services Business responsible for operations across products, platforms and services. Also worked with Infosys, Kanbay and Tata Steel.



Anees Ahmed
Executive Director

Co-founder of Mistral, actively involved in the strategic planning and new business initiatives of the company with his astute business acumen and exemplary vision. Active member of Entrepreneurs Organization (EO) and Young Presidents Organization (YPO).



Sudhakar Gande
Non Executive Director

An acknowledged investment banker and a visionary who has architected the success of several venture developments. Chairman, FICCI – Aerospace and Air Defence Task Force and Member, National Executive Committee, FICCI



Ashwani Kumar Datta
Non Executive Director

Ex-Chairman & Managing Director, Bharat Electronics Limited (BEL). Has extensive experience in Development & Engg., Production, & installation / commissioning of complex Radar & Communication Systems.



Sidhartha Mehra
Non Executive Director

A qualified Chartered Accountant with a rank from ICAI and Company Secretary from ICSI. Ex. Vice President at GE Capital



K.M. Rustagi
Independent Director

Fellow member of the Institute of Chartered Accountants of India and an Associate Member of the Institute of Company Secretaries of India.



Srinath Batni
Independent Director

Has a worldwide leadership experience in Strategic Groups & Customer Delivery including Retail and Telecommunications Business.



Pradeep Dadlani
Independent Director

Consultancy and Corporate experience in varied sectors & functional areas such as IT, Media. Telecom, Environment, Industry



Mariam Mathew
Independent Director

Rich work experience in the IT industry and has worked with several global companies including WIPRO, Cyient, CMC

Dynamic & Adept Management for Execution of Future Plans



Mritunjay Singh
Chief Executive Officer & Executive Director

Mritunjay Singh (Munjay) brings decades of experience and has proven record of taking customer-centric technology companies to the next level of growth.

His previous role was Executive Director and President of Persistent Services Business. He was COO of the company responsible for operations across products, platforms and services. He was instrumental in strengthening company's sales and delivery capabilities and was responsible for growth in USA and Australian markets. He was driving the India government business as part of new market expansion. He turned around company's legacy business and put it on a growth trajectory.

Prior to Persistent, Munjay was with Infosys for over a decade and last served as head of Financial Services Application Delivery and Pune Development Centre. He also worked with Kanbay and Tata Steel.



Kaushik Sarkar
Chief Financial Officer

Kaushik's experience spans over two decades in the field of Financial and Business operations. His professional expertise includes Business Partnering, driving operational efficiency and Automation, Financial Planning and Analysis, Instituting internal control and systems, Strategy and acquisitions, Relationship and Change Management, Treasury, Tax & Compliances.

In his earlier role, Kaushik has been a Senior Director and Head of Finance and Operations for Adobe Systems India, responsible for growing the Indian operations and driving profitability. Prior to that he spent 8 years as Senior Director Finance for Oracle in India & in USA. At Oracle he was instrumental in setting up finance Shared Services centre and partnering; driving the global Cloud computing business to a profitable growth trajectory. He has a wide ranging leadership experience with Siemens India & in Germany for around 8 years.



Mitalee Dabral
Head HR

Mitalee Dabral is head of HR for AXISCADES. She has over 16 years of HR generalist experience in Human Resources across leading organizations in India. She holds an HRM (Human Resource Management) degree from TISS (Tata Institute of Social Sciences -Mumbai) 2002. She has held diverse leadership responsibilities as a Strategic HR Business Partner to support business agendas and create high performing HR teams.

Mitalee, until recently was Director HR at ANI Technologies - Ola cabs. She was responsible for HR Service Delivery across multiple Business Units. She was instrumental in setting up and strengthening company's HR Policies, processes and HR service delivery capabilities in various HR aspects.

Prior to Ola, Mitalee was with Accenture, Patni & Infosys where she was leading the HR function for Product Lifecycle and Engineering Services Unit.

Dynamic & Adept Management for Execution of Future Plans



Sharadhi Babu
Whole-time Director – AXISCADES Aerospace & Technologies

Sharadhi is an Aeronautical Engineer, a Software Professional and an Entrepreneur with over 25 years of industry experience.

Sharadhi has served as an Aeronautical Engineering Officer in the Indian Air Force handling technology and operations of Radar, Communication, Data Handling and associated systems. His work experience in the field of Software Engineering spans across several cutting edge technologies, Product Development, Systems and Application Development, Designing, Architecting, Building and Delivering several innovative products and many huge, complex Software Systems of Networking, Wireless and Wire-line Communications and blend of Open and Embedded Systems domain expertise. Sharadhi co-founded M/s Adanya Technocrats and worked as its Chief Operating Officer.



Ajay Sarin
Sales – North America

Ajay has over 24 years of experience in sales, strategic business development, CRM, brand building and executing new initiatives. Prior to AXISCADES, Ajay was working with ALTRAN as Director - Business Development. He has worked in different industries like Oil and Gas, IT and global Engineering product companies like Rolta, Autodesk, ESRI, and Trimble where he has managed domestic and international business development. He has been instrumental in initiating strategic partnerships towards long term growth.



Anees Ahmed
Founder & President – Mistral and Executive Director AXISCADES

Anees, co-founder of Mistral, has played a guiding role in moulding the company to become one of the most respected global players in the embedded technology domain. He is actively involved in the strategic planning and new business initiatives of the company with his astute business acumen and exemplary vision.

An entrepreneur since the age of 23, Anees has over 25 years of Sales and Business Development experience. Prior to setting up Mistral, Anees had a successful career at Pertech Computers Ltd. and Cranes Software. Anees holds a Bachelor's Degree in Computer Science Engineering and is a graduate from MIT's "Birthing of Giants" program.

Dynamic & Adept Management for Execution of Future Plans



Anjan Kumar
Sales Auto, India and GIC

Anjan is Vice President and Head of Sales (APAC) and Automotive portfolio for AXISCADES. He is a Business leader with more than 20 years of experience in various Client Sales and engagement stints in Engineering and IT Services organisations. His domain competence is largely with Automotive and Manufacturing. He has grown new Businesses, managed large global Accounts (revenues upto \$65M) in the US, Europe and APAC markets.

His tech consulting experience from his earlier years has helped carving out compelling value proposition for the Clients.



Abhijit C
Head, Alliances

Abhijit has appx 14 years of experience in the product engineering space working for large enterprises in the discrete manufacturing ecosystem. He leads our industry 4.0 strategy working with our global alliances like Siemens PLM, Dassault Systemes, Altizon and Aras corporation.

Abhijit joined us from Persistent Systems where he was heading the PLM practice heading large consulting and system integration projects for some of the largest enterprise customers in aerospace, industrial and automotive space.



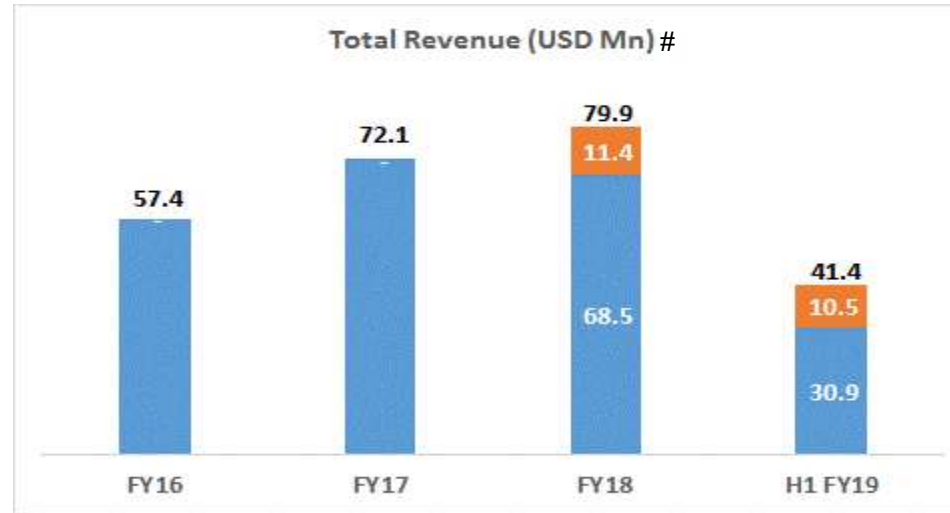
Paddy Rao
Director Sales – Aerospace, North America

Paddy Rao comes with significant experience of Sales in large tier 1 company. He was a Country Manager for tier 1 company before he started his sales enablement consulting firm. He comes with 30+ years of global business development experience having worked in Asia, Europe and North America.

