

# ENGINEERING THE CHANGE



# L&T Technology Services – At a glance

Global Leader: #1 Indian Pure Play Engineering Services Company



224

Global clients



\$ 484 mn

FY17 Rev



254

Patents



\$ 128 mn

Q1 FY18 Rev



10,500+



15.3%

Q1 FY18 EBITDA



## Industry Verticals



Industrial Products



Medical Devices



Telecom, Consumer Electronics, Semiconductors



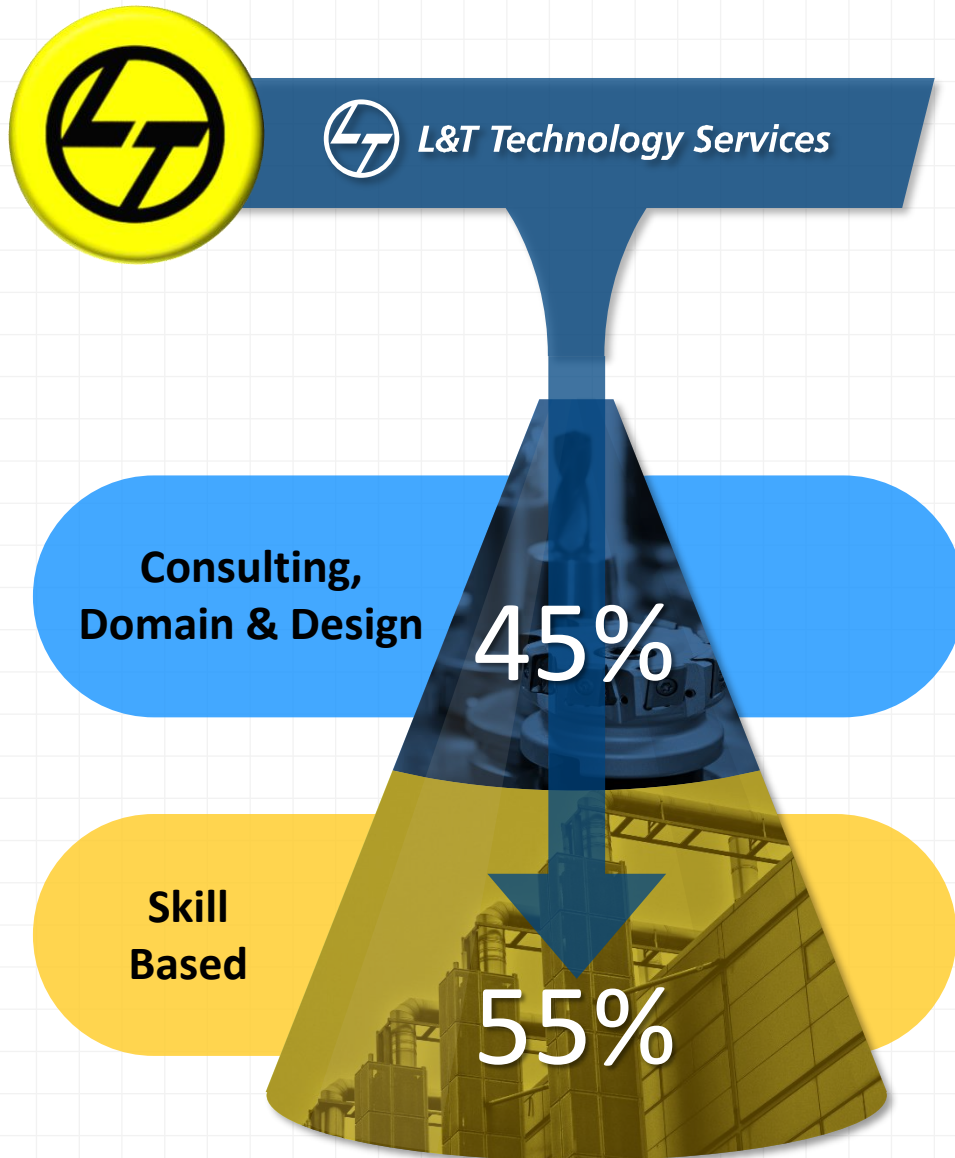
Transportation



Process Industry



# Difficult to replicate our differentiation



+

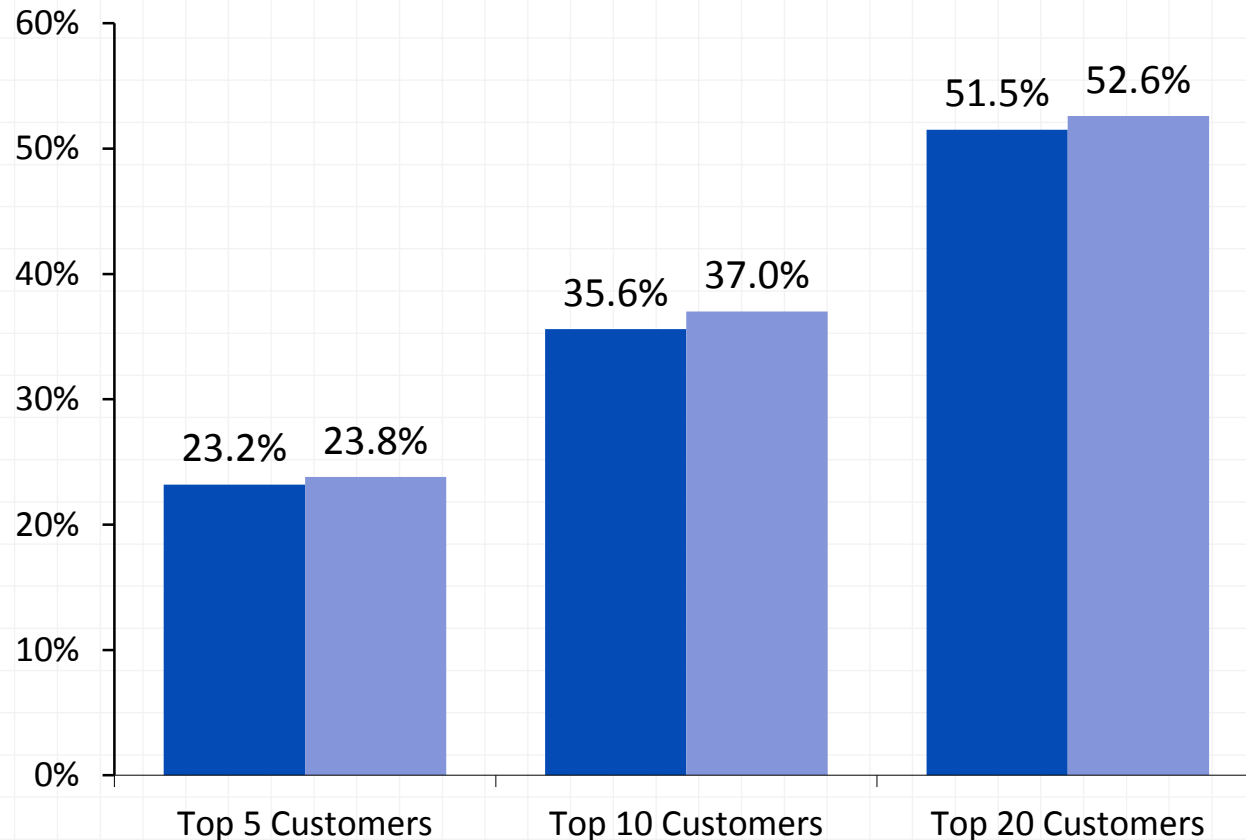


# Our clientele continues to be our prized asset...



# Customer Base

## Client Contribution to Revenue

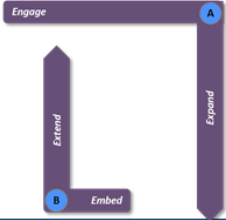


■ % of Consolidated Revenue for Q4 FY17 ■ % of Consolidated Revenue for Q1 FY18

## Revenue-wise Client Profile

Customer Revenue (USD Mn)	No. of Customers Q4 FY17	No. of Customers Q1 FY18
30 Million +	1	2
20 – 30 Million	2	1
10 – 20 Million	6	8
5 - 10 Million	21	16
1 - 5 Million	49	53

# Our Strategy



## Multi-Vertical & Regional Strategy

- 5 Verticals
- L Model
- US, Europe and Japan Markets



## Global Design Centers & New Technologies

- Proximity & near-shore centers
- Specialized centers for POCs, solutions & frameworks
- Connected Product & Services, Smart Mfg & Operations, Perceptual Engg., Pervasive Technologies



## Non Linear Revenues

- Licensed Revenue
- IP Influenced revenue

- iBEMS,
- UBIQWeise,
- GDA – IP
- W.A.G.E.S
- DC DC Convertor
- Stackable Invertor
- NB - IoT



## Top Account Mining & Selective Hunting

- T30 Program
- A3 -Hunting Adjacencies
- Large Deals based on Annuity business model



## Acquisitions

- Selective acquisitions in Product Software & New age technologies which cuts across domains



# ....supported by best in class infrastructure with in-depth capabilities



Lighting Lab



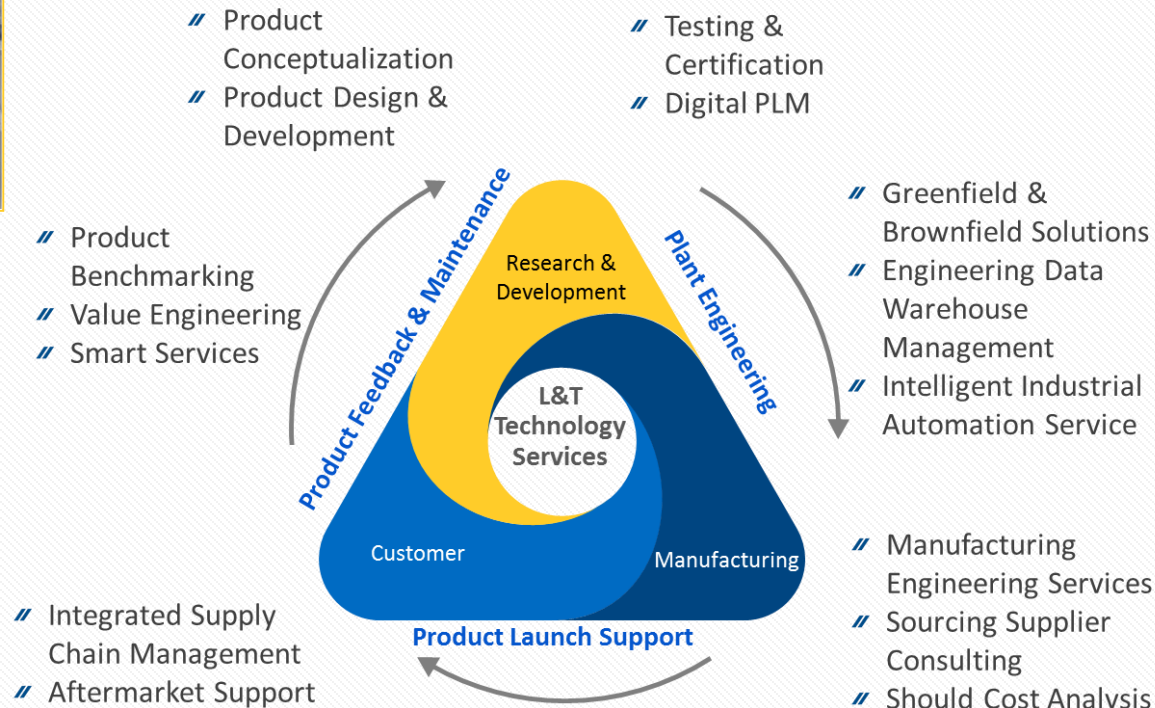
Optics Lab



Medical Lab



Environmental Lab



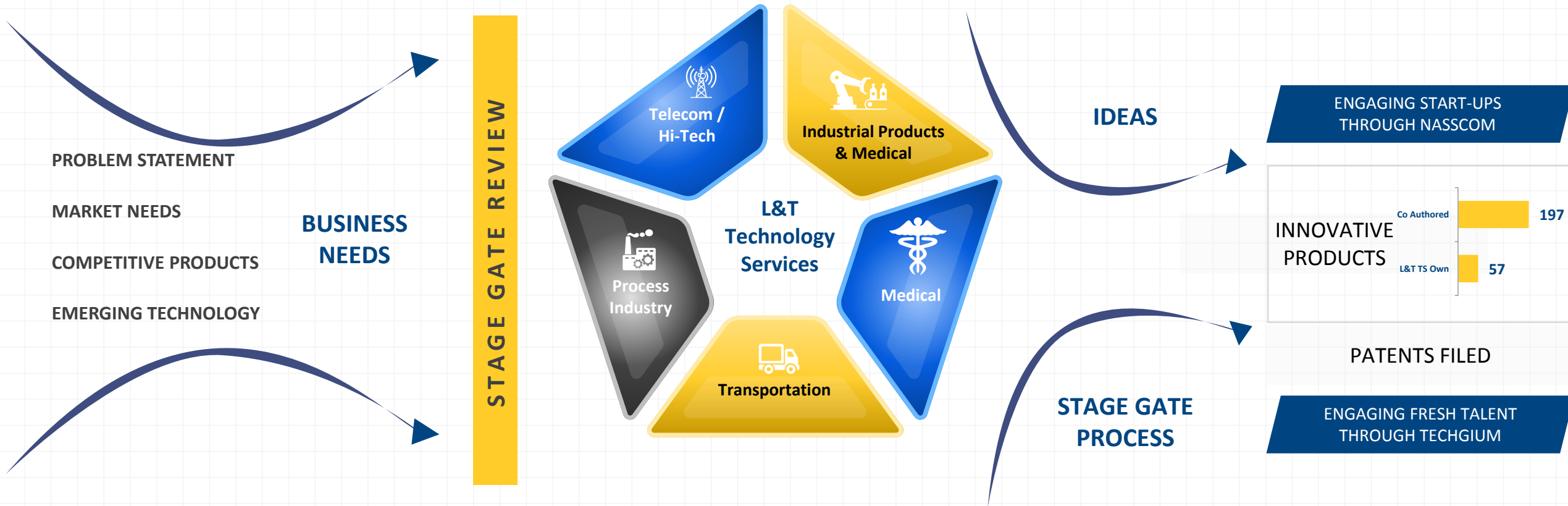
Injecting Innovation

Improving Quality & Reliability

Optimize Operations

Enter New Markets

# We continue to be focused on driving innovation





# Solution Frameworks



Intelligent Building Energy Management System

- System of Systems
- Modular & Customizable System
- Advanced Analytics

i-BEMS PLATFORM HAS BEEN DEPLOYED IN WORLD'S SMARTEST CAMPUS IN ISRAEL

## UBIQWeise™

IoT Platform

- Device Health Monitoring
- Predictive Analytics
- Data Aggregation

DEPLOYED SUCCESSFULLY FOR HVAC AND CONSTRUCTION MAJOR

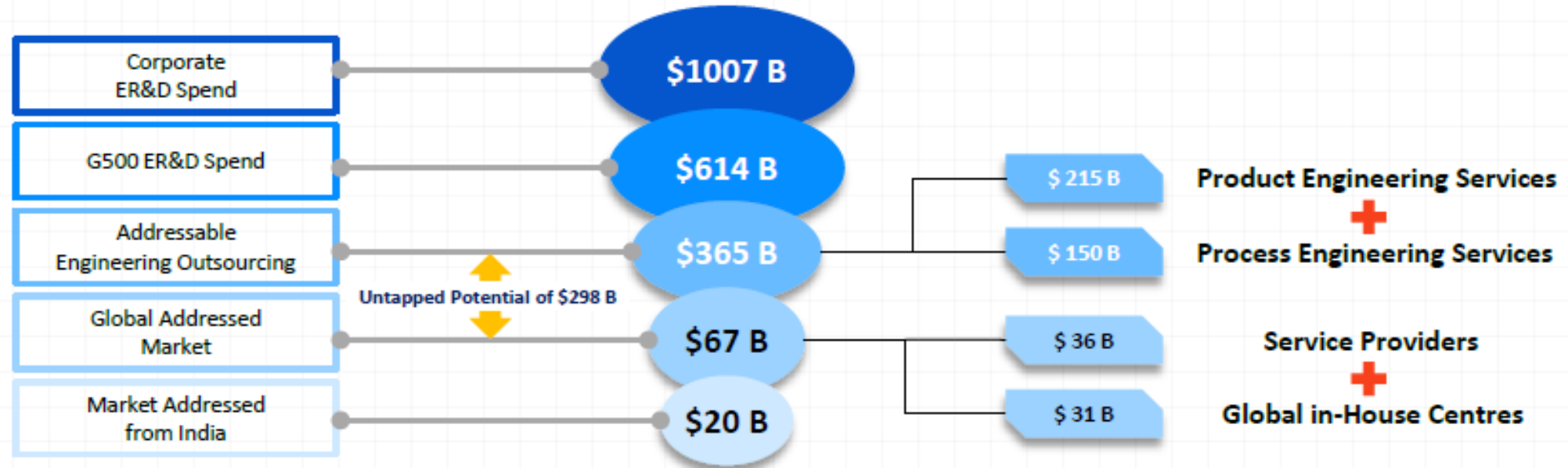
## WAGES

Water, Air, Gas, Energy, Steam

- Monitoring Plant KPI
- Energy Monitoring & Metering
- Water Recycling & Reuse Engineering

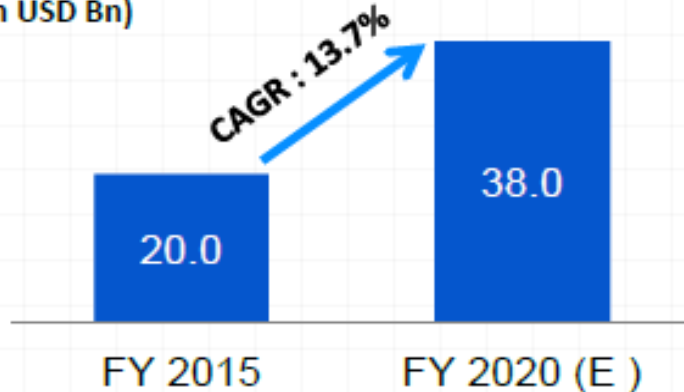
SUCCESSFULLY USED FOR FMCG MAJOR

# Global Addressable Engineering Outsourcing Opportunity

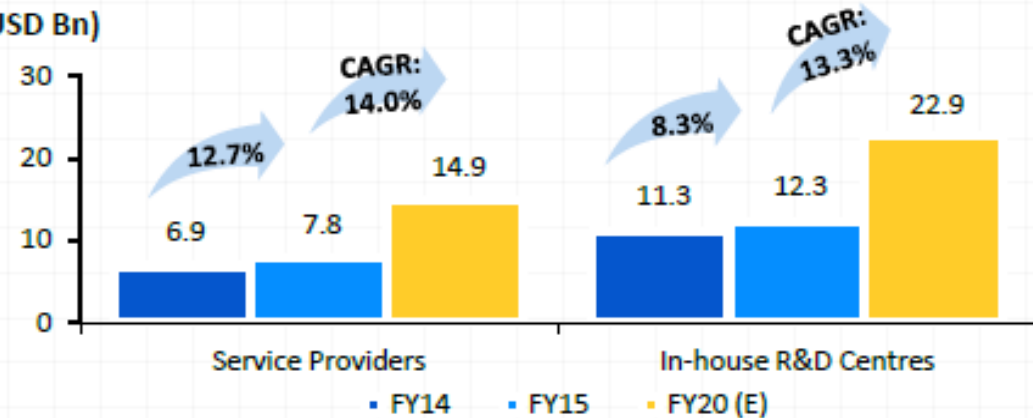


## India Advantage

ER&D Service Growth Rate  
(in USD Bn)



Indian ER&D Market Growth  
(in USD Bn)





# Micro-Vertical Focus (1 of 3)

## Transportation



### AEROSPACE & RAIL

- In flight Entertainment
- Air Traffic Management
- Test Bench Development
- Avionics
- Wire Harnessing
- Signaling
- Real-time monitoring & Predictive Analytics
- Additive Manufacturing



### AUTOMOTIVE

- ADAS/Autonomous Driving
- Infotainment
- Hybrid Cars
- Manufacturing Engineering
- Connected Cars
- Telematics



### OFF HIGHWAY

- Localization
- Manufacturing Engineering
- Value Engineering
- Electronics Systems Development
- Hybrid /Electric Trucks and buses
- Autonomous Driving
- Connected machines

Legend: Bread & Butter | Next-Gen





# Micro-Vertical Focus (2 of 3)

## Industrial Products



### BUILDING & HOME AUTOMATION

- Building Management Solutions
- Energy Efficient Lighting
- Intelligent Mobility Solutions
- Imaging Algorithms



### ELECTRICAL DRIVES & POWER

- Power Electronics
- Sustenance Engineering
- Real-time Monitoring & Analytics
- Energy efficient product development



### MACHINERY

- IoT
- Cost takeout Programs
- Machine Learning
- Value Engineering
- Artificial Intelligence
- Machine Vision
- Digital Twin

## Medical Devices & Healthcare



### DIAGNOSTICS

- Diagnostics Imaging
- Manufacturing optimization
- Data Analytics and Security
- Wearable's diagnostic applications



### PATIENT CARE

- Cost Optimization Programs
- Engineering Analysis(CAE)
- Real-time Connectivity and Integration
- Intelligent Patient Care



### SURGICAL

- Product Design and Development
- Risk Management and Compliance
- Value Engineering
- Robotics
- Reusable surgical solutions

Legend: Bread & Butter | Next-Gen



# Micro-Vertical Focus (3 of 3)

## Telecom and Hi-Tech

## Process Industry



### SEMICONDUCTOR

- ASIC/SOC Design and Development
- Custom Engineering
- V&V
- Sensors/MEMS
- IoT Chipsets Development & Testing



### MEDIA & ENTERTAINMENT

- STB Middleware Design & Development
- Cloud based Video
- Testing
- Dev-Ops
- Next-Gen Media Streaming



### CONSUMER ELECTRONICS

- Middleware development, Integration and Testing
- Application development and Testing
- Smart Homes & Security
- AR/VR Technology



### TELECOM & ISV

- SDN/NFV and Network Management
- Product Design and Sustenance
- Software Development and Testing
- 5G Core and RAN Network
- Virtualization and Network Security
- Dev-Ops



### CPG

- Sustenance Engineering
- Brown field Development
- Plant Controls Mobility Solutions
- Integrated Manufacturing and Supply Chain



### SPECIALITY CHEMICALS

- Green Field Development
- Sustenance Engineering
- Intelligent Industrial Automation
- Energy Audit & Energy Management Services



### OIL & GAS

- Asset Management Solutions
- Discipline Engineering
- Digital Engineering
- Data Analytics and Interpretation

Legend: Bread & Butter | Next-Gen

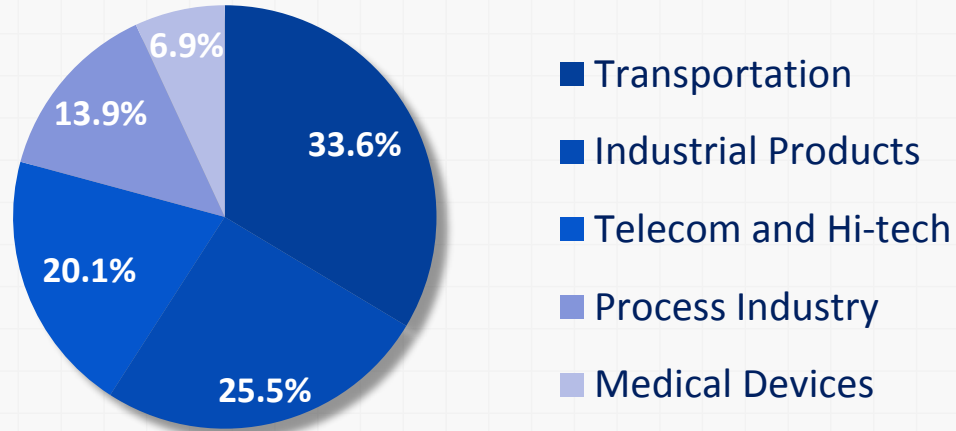
# Performance Highlights – Consolidated

<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>Parameters</b>	<b>Q1 FY18</b>
<b>Actual</b>	<b>Actual</b>	<b>Actual</b>		<b>Actual</b>
428	468	484	Revenue from Operations (USD Mn)	128
26,186	30,662	32,483	Revenue from Operations (Rs. Mn)	8,226
252	845	591	Other Income (Rs. Mn)	262
15.2%	16.9%	18.0%	EBITDA Margin	15.3%
13.4%	15.0%	16.1%	EBIT Margin	13.5%
11.9%	13.7%	13.1%	Net Income Margin	11.9%
61.14	65.47	67.06	Avg. Exchange Rate (USD/INR)	64.45

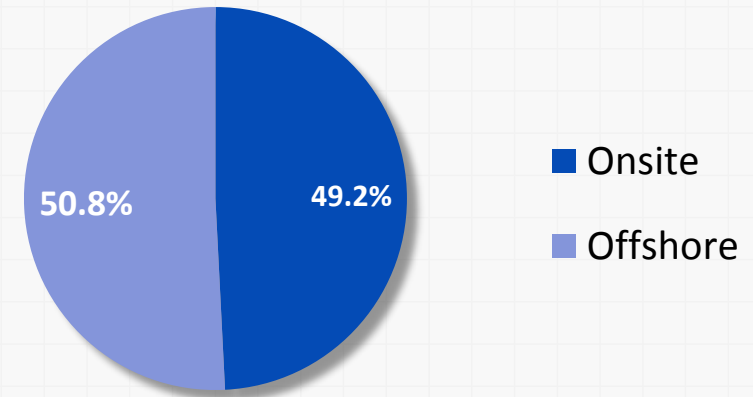


# Diversified Business and Geographical Mix

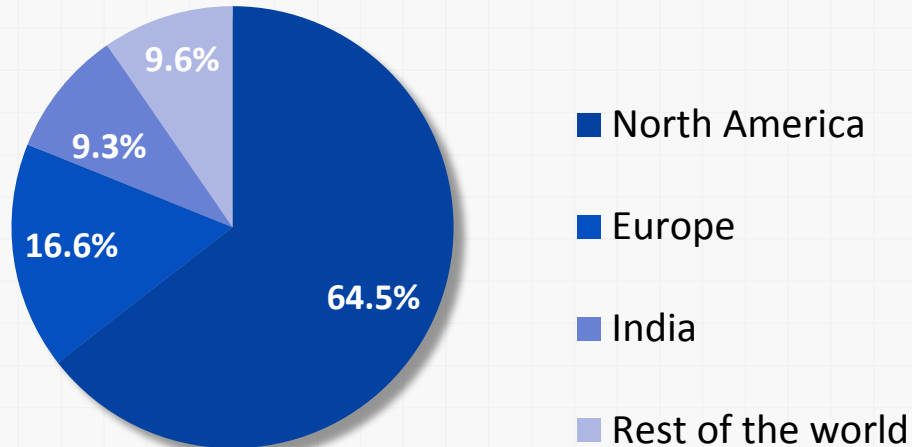
## By Vertical



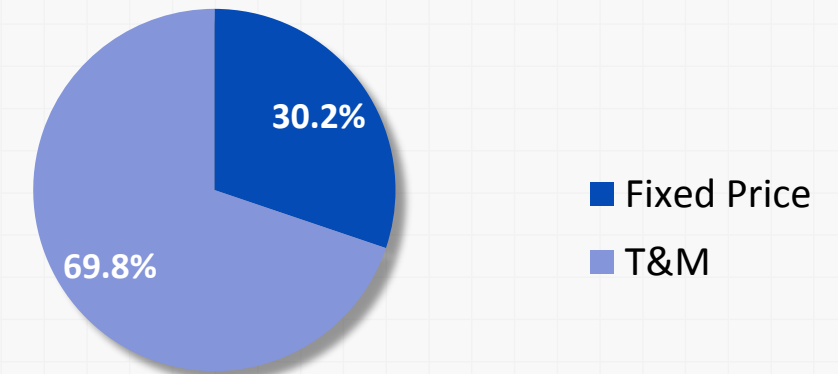
## Onsite vs. Offshore Split



## By Geography



## Fixed Price vs. T&M



# Awards and Accolades

FROST  
&  
SULLIVAN

Excellence in  
Engineering  
Services Award

zinnov

Leadership in IoT  
Product  
Engineering  
10 Verticals  
Embedded &  
Mechanical

DAIMLER

Innovation Award

United  
Technologies

Global Engineering  
Productivity  
Improvement Award  
& Gold Supplier

HfS

Winners Circle in  
HfS' Industry 4.0

Gartner

“Key vendors in  
the IoT embedded  
space”

DATAQUEST

Innovative use of  
digital technology



Golden Peacock  
National Quality  
Award 2017



IACC  
“Company of the  
Year” &  
“Green Office  
Space of the Year”



Quality Excellence  
Award in Product  
development



The Golden Globe  
Tigers Award 2016

# What goes behind Product Design?

Complex product design has been LTT's traditional strength...

## TRANSPORTATION



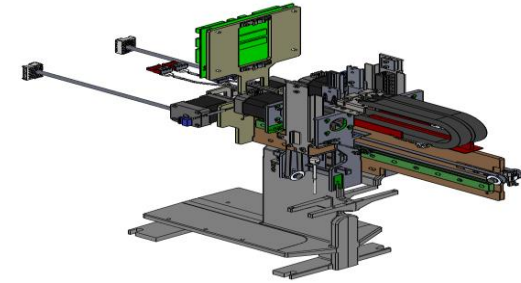
Passive Occupant Detection System for Passenger Safety

## AERO



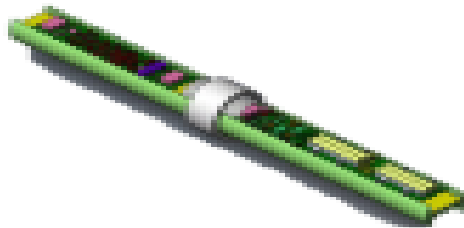
Flight Control Computer to control Unmanned Aerial Vehicle

## MEDICAL



Cost Reduction of Pipettor Gantry Assembly by 25+%

## INDUSTRIAL PRODUCTS



4.5 KW High Power Amplifier Acoustic Downhole Transmitter

## TELECOM



Ruggedized Tablet for Extremely Harsh Conditions, Mission Critical

## PLANT ENGINEERING



Barrier Free, IGBC Green Certified Manufacturing Plant Design

...now we are transitioning to product ecosystem design





# ADDRESSING TRENDS THROUGH SPECIALIZED OFFERINGS



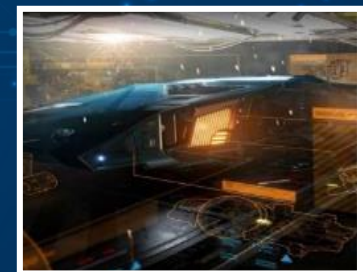
CONNECTED PRODUCTS  
& SERVICES



SMART MANUFACTURING  
& OPERATIONS



PERCEPTUAL  
ENGINEERING



PERVASIVE  
TECHNOLOGIES

# Augmented Guiding for Remote Auto Servicing



## CASE STUDY FOR CONNECTED SERVICES

### Augmented Guiding for Remote Auto Servicing:

- Intuitive & Intelligent service assistance
- Online access to Service manual, Drawings
- Auto Health Monitoring
- Remote Supervisory Assist

### Market Drivers:

- Monitor the health of spare parts in the vehicle
- Assistance in performing regular maintenance
- Spare parts management



# Remote Asset Performance Management



## CASE STUDY FOR SMART OPERATIONS

The key challenge in asset intensive industries is to manage field assets and equipment more effectively.

We created a **Remote Asset Performance Management Solution for a Construction Major** which:

- Intends to cover 30 thousand assets across 500 asset types
- Expected 12% improvement in asset utilization
- Reduced costs as on-time asset availability improve
- Uses our home grown **UBIQWeise™** platform



# Equipment Monitoring & Effectiveness



## CASE STUDY FOR SMART MANUFACTURING

Client requirement was to connect critical 25 years old machines in manufacturing plant for remote monitoring of Overall Equipment Effectiveness (OEE).

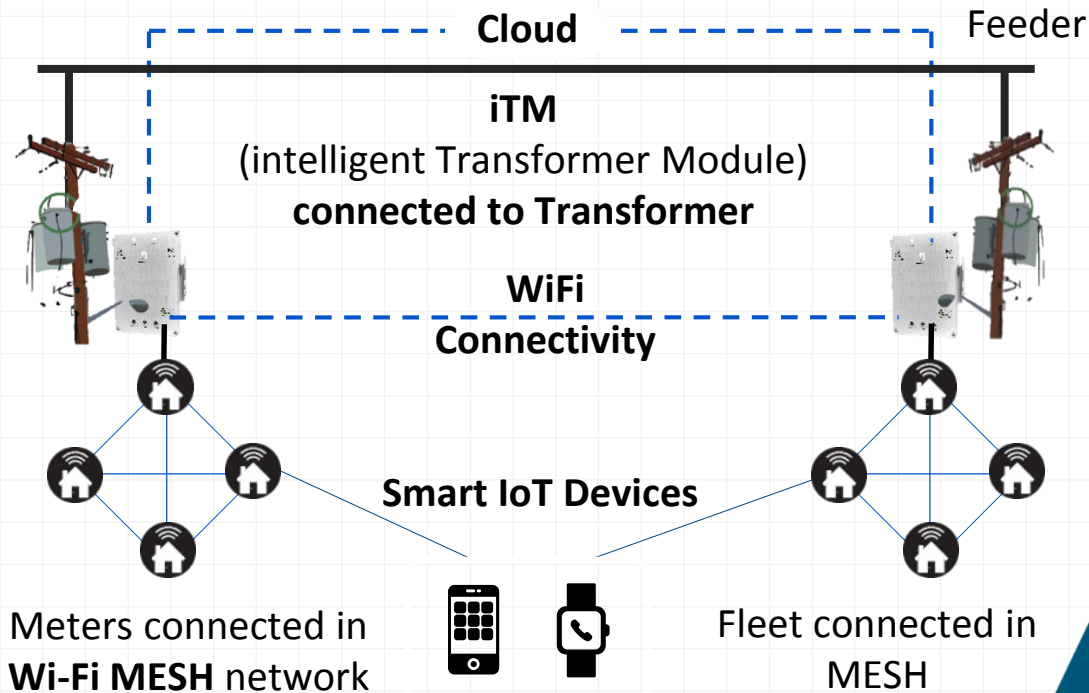
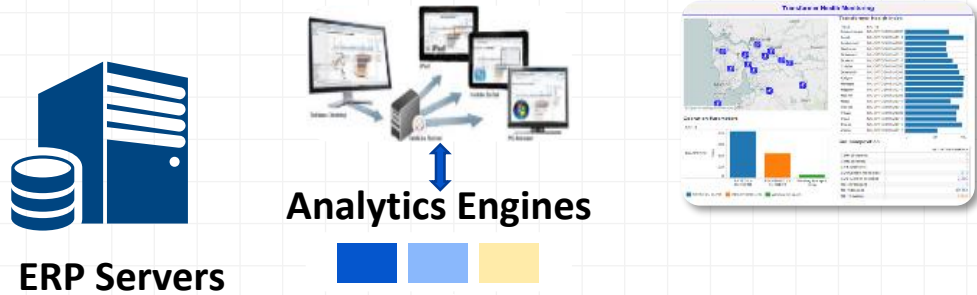
We developed a solution where **Multiple machines in a plant and multiple plants at different locations have been retrofitted with sensors and connectivity.**

- Developed Software to analyze, monitor and measure OEE parameters.
- Provides Predictive Maintenance and Energy Conservation.
- Measures the effectiveness and efficiency of manufacturing process.



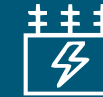
# Smart City Energy Solution for Utilities

We created a complete end-to-end solution for **US based Utility Major** to monitor energy distribution performance at all levels.



## CASE STUDY FOR MESH TECH.

### HARDWARE SOLUTION



Connected to Meter and Transformer Junction Box

- Transformer health monitoring by capturing critical transformer data like oil and coil temperatures, moisture levels, loading etc.

### NETWORK SOLUTION



Data Transmission over Wi-Fi

- Proprietary Mesh Topology
- Uploading voluminous on cloud.
- Scalable network for multimillion end points

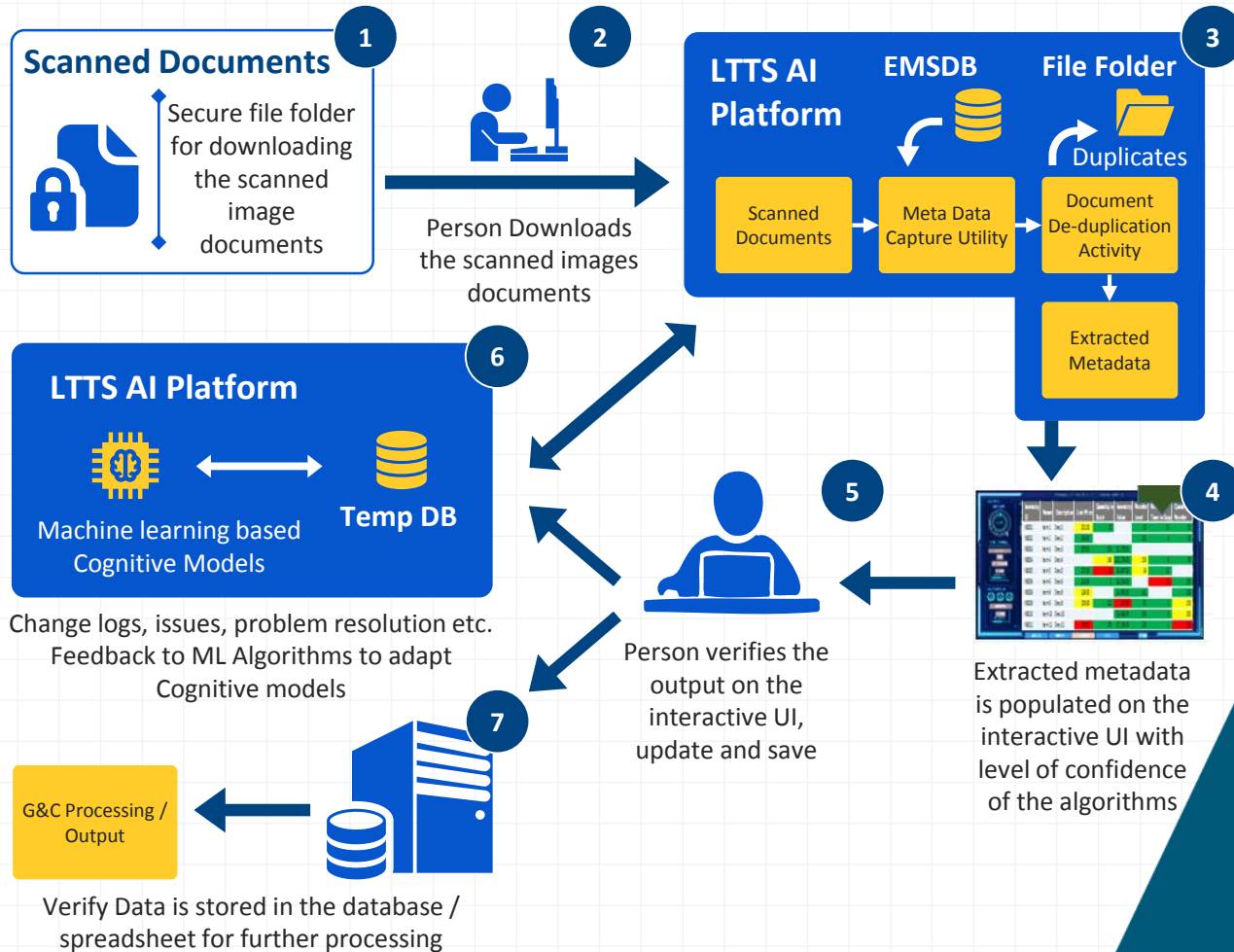
### SOFTWARE SOLUTION



Remote Monitoring Application

- Fault & Theft Management
- Demand & Outage Management
- Energy Meter Device Management
- Billing Generation

# AI based Document Search and Query Engine



## CASE STUDY FOR ARTIFICIAL INTELLIGENCE

We created NLP based Search Application for NA based Engineering Major which brings information and insights to the users who need it fast with minimum efforts.

- Includes Global Engineering Practices that address design, fabrication, inspection, testing, and operational requirements that are accessed by their various stakeholders globally.
- Complete data is indexed in Unified View