



# Engineering Service Providers – Capabilities Study

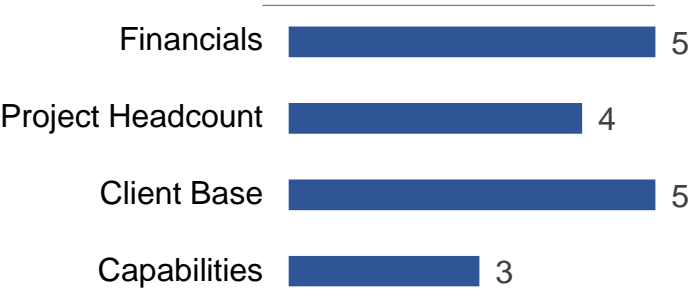
July 2018

Rating Parameters	Weightages
<b>Financials</b>	<b>25%</b>
Total Employees	100%
<b>Project Headcount</b>	<b>25%</b>
Design & Development	25%
Testing & Automation	25%
Sustenance & Maintenance	25%
Regulatory Compliances & Support Services	25%
<b>Client Base</b>	<b>25%</b>
Client partnership	60%
Partnership Maturity	40%
<b>Capabilities</b>	<b>25%</b>
Segment Capabilities	60%
Imaging Diagnostics	10%
Non-Imaging Diagnostics	10%
Surgical Devices	10%
Monitoring Devices	10%
Prosthetics	10%
Other Therapeutic Devices	10%
Emerging Technologies	40%

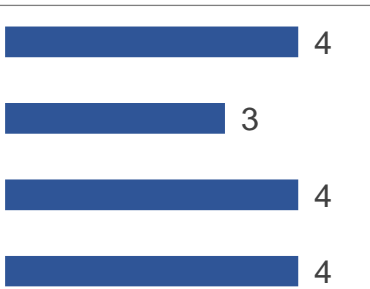
The list of total 8 companies were analysed on all mentioned parameters and weightage has been given for each of them to arrive at the list of **Top 8 Service Providers catering to Medical Devices** companies.