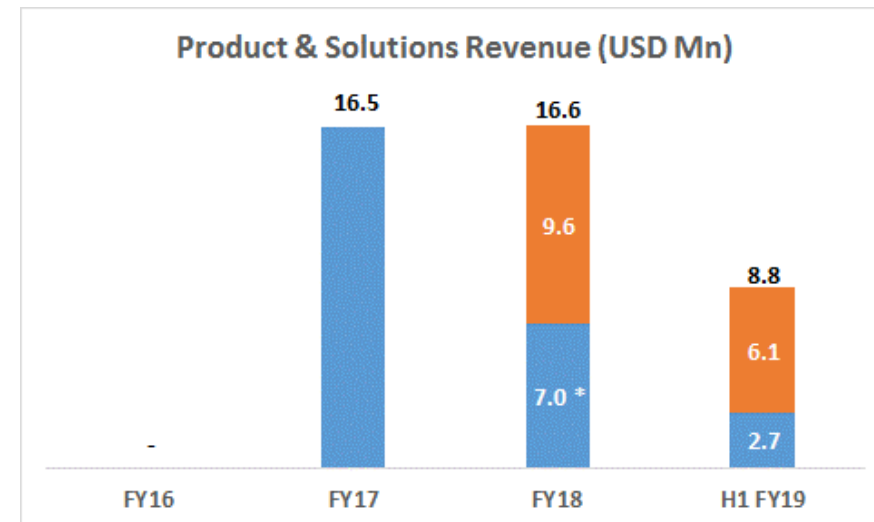
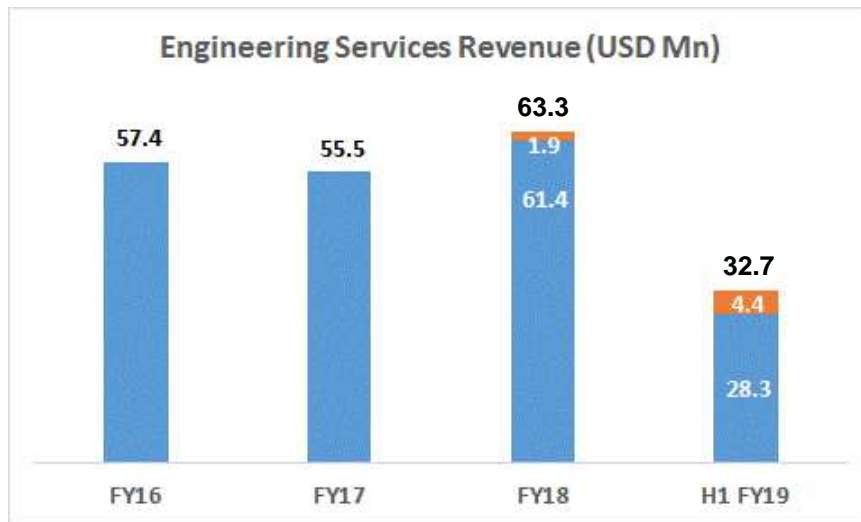
During his 12 years stint at Infosys NA, he led several wins that included multiple OEDCs generating over \$1.5 Billion to Infosys from US, Canada and European clients Driving exponential market growth and winning marquee clients like Boeing, Airbus, Bombardier, Gulfstream, Spirit, Delphi are his forte

A Six Sigma MBB & Champion with Masters in engineering and another in Management , he earned his stars in HAL, GE, Delphi Auto & Infosys.

We are coming off the biggest dip in manufacturing industry



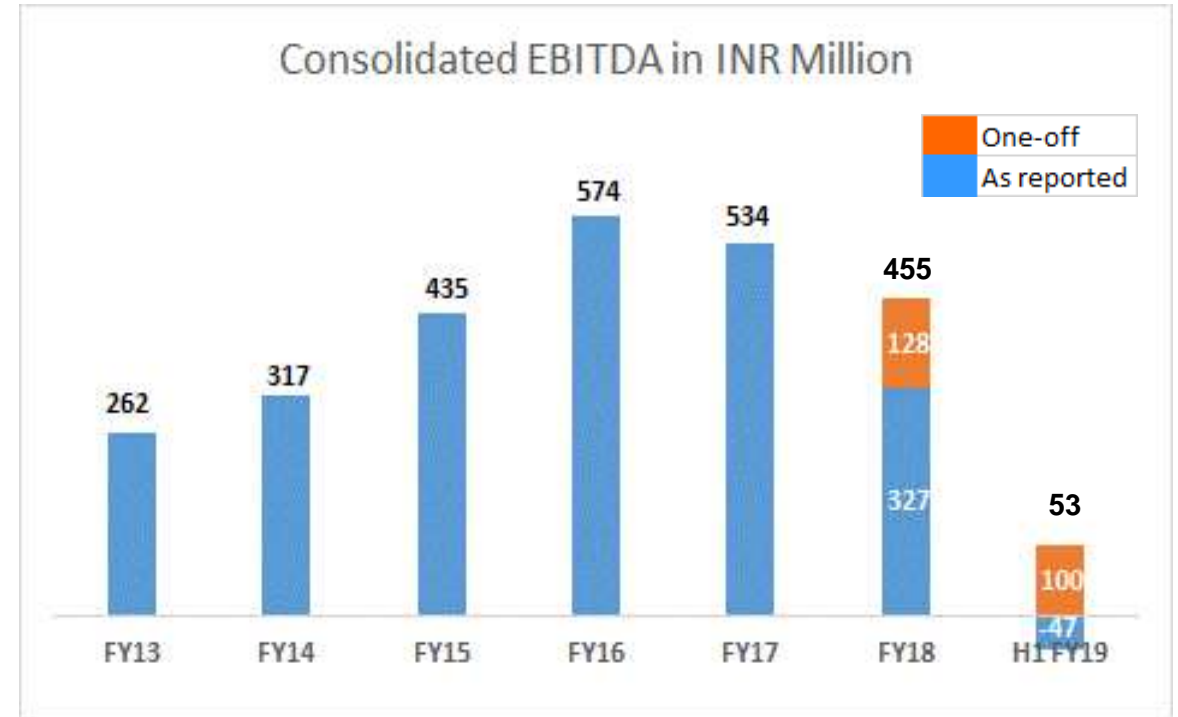
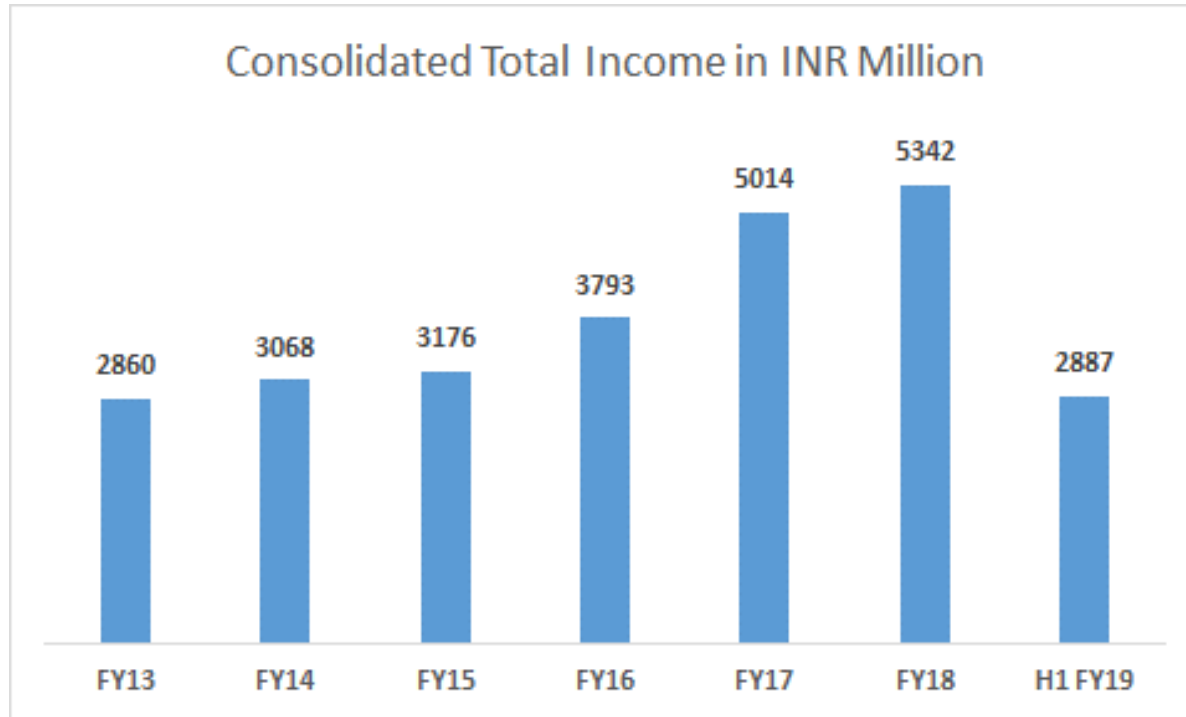
■ Acquisition
■ Organic



Includes the revenue of USD16.5 Mn of ACAT acquired in FY17

* Decrease mainly due to end of cycle of large offset Contract

Consolidated Revenue and Margin Trend



Notes :

Revenue and EBITDA from FY17 is inclusive of ACAT. Revenue and EBITDA of FY18 is inclusive of 4 months revenue and EBITDA of Mistral
 Decrease in EBITDA in FY17 is mainly due to completion of production phase in M2K project
 Decrease in EBITDA in FY18 is mainly due to decrease in revenue in ACAT and also impact of one-offs to the tune of INR 12.8 Crores in Q4 FY18

Revenue matrix

Revenue By Vertical (%)	FY16	FY17	FY18	H1 FY19
Engineering Design Services	100.0%	77.2%	79.4%	78.7%
Product & Solutions	0.0%	22.8%	20.6%	21.3%

Revenue by Delivery Location	FY16	FY17	FY18	H1 FY19
Onshore	54.0%	43.2%	48.1%	42.8%
Offshore	46.0%	56.8%	51.9%	57.2%

Revenue by Project type	FY16	FY17	FY18	H1 FY19
Time and Material	64.0%	47.8%	48.8%	51.0%
Fixed Price	36.0%	52.2%	51.2%	49.0%

Revenue by Currency	FY16	FY17	FY18	H1 FY19
USD	73.5%	61.9%	65.8%	66.1%
EURO	5.4%	22.9%	12.6%	8.0%
INR	4.1%	5.5%	12.8%	16.4%
GBP	7.1%	3.3%	3.0%	3.5%
CAD	9.9%	6.5%	5.6%	5.6%
Others	0.0%	0.0%	0.2%	0.4%

Consolidated performance for FY17 includes the performance of ACAT

Consolidated performance for FY18 includes the performance of Mistral Solutions Private Limited for the period December 2017 to March 2018 (INR revenue % for FY18 is higher due to this)

Revenue matrix (Contd.)

Revenue By Industry (%)	FY16	FY17	FY18	H1 FY19
Aerospace	51.0%	38.6%	40.1%	29.9%
Heavy Engineering & Others *	36.7%	30.4%	28.1%	43.6%
Automotive and Industrial Products	7.6%	3.5%	3.6%	3.2%
Energy	4.7%	4.5%	7.6%	2.3%
Product & Solutions	NA	23.0%	20.6%	21.0%

Revenue by Geography	FY16	FY17	FY18	H1 FY19
EUROPE	50.3%	58.7%	43.0%	33.7%
USA	25.3%	23.5%	34.4%	38.4%
APAC	14.5%	11.3%	17.1%	22.0%
CANADA	9.9%	6.5%	5.7%	5.9%

- Others includes Medical

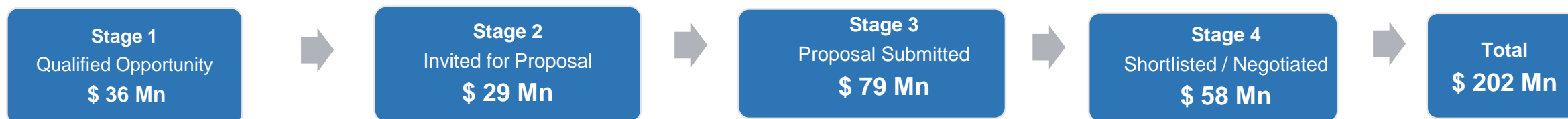
Consolidated performance for FY17 includes the performance of ACAT

Consolidated performance for FY18 includes the performance of Mistral Solutions Private Limited for the period December 2017 to March 2018

Order Book

Vertical	Order Backlog	Order Book
	USD Mn	USD Mn
Engineering Services	10	60
Product & Solutions	22	22
Total	32	82

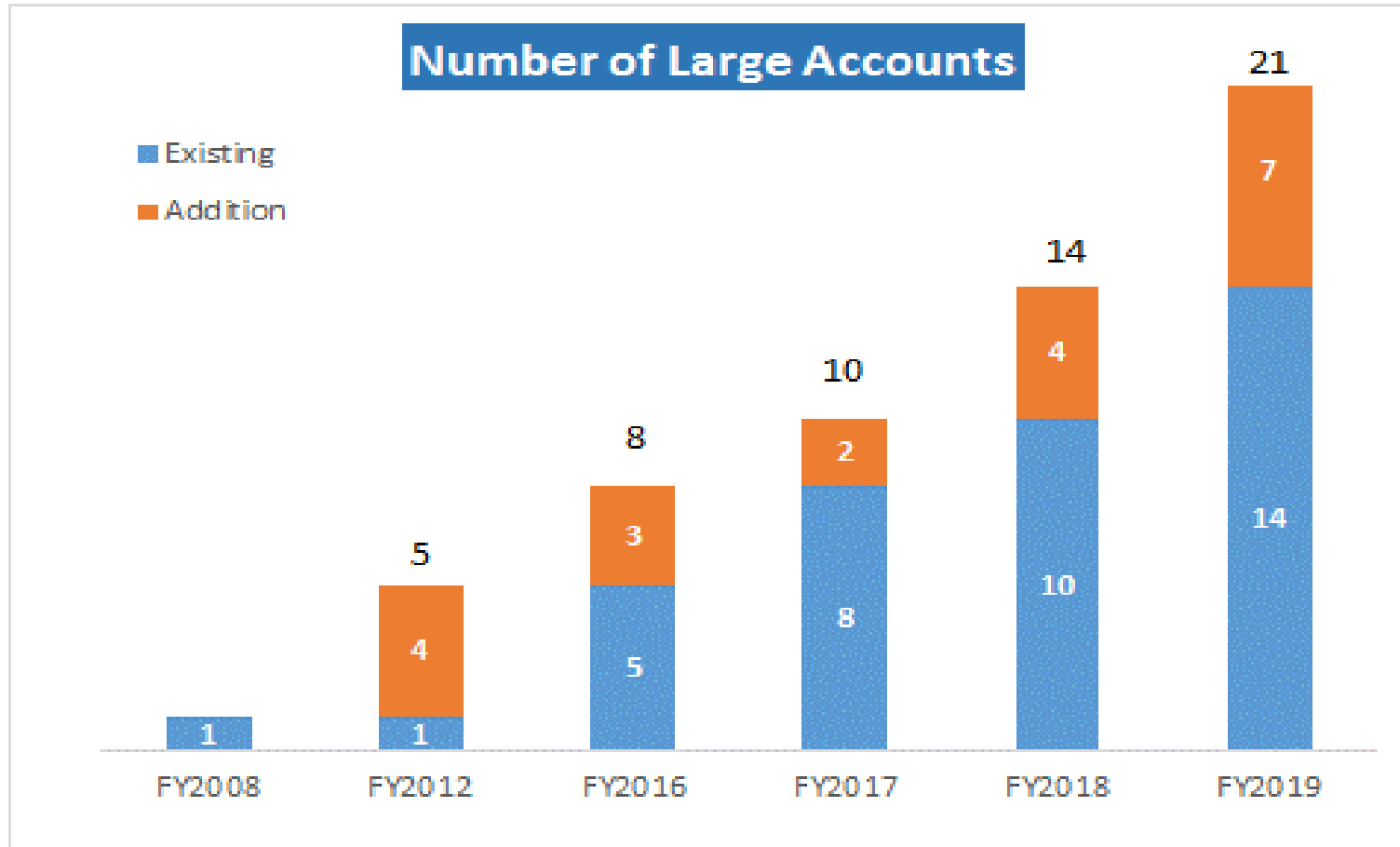
Pipeline as of 30th Oct 2018



Vertical	Stage1	Stage2	Stage3	Stage4	Total
Engineering Services	36	25	67	13	141
Product & Solutions	0	4	12	44	61
Total	36	29	79	58	202

AXISCADES - Growing Client Base

From One Account contributing 100% of revenues in 2008, 14 large accounts to contribute about 83% of revenues in FY18



Revenue at Current runrate	Number of Accounts
> 20 Mn	2
> 5 Mn	5
1 - 5 Mn	14
Total	21

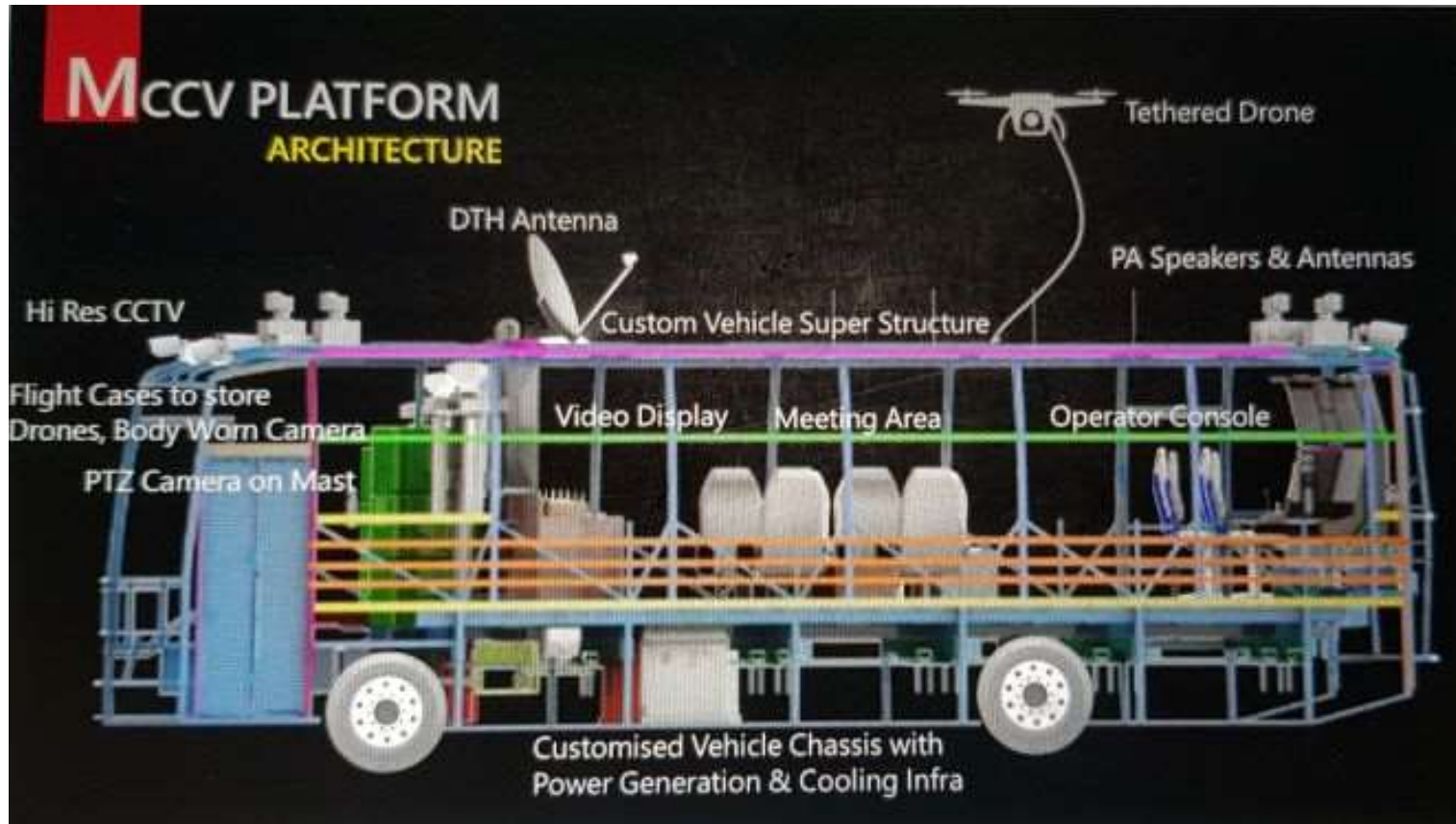
Large accounts = Accounts which has potential to reach > \$ 5 Mn in 3 to 5 Years

Poised for growth

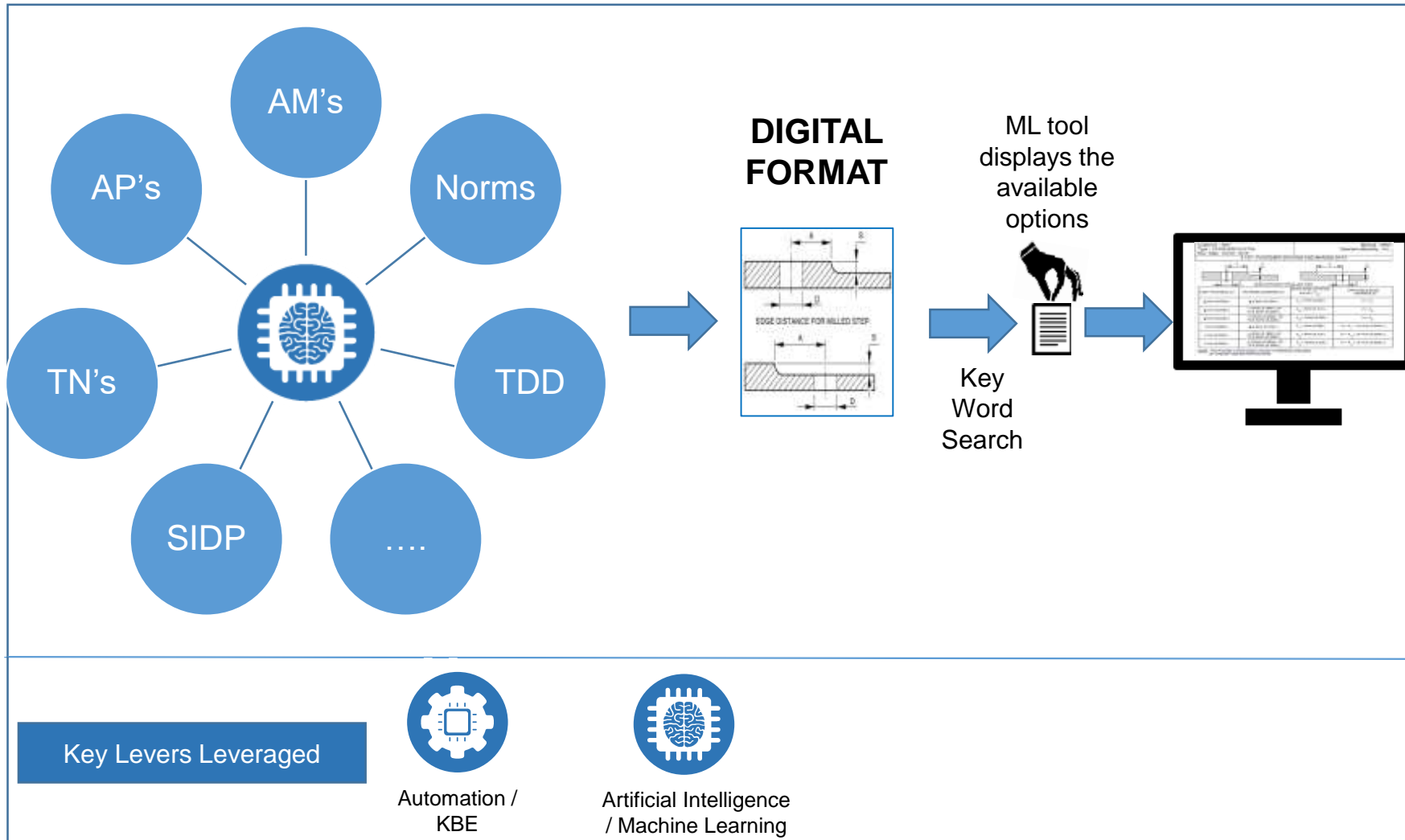
- Engineering Services Market is poised for outsource/right shore
- “Made in India” is the mantra in Homeland/Defence Product market
- Nimble and small company are the ones who will win in this
- Right strategy, right team, right time for transforming the company
- It’s all about execution

Going beyond numbers

Products for Homeland Security



Expanding our market by leveraging Machine Learning, augmented reality ..



- Searches all data-structured, unstructured, images, 3d models
- AI/ML engine makes it searchable
- Reduce non engineering tasks

AI/ML enabled Digitization / Automation for Engineering Activities

Objective:

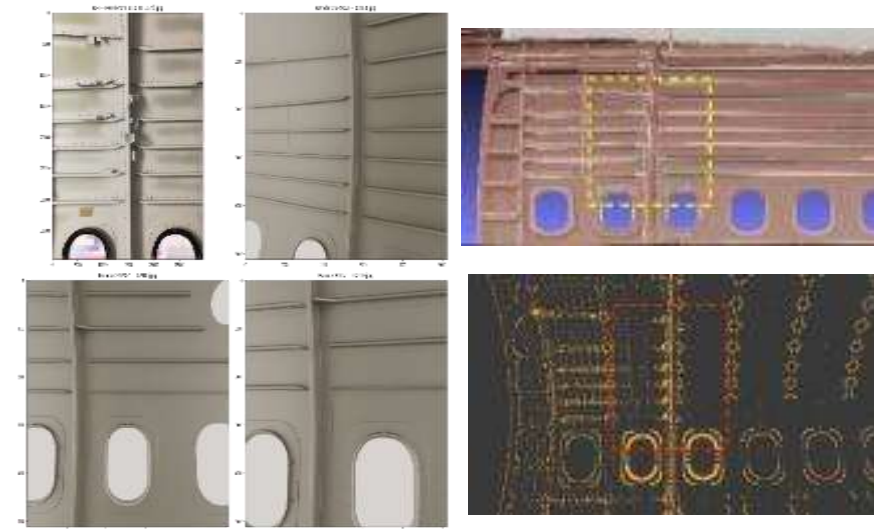
- Digital platform to reduce/minimize the non-engineering tasks in concessions/repairs management
- AIML concepts that identify relevant or similar concessions & repairs
- Address through text, image recognition techniques for the unstructured data and reduction in communication loops with Harmonized Solutions - Agnostic to language

Benefits:

- Reduce the ALT & improves the quality
- Reduces human errors - aided by AR and VR
- Easily scalable and applicable to create hands-free manufacturing environment

#	Title	Scope
1	Smart Plant Engineering Management	<ul style="list-style-type: none"> • <i>Developing AI/ML based application to recognize and provide exactly matching similar/relevant concessions</i>
2	Smart Repair Solutions for In Service Aircrafts	<ul style="list-style-type: none"> • <i>A standard platform / application to record damage details /damage reports across the airliners.</i> • <i>Develop an AI/ML application to recognize & provide an exactly matching or a similar/relevant repair solution</i>
3	Automatic Part Geo-Localization in DMU by using KBE	<p><i>Develop and showcase, automatic geo location recognition of a part in existing DMU of Single Aisle (SA) by keying a Picture of a part or 3D Model of the Part or Cloud of Point or a Mesh (in absence of DMU).</i></p>
4	Digitization for Mechanics	<p><i>Creation of Flowchart and decision tree for SRM activity</i></p>

Geo localisation



We build complex electronics like RADAR & SONAR parts

- » 100% Success rate in every single indigenous radar design since 2007
- » Radar Electronics for Ground, Air & Naval applications
- » Already in production



**Medium Powered
RADAR**



**AEWAC Radar
Processing Unit**



**Through Wall
Radar**



FEP for Ship/Subs



**Locators &
Receivers**



**Low-level Tracking
RADAR**



Multi-function Radar



Snapshot of Our Key Engagements

European Aerospace & Defence OEM

Since 2011

- A dedicated ODC as an extended engineering centre
- E2S supplier status since 2008
- Seamless delivery across 9 transnational sites
- Engagement across divisions such as Commercial, Military, Helicopters and Tier-1 supply chain

North American Off-Highway OEM

Since 2008

- One of the largest Engineering Service Provider to the OEM
- Footprint of 24 locations across the globe
- Engaged across 12+ BUs of the OEM

STRATEGIC PARTNER

WORKFORCE GROWTH

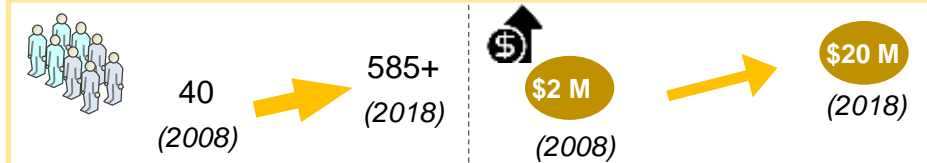
TECHNICAL EXPERTISE

HIGHLIGHTS



- 34 Signatory Authority Delegations
- Primary & Secondary Structures – Concept, Preliminary & Detailed design
- Domain expertise in Metallic and Composites
- Core expertise in Design, Stress and F&DT
- Plant Engineering – Concessions 150,000+ concessions

- Penetrated new geographies such as USA and China
- Foraying into newer domains such as Digitization and Cabin Engg.
- A – rated supplier with consistent quality and quicker turn around time



- Providing engineering solutions across the product lifecycle stages such as Product design, validation (FEA), Manf. Engg., PLM and Engg. IT
- Value addition through Automation and Knowledge Based Engineering
- Niche offerings in Virtual Manufacturing and 3D Plant layout designs
- Domain expertise in Structures, Harness and Routing, Hydraulics, Lubrication systems, Engines and Vehicle Integration

- Moving up the value chain as a strategic supplier partner with unique customer centric engagement models
- Awards and Recognitions for Quality - Gold Award Winner consecutively in 2017
- We are targeting new service lines such as embedded electronics and telemetry across new & existing products

Mistral - 20+ YEARS OF ENGINEERING EXCELLENCE

20+ AWARD
WINNING
DESIGNS

100+ DESIGNS
COMMERCIALY
DEPLOYED

350+
SKILLED
EMBEDDED
ENGINEERS



DRDO Defence Technology Absorption Award

STPI Karnataka IT Exports

EDN Winner of Hot 100 Products 2011

Red Herring 100 Award – 2008

Winner of Innovation Award - 2008

India SME 100 Awards 2017

FedEx IBL Award 2010

UBM ACE Awards 2012

NASSCOM Winner of Innovation Award - 2008

Global Services 100

AEROSPACE & DEFENSE

- Airborne Systems
- Electronic Warfare
- Naval Systems
- RADAR
- RF Solutions
- SONAR
- Telemetry

HOMELAND SECURITY

- Master Control Room
- Mobile C4ISR Platforms
- Tactical Communication Systems
- AI & Video Analytics
- Drone Solutions

PRODUCT ENGINEERING

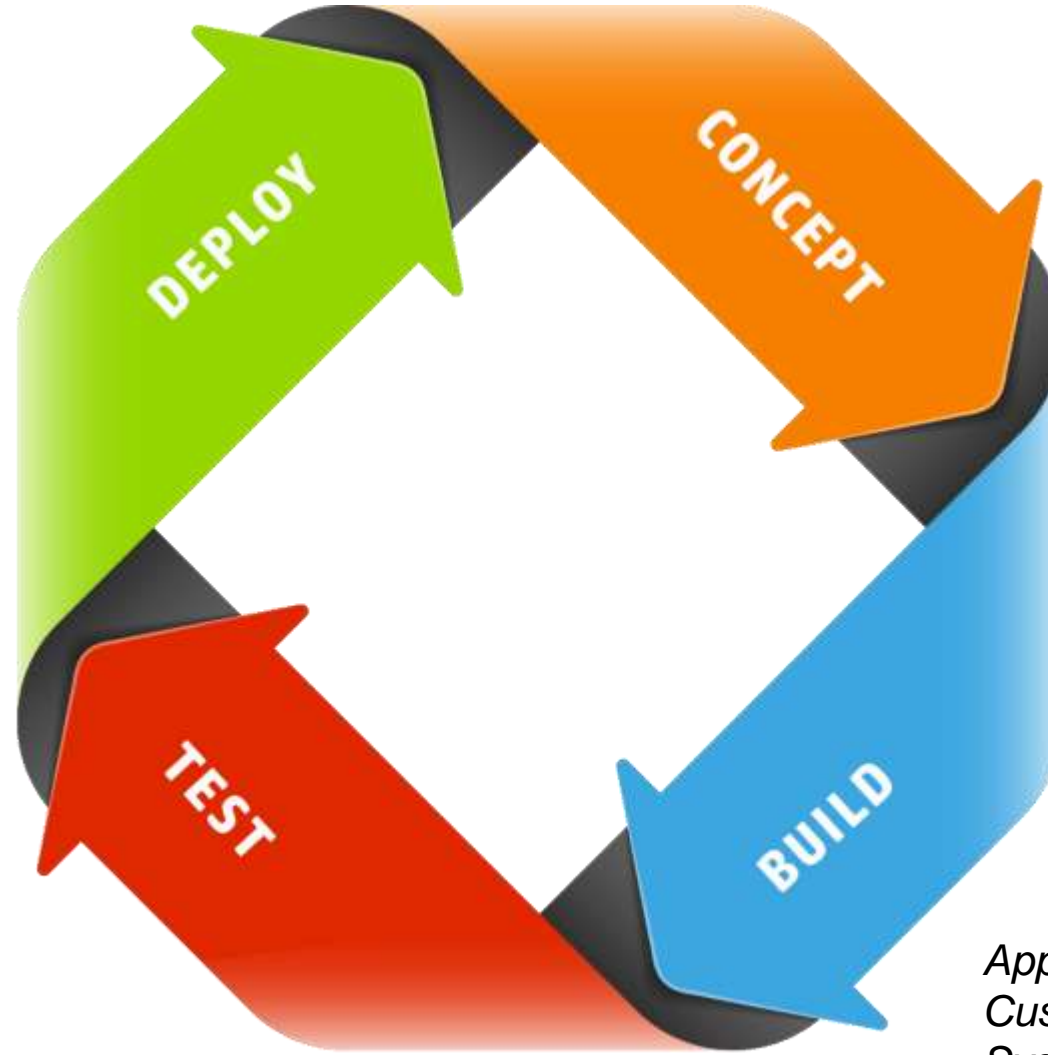
- Wearable Electronics
- Industrial Automation
- Internet of Things
- Medical & Assistive Technology
- Infotainment

CONCEPT TO DEPLOYMENT

*Requirements Management
Feasibility Study
System Architecture
Application Analysis
System Identification
Proof of Concept*

*Board Design
FPGA Design
System Software
COTS Amalgamation
Middleware*

*Application Development
Custom Engineering
System Implementation
Application Porting*



*System Training
Support & Maintenance
Obsolescence Management*

*FCC/CE
UL
DO254, DO178
CoC*

*Independent Verification and Validation
Endurance
Environmental Certification
Customer Acceptance
Design for Manufacturability
Field Trails
Production Support*

PRODUCT ENGINEERING SERVICES



Internet
Of Things



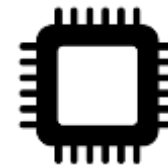
Wearable
Electronics



Industrial
Automation



Medical &
Assistive

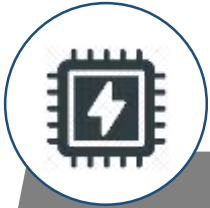


Silicon
Support



Infotainment

WEARABLE ELECTRONICS



*Small form factor,
miniaturization, extended
battery life*



*Head Tracking, Voice
Recognition*



*BT/Wifi connectivity
between iOS/Android
devices*



CASE STUDIES

- *AR Glasses for Military and Industrial applications*
- *Portable smart screen for PC/Mobile*



INTERNET OF THINGS



*Cloud connect with
AWS, Samsung Artik
and others*



*M2M: 6LowPAN, ANT,
ZigBee , BLE, NFC and
RFID*



*Connectivity: WiFi,
WiMax, LTE, 6LowPAN,
WirelessHART*



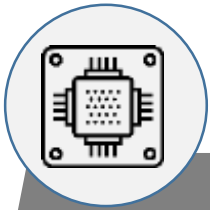
*Protocols: MQTT, CoAP,
XMPP, DDS, STOMP,
AMQP, REST, LWM2M,
Websocket*



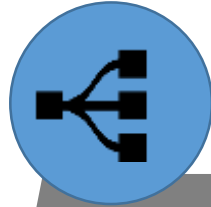
CASE STUDIES

- *Smart Safe*
- *Industrial Energy Meter IoT System*
- *Smart Refrigerator*





*High power efficient, HDI
and Flex PCB designs*



*Connectivity: ProfiBUS,
EtherCAT, CAN,
PROFINET IO, EtherNet/IP,
ModBUS, DeviceNet etc.*



*Client Apps for displaying
real-time parameters,
trends based on Cloud
data*



CASE STUDIES

- *Industrial Gateway*
- *IoT Energy Meter*
- *Power Transmission System*



MEDICAL AND ASSISTIVE ELECTRONICS



*Pulse Oximetry, ECG/EEG,
Non-Invasive BP*



*Custom iOS and Android
apps development*



*3rd party library
integration: Voice
recognition, gesture
recognition, OCR, TTS and
likes*



CASE STUDIES

- *Fetal Heartbeat Monitor*
- *Portable Barcode Scanner*
- *Portable Desktop Magnifier*



INFOTAINMENT



*Form factor Design with
multi-display support*



*Multimedia framework
customization*



*Media Streaming / Media
Encryption*

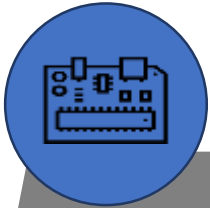


CASE STUDIES

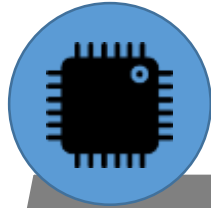
- *In-flight Entertainment*
- *Car Infotainment System*



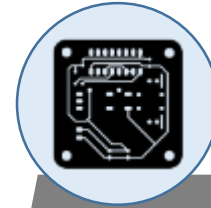
SILICON SUPPORT



System on Modules (SoM)



Silicon Validation Platforms



*SoMs, Development
Platforms & Reference
Designs*

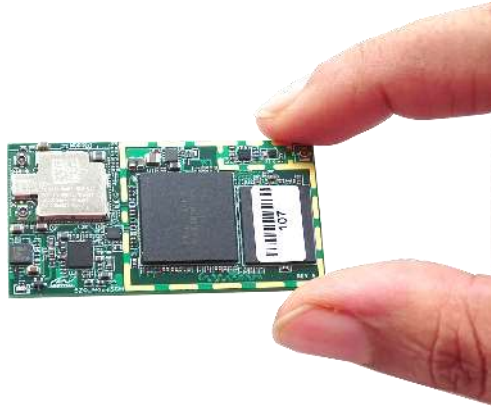


CASE STUDIES

- *820 Nano SOM & Development Kit*
- *AM437x PoM*
- *RTM-Breakout Card for Keystone II EVM*



SYSTEM ON MODULES



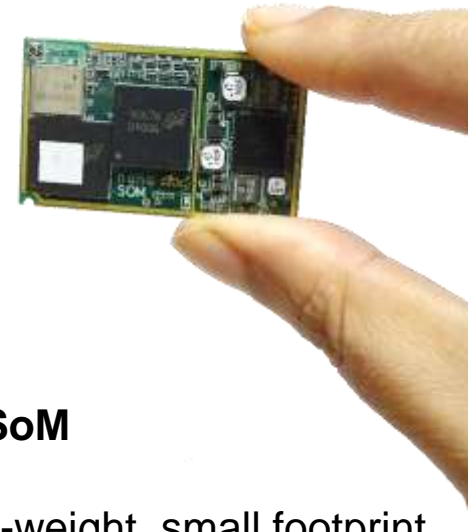
820 Nano SoM

- Ultra Compact
- Qualcomm™ Snapdragon 820
- USB Type C
- 9-axis MEMS
- UFS memory
- 4K Encode/Decode
- Yocto 2.0 and Android N/O



SMARC Module

- Small Form factor
- Renesas RZ/G1E
- 1GByte DDR3
- 4GByte eMMC
- 314 edge fingers
- Linux kernel 3.10



i.MX6 SoM

- Light-weight, small footprint
- Freescale i.MX6 Dual/Quad
- 1GB LPDDR2-800 (PoP)
- 4GB eMMC
- WLAN and Bluetooth
- Yocto & Android KitKat



AM437x PoM

- Ready-to-use Product on Module
- Sitara AM437x from TI
- 1 GB DDR3L Memory
- HDMI output support
- USB & DC powered
- Connectivity – LCD, CAN, I2C, Ethernet, SPI

AEROSPACE AND DEFENSE



RADAR
Sub-Systems



Electronic
Warfare



Telemetry
Solutions



NAVAL
Systems



Airborne
Systems



*High-speed Digital and
Mixed Signal HW Design*



*FPGA/DSP/GPGPU
Signal Processing
platform*



*AFT, Conduction cooled,
Air and Liquid Cooled*



CASE STUDIES

- Radar Controller and Processing Unit
- Signal and Data Processing
- Front-end Processing Unit
- Airborne RSP System





*SBCs and DSPs for
multi-channel acoustic
Data Acquisition and
Processing*



*Phased Networked
system for high-res
graphical display*



*Qt based Application
Development for Data
control and display*

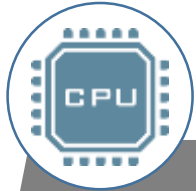


CASE STUDIES

- Front-end Processing for SONAR
- Coastal Surveillance System
- Signal Processing System
- Display Systems



ELECTRONIC WARFARE



Multi-processor / Multi-board application architecture and design



DO-178B Complaint Software Development



*FPGA / Processor
Algorithm: Pulse
Compression, DDC, FFT,
CFAR, Vector Correlation,
Kalman filtering, Doppler
Processing*



CASE STUDIES

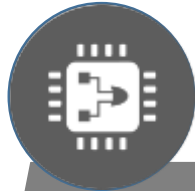
- DF System
- Next-generation DRFM platform
- U/VHF Microwave Receiver



TELEMETRY



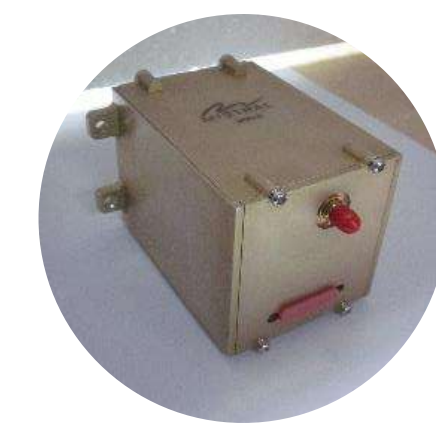
*IRIG 106, Class 2
specifications compliant*



*Finite State Machines
implemented on FPGA*



*Electrical, sensor, analog
and digital signals*



CASE STUDIES

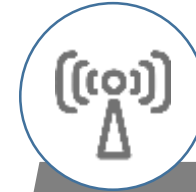
- Dual-node Telemetry Encoder
- Integrated Telemetry System
- Miniature Integrated Telemetry



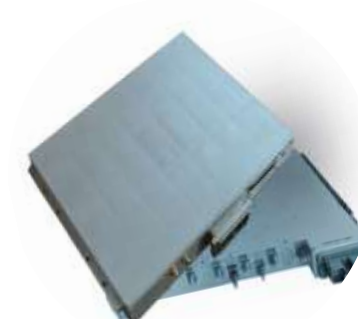
*Transceivers based on
UHF, VHF, HF, MF*



*Phased Array Radars in
L, S and C-bands*



Antenna designs



CASE STUDIES

- GaN based Transmit-Receive Multi module
- Ku Band Signal Data Recorder
- C-Band Synthesizer
- Wall Penetrating RADAR





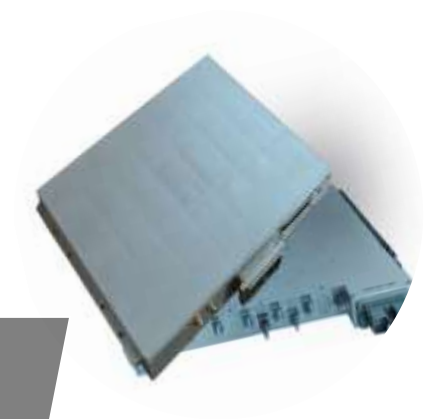
*DO-178B and DO-254
complaint Designs*



*FPGA/DSP/DPDPU
based Signal Processing
systems*



*Integration and
implementation of DSP
Algorithms*



CASE STUDIES

- GaN based Transmit-Receive Multi Module
- Avionics Controller
- Remote Interface Unit



REDEFINING HOMELAND SECURITY

MOBILE C4ISR PLATFORMS

- Easy & Rapid Deployment
- CCD/Thermal camera, PTZ, Drones, Long-range, wireless COFDM, NLOS body worn cameras
- Integrated Communication System
- Voice, data and video conferencing



HOMELAND SECURITY PRODUCTS

Mobile C4ISR
Platforms



Video
Investigation



IP MESH
Radios



AI based Video
Analytics



Drones &
Drone
Detectors



Body-Worn
Cameras



Mission
Critical
Communication



ALLIANCES



AEROSPACE AND HEAVY ENGINEERING

Digital Solutions for improving efficiency, Design Cycle and manufacturing delays, with enhanced Customer Experience



Digital Solutions Portfolio

AR / VR / MR

Automation

Artificial Intelligence (AI) & Machine Learning

In-Flight Entertainment & Communications

IoT & Industry 4.0

Additive Manufacturing / 3D printing

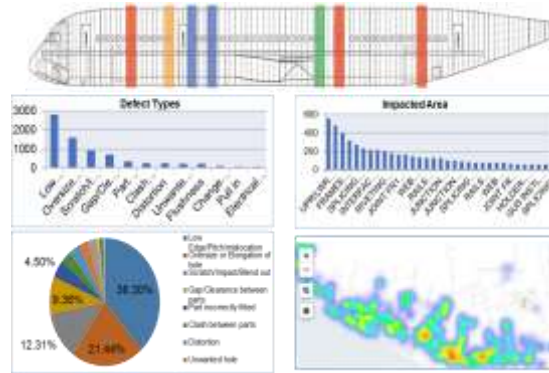
Data Analytics

Digitisation Engineering in Practice

1. Data Analytics

Benefits

- Insights on trends & patterns
- Quick Wins
- Big data management
- Long-term solutions based on know-how



<Use Case 1>

Use Case Description:
 (Design assessment) (Mfg or Operational) and production solutions based on historical data (Year, Location, Design type and Tooling).

How do you do this today?
 Manual, expensive, error prone...

For whom?
 Design and Production

What are the business benefits?
 - Reduce turn around for Mfg and increased production rates.

What data do we need?
 - Design, Location of design, type of design, Aircraft, Tool, Tooling/Process (Level, Material, Turnover etc..)

<Use Case 2>

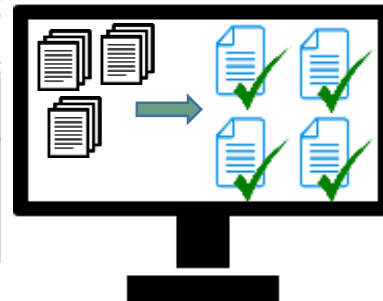
What is the validation strategy?
 Based on the experience of the Designer to make decision on the installation of the design.

Do I have the data? Do we need to acquire/purchase it?
 The old data is already available with the Mfg tool can be tested and used for tooling. No need to purchase or acquire it.

What is go/no-go criteria?
 Whether it will meet the tolerance and fitting requirements.

AM #	MSN	DESIGNER	DATE	STATUS
AM # 9152178	MSN 88345	DEEPIKA PABBITTY	16.03.2018	1
AM # 9174902	MSN 88307	PRAKASH UDDAR	15.03.2018	1
AM # 9171051	MSN 88304	PRAKASH UDDAR	15.03.2018	1
AM # 9162777	MSN 88389	SAEESH SAHADEVAN	15.03.2018	1
AM # 9165181	MSN 88354	DEEPIKA PABBITTY	15.03.2018	1
AM # 9169425	MSN 88360	SAEESH SAHADEVAN	15.03.2018	1
AM # 9169820	MSN 88372	SAEESH SAHADEVAN	15.03.2018	1
AM # 9161855	MSN 88395	SAEESH SAHADEVAN	15.03.2018	1
AM # 9142974	MSN 88332	SAEESH SAHADEVAN	15.03.2018	1
AM # 9167468	MSN 88380	PRAKASH UDDAR	15.03.2018	1
AM # 9135942	MSN 88355	DEEPIKA PABBITTY	15.03.2018	1
AM # 9155139	MSN 88356	TAMIL SELVAN P	14.03.2018	1
AM # 9129431	MSN 88341	TAMIL SELVAN P	14.03.2018	1
AM # 9169227	MSN 88392	TAMIL SELVAN P	14.03.2018	1
AM # 9169289	MSN 88392	SAEESH SAHADEVAN	14.03.2018	1
AM # 9164144	MSN 88354	TAMIL SELVAN P	13.03.2018	1

Business Workplace



2. Non Technical Tasks reduction by Leveraging AIML

- Non-engineering tasks addressed by AI based tool like Quick search, previous solutions, new updates etc...
- Strong engineering judgment and validation by engineer

Benefits

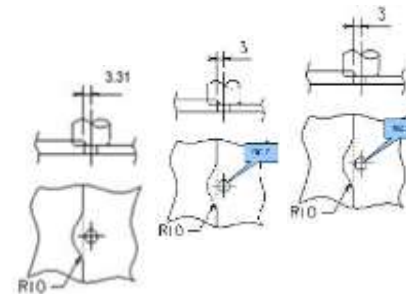
- Quicker turnaround time for every concession
- Introduction of better practices across locations
- Improved Quality and Lead time

3. Knowledge based Engineering

- Each program has exhaustive set of design rules / guidelines to be mandatorily followed for a particular design/stress activity
- Machine will start to recommend Simple Engg Decision

Benefits

- Effective practices established
- Improved decision recommendation
- Optimal use of available design
- Ensures compliance to the standards & practices
- Shorter learning curve for engineers

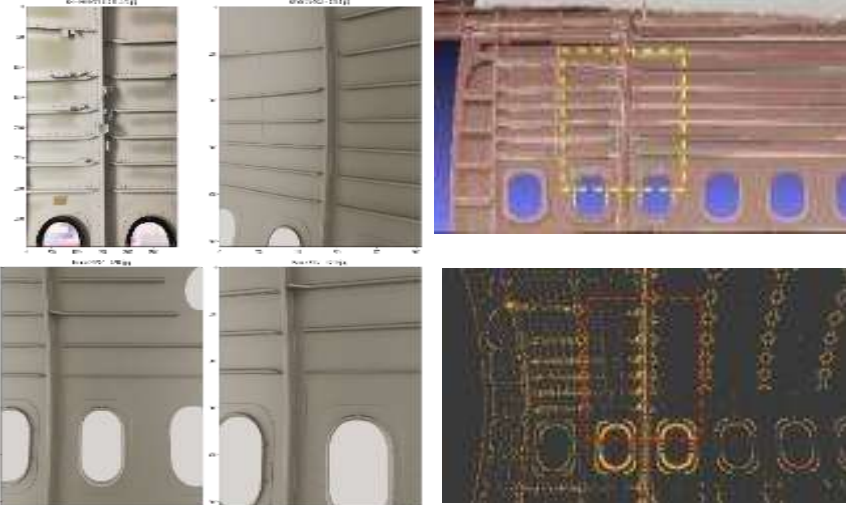


AIML enabled Solutions for Engineering Activities

Objective:

- Digital platform to reduce/minimize the non-engineering tasks in concessions/repairs Mgmt
- AIML concepts that identify relevant or similar concessions & repairs
- Address through text, image recognition techniques for the unstructured data and reduction in communication loops with Harmonized Solutions - Agnostic to language

Geo localisation



Upload image to search

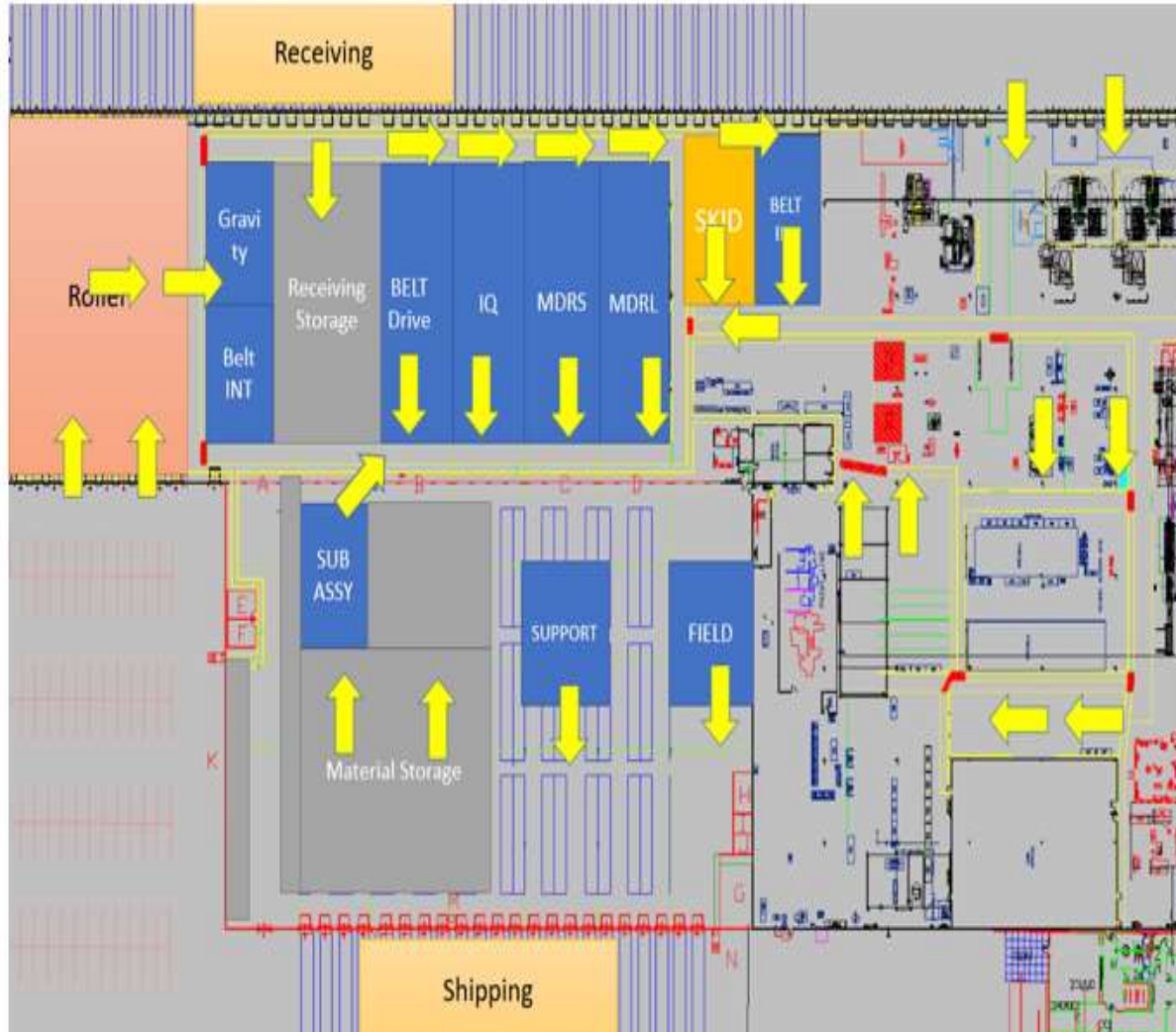
#	Title	Scope
1	Smart Plant Engineering Management	<ul style="list-style-type: none"> • <i>Developing AI/ML based application to recognize and provide exactly matching similar/relevant concessions, and also recommend the solutions for Engineering problems</i>
2	Smart Repair Solutions for In Service Aircrafts	<ul style="list-style-type: none"> • <i>A standard platform / application to record damage details /damage reports across the airliners.</i> • <i>Develop an AI/ML application to recognize & provide an exactly matching or a similar/relevant repair solution</i>
3	Automatic Part Geo-Localization in DMU by using KBE	<i>Develop and showcase, automatic geo location recognition of a part in existing DMU of Single Aisle (SA) by keying a Picture of a part or 3D Model of the Part or Cloud of Point or a Mesh (in absence of DMU).</i>
4	Digitization for Mechanics	<i>Creation of Flowchart and decision tree</i>

Benefits:

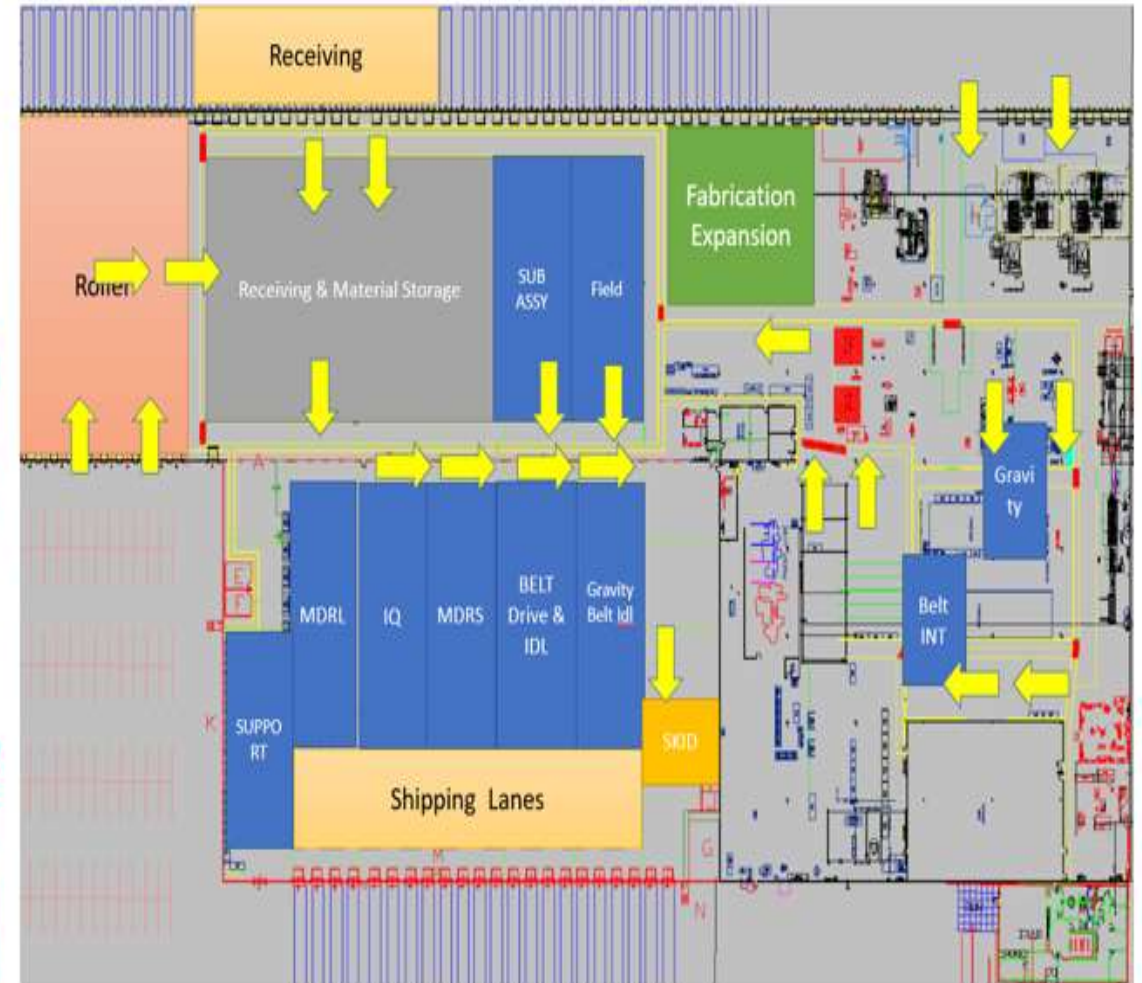
- Reduce the lead time & improves the quality
- Reduces human errors - aided by AR and VR
- Easily scalable and applicable to create hands-free manufacturing environment

Smart Factory/Industry 4.0 Solution – Optimize assembly line

AS-IS



TO-BE



Bringing efficiency and faster decision making on shop floor

Problem:

- Customers are under increasing pressure to get more done faster with same resources, and maintain high standards while doing so. This demand is for speed, efficiency and precision. Reducing or eliminating the wastes to increase speed, keeping equipment running is an essential part to increase efficiency and reducing rework or quality issues to increase precision.
- Accurate data is needed to decision makers, to take a better decision to achieve the tighter targets.
- Manual system of collecting data from shop floor is very ineffective due to error's and costs associated with production oversights.

Methodologies:

- Analyze the machines and make arrangements to get the link with IOT
- Use some platform or technology to analyze the data which is collected from machines.
- Display or pop up warnings to the decision makers.

Solution:

- Axiscades introduce a complete autonomous system that can be implemented at low cost to track shop floor activities such as break downs, machine efficiency, product status, parts consumed or availability, rework and idle times in real time. Analyzed & displayed or pop up warnings to the decision makers.



Conventional



SPM/CNC



Robots



Outcomes



Enable optimal performance of humans on shop floor

Problem:

Operator has to check the information at the work bench, walk to different rack locations find necessary parts, place them in the kit and sign off the order. This is a lot of time consuming, yet tedious process which results to:

- 20% defects recorded for orders with ship-loose items (Wrong parts and missing parts shipped to Customers)
- Huge warranties due to part unavailability.

Methodologies:

- Optimized Process and Routings
- Introduction of AR Glasses-
- Pool Proof In Built

Solution:

- AXISCADES to introduce AR- Glasses
- Voice Command Enabled
- Provide Turn-Key solution with AR- Glasses for Ship-loose area

Result:

- Identified 4 more Assembly Processes, working on business case



2 Handed
task to
hands free



FINANCIAL PERFORMANCE

Consolidated Financial Performance – H1 FY19

	Q2 FY19	Q1 FY19	QoQ	H1 FY19	H1 FY18	H1 YoY
Revenue from operations (\$ Million)	\$ 23.3	\$ 18.1	28%	\$ 41.4	\$ 35.1	18%
In Million Rs						
Revenue from operations	1,628	1,226	33%	2,854	2,265	26%
Other Income	11	21		32	57	
Total Income	1,639	1,248	31%	2,887	2,322	24%
Employee Expenses	882	795	11%	1,676	1,296	29%
Direct Expenses	299	132	127%	430	108	300%
Project consultancy Charges	73	67	8%	140	315	-56%
Other expenses	436	251	74%	687	443	55%
Total expenses	1,689	1,245	36%	2,934	2,162	36%
Operating Income	(50)	3	-1802%	(47)	159	-130%
PBT	4	(104)	-104%	(100)	16	-741%
PAT (Before Minority Interest)	1	(79)	-101%	(78)	10	-908%
PAT (After Minority Interest)	(0)	(80)	-100%	(81)	8	-1170%
Basic EPS	(0.01)	(2.13)	-100%	(2.14)	0.20	-1170%
Operating Income %	-3.1%	0.2%		-1.6%	6.9%	
PBT %	0.3%	-8.4%		-3.5%	0.7%	
PAT % (After Minority Interest)	-0.02%	-6.4%		-2.80%	0.33%	

Explanatory Notes

Revenue from Operations

- Q-o-Q grew 33% and H1 Y-o-Y by 26% in INR terms

Employee expense Q2 FY19

- Increase mainly due additional headcount for incremental revenue and impact of pay hikes.

Direct expense of Q2 FY19

- Increase in Q2 is due to increased cost of material on account of higher revenue from product sales

Other expenses of H1 FY19

- Includes provisioning of INR 100 Mn for a Hi-tech start-up customer in US.
- Net forex loss of INR 63 Mn mainly on account of unrealised foreign exchange loss on restatement of foreign currency loan.

PBT of H1 FY19

- PBT was impacted by INR 70 Mn due to non-cash accounting treatment pertaining to the Mistral acquisition and includes one time exceptional income of INR 145 Mn, being re-estimation of fair value of contingent liability payable for Mistral acquisition.
- Cash Profit of H1 FY19 after adjusting for above is INR 100 Mn

Consolidated Balance Sheet Snapshot

Particulars	30-Sep-18	31-Mar-18
	(INR Mn)	(INR Mn)
Net Worth	2867	2917
Total debt	1503	1378
- Long term loan	618	726
- Short term Working Capital	886	652
Net debt (Total debts – Free Cash)	1073	759
Trade payables	398	500
Fixed assets (Net of Depreciation)	3469	3437
Capital work-in-progress	5	5
Cash and cash equivalents	430	619
Trade receivables	1,810	1,659

Increase in Trade receivables was mainly due to a large product delivery in Product business amounting to INR 210 Mn in Q2 and has since been received

Trade Receivables

Particulars	30-Sep-18	31-Mar-18
	(INR Mn)	(INR Mn)
Trade receivables	1,810	1,659

Increase in Trade receivables was mainly due to a large product delivery in Product business amounting to INR 210 Mn in Q2 and the payment was received in November 2018

DSO as of 30 September 2018 120 Days

Receivables overdue :

> 180 Days - INR 73* Mn (Including PSUs and Government departments)

> 180 Days - INR 10 Mn (Excluding PSUs and Government departments)

* Out of INR 73 Mn, INR 50 Mn es expected to be collected by December 2018

New Clients: KYC Process

- Standard form for capturing D&B rating and Financial evaluation of customers
- Must for signing any new MSA

Existing Clients: Regular Checks

- Financial and risk analysis of all existing customers having large receivables
- Customer specific DSO targets

PRUDENT RECEIVABLES MANAGEMENT

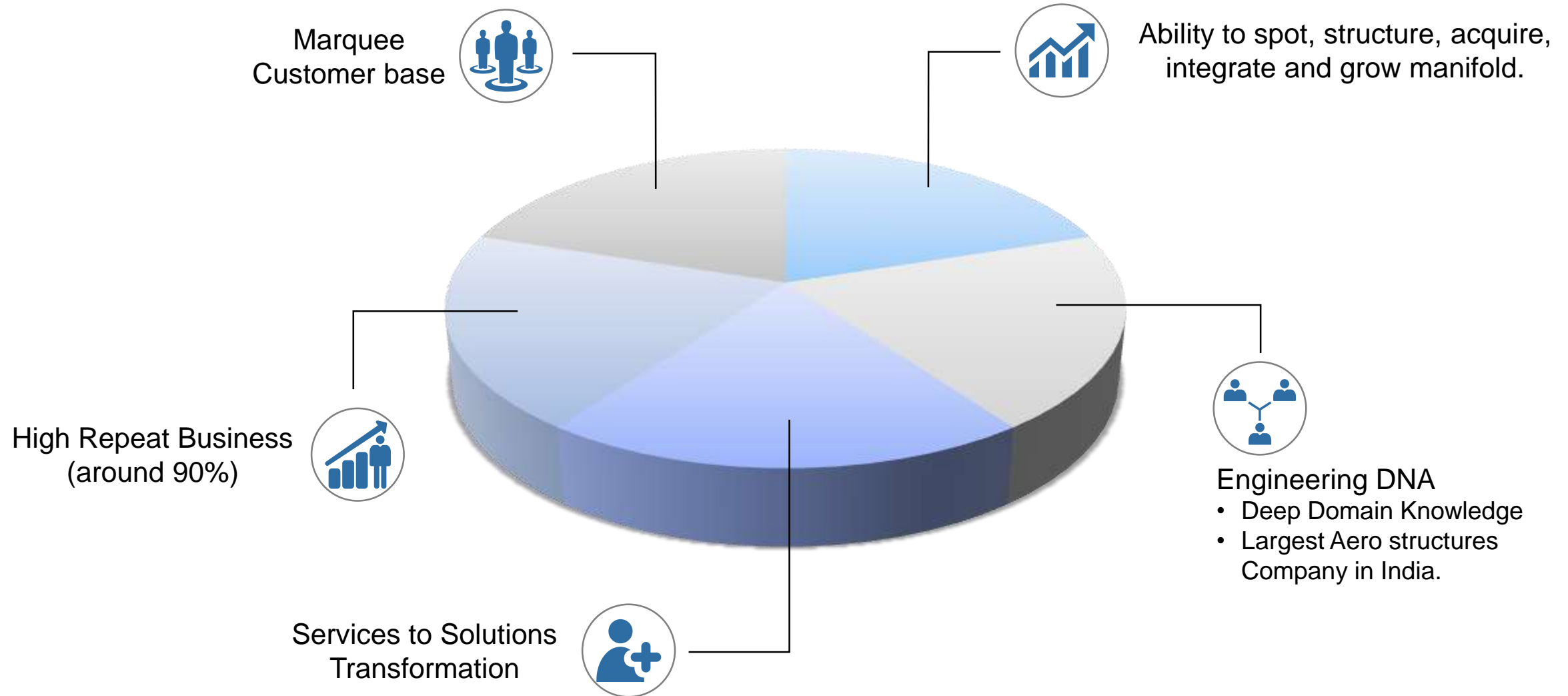
Provisioning Policy

	Government Agencies	MNC's	Non-MNC's
Over due days	% Provision	% Provision	% Provision
> 180 days to 365 days	-	-	50%
>365 days to 720 days	50%	50%	100%
> 2 years	75%	100%	100%

Low Receivables > 180 Days

- More than 180 Days - INR 73 Mn
(Including PSUs and Government departments)
- More than 180 Days - INR 10 Mn
(Excluding PSUs and Government departments)

AXISCADES at inflection point



Thank You