# Service Providers Ranking across Medical Devices Outsourcing Landscape

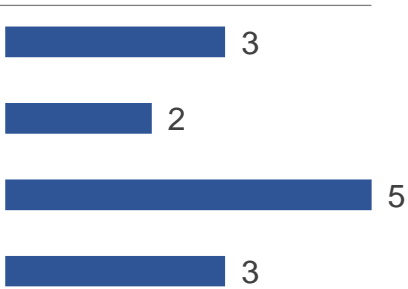
## 1 HCL



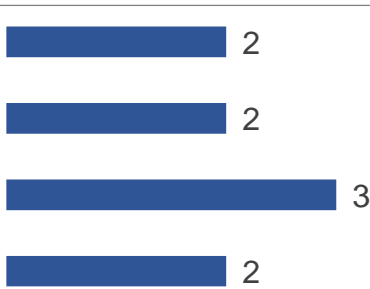
## 2 TCS



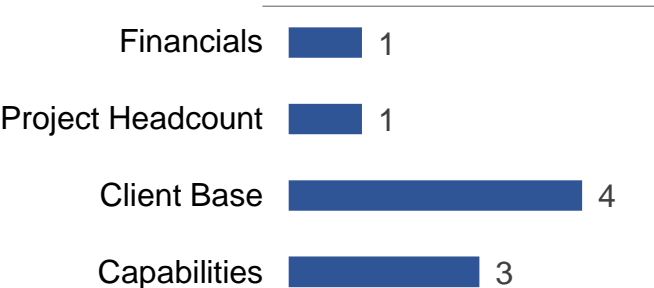
## 3 Altran



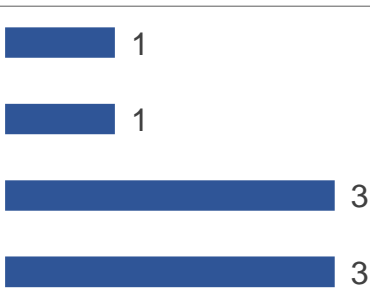
## 4 Wipro



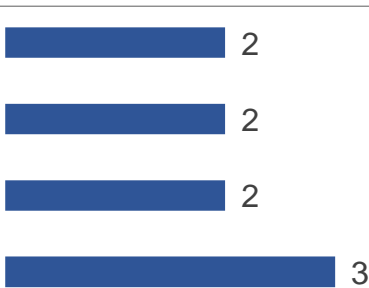
## 5 Quest Global



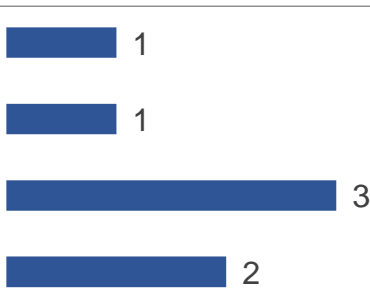
## 6 Infosys



## 7 Global Logic



## 8 Tech Mahindra



Note : The above analysis is based on the DRAUP's proprietary engineering and talent database and insights from industry stakeholders, updated as on July, 2018



- In 2018, the company began building software to help with the General Data Protection Regulation (GDPR) in Europe.
- Wipro was opening manufacturing locations in Andhra Pradesh and Guangzhou on April 2018.



**1945**  
Year of Establishment



Bangalore, India  
Company Headquarters



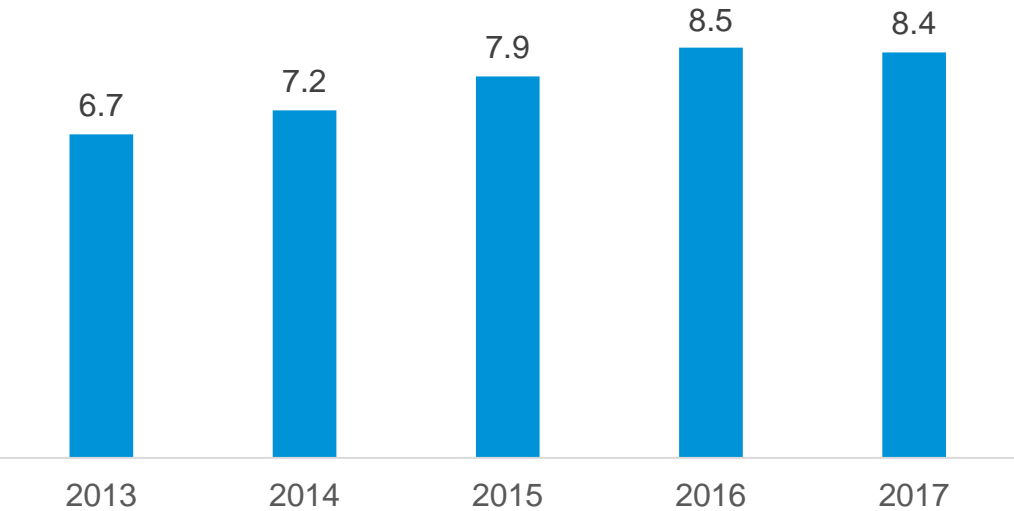
**\$ 8.4 billion**  
Revenue (FY'17)



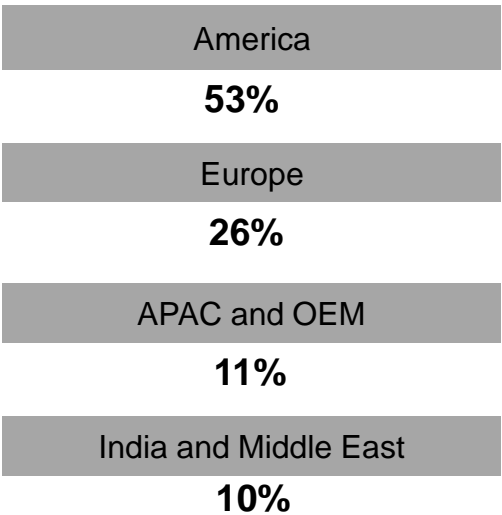
**~ 162,553**  
Employees (FY'18)

Revenue Growth (in Billion) –  
(for 5 years)

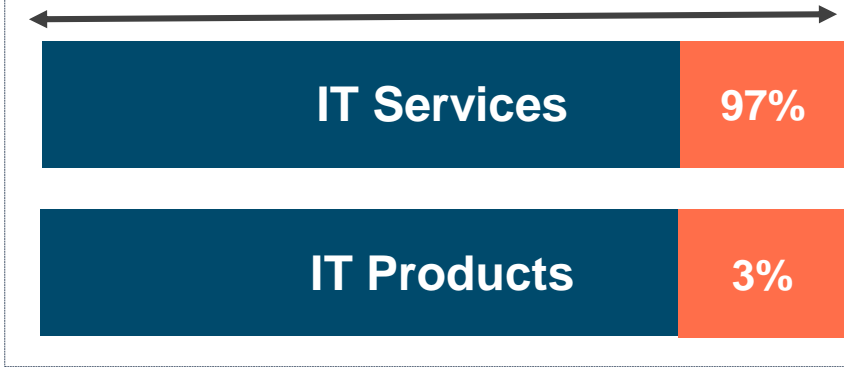
**5.82%**  
Revenue CAGR  
(5 Yrs)



Revenue by Geography (FY 2017)




Business Segments




Revenue %



 ~ \$40 – 60 Mn  
Revenue (FY'17)

 ~ 650 – 750  
Head Count (FY'17)

 44%  
Onsite Percentage

Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

Key Clients



GE Healthcare



Key Developments

- Usage of non-invasive wearable sensors, mobility, cloud-based analytics and evidence-based decision support systems.
- Claims Administration, Medicaid Medical Management, Health Risk Assessment (Clinical and Behavioral) HRA, complex case management, Medicaid Care Management platform for integrated behavioral-clinical programs.
- Hospital Information System to automate clinical, electronic medical records (EMR), administrative and inventory functions.

### Imaging Diagnostics

- Cardiology, Neurology, Oncology, Vascular, Molecular imaging and Interventional Imaging systems.
- AW streamlines post-processing by bringing together all imaging techniques, AW boosts your productivity across all modalities such as CT, MR, PET, SPECT, Interventional, and presents a consistent user interface for all clinical applications.
- New product design in the field of Patient handling and Electronic packaging of electronic modules for MRI Scanners.

### Non-Imaging Diagnostics

- Development of codes for computer-based tool used for testing the pulse rate of the patient during invasive and non-invasive breathe-down.
- Development of advanced touch screen maternal fetal monitor to monitor the maternal and fetal vital signs to help assess maternal and fetal well-being.
- Monitor the vital signs like maternal blood pressure (NIBP), pulse oximetry (MSpO2), maternal heart rate (MHR/MECG), and fetal heart rate (FHR/FECG).
- The ABL90 FLEX analyzer combines the high measuring accuracy with the ease of use. Designed specifically for point-of-care testing, the analyzer measures 17 parameters, including blood gas, electrolytes, metabolites and CO-oximetry from just 65?L of whole blood. Mixing and measurement of the blood sample is done automatically.

### **Monitoring Devices & Surgical Devices**

- Cardiac Implant Monitoring System, EMRGateway, Cardiac Event Monitoring System and Care Ports development.
- Development of Mobile Application for real time monitoring of ECG Signal.
- Medicine transfusion (Value engineered infusion pump), IGS for surgeries

### **Other Therapeutic Devices**

- Development of AERO Remote Control, a mobile device, generally containing an embedded blood glucose meter, capable of communicating with a CGM sensor patch connected through Bluetooth with the Remote Control Device. It is a Class-C medical device project designed for the patients suffering from diabetic s type-1 and type -2.
- Implementation of MedibusX in Delta s last release to make it compatible with the available Ventilators, Anesthetic Devices and other MedibusX products in the market.





**Altran** Technologies is active in innovation and advanced engineering consulting. The company covers the entire project life-cycle, from the planning stages (technological monitoring, technical feasibility studies, strategy planning, etc.) to final realization (design, implementation, testing, etc.)..



**1982**  
Year of Establishment



**Paris, France**  
Company Headquarters



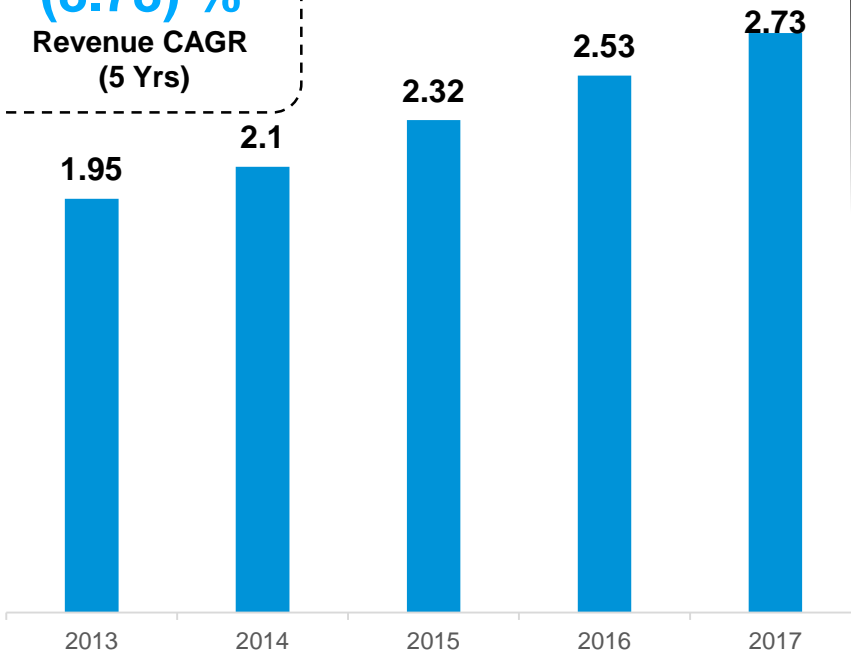
**\$2.73 Billion**  
Revenue (FY'17)



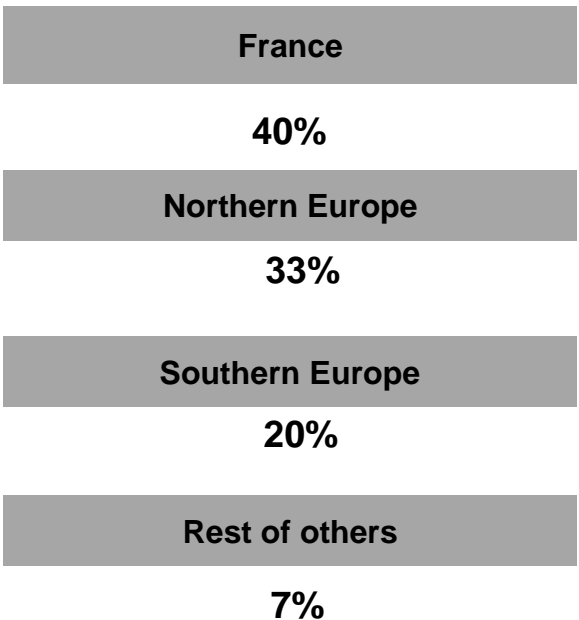
**~2,00,364**  
Employees (FY'17)

**Revenue Growth**  
(in \$Billion) - (for 5 years )

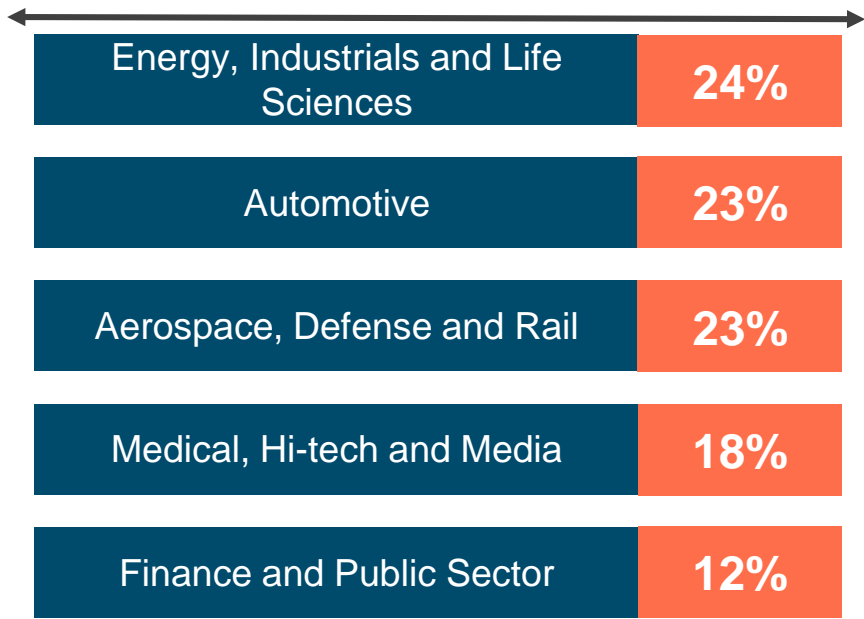
**(8.78) %**  
Revenue CAGR  
(5 Yrs)



**Revenue by Geography (FY 2017)**




**Business Segments**





Revenue %





 ~ \$70 – 100 Mn  
Revenue (FY'17)

 ~ 800 – 900  
Head Count (FY'17)

 90%  
Onsite Percentage

Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

Key Clients



Key Developments

- DISDEO: Developing an intelligent medical device enabling a better observance of medical treatments
- Smart Patient Adherence, a secure, end-to-end user-centric solution, connecting real-time connected objects surrounding the patient (pillboxes, blisters, etc.) and providing a communication platform between patients, doctors and Life Sciences companies to monitor and improve patient adherence.
- Cloud-Based Portal for Mobile Imaging Device
- Population Care Management Architecture

### Imaging Diagnostics

- Medic@ aims at developing services for high performance medical images treatment for the preparation, supervision or simulation of surgery.
- Integrated into tools for medical imaging.
- Exploited based on images and integrated with shared medical imaging platforms.
- Implementation of the product as a part of virtual laboratories.

### Non-Imaging Diagnostics

- XylemDx offers instant personalised testing at the doctor's surgery or pharmacy for signs ranging from the latest strain of the flu virus to specific biomarkers for genetic heart conditions.
- The XylemDx technology turns a sheet of paper into any one of a variety of different diagnostic tests, each of which can be produced on the same fabrication device.
- Each piece of paper can be configured with a bespoke set of test modules – for example, electronic, thermal, fluidic, optical or biological reagent modules – before being folded concertina-style into the traditional test cartridge shape.

### Other Therapeutic Devices

- Vena platform, that supports a set of standards that have been selected by the Continua Health Alliance to guarantee compatibility between personal health devices.
- As well as providing Bluetooth, and USB connectivity, the single chip Vena platform can be used as the core of a complete device providing user interface and sensor processing, or as an addition to an existing device.
- VueForge® Connect: full featured IoT Platform for various purposes.

### Surgical Devices & Monitoring Devices

- The MEDIC@ program aims at proposing a system of augmented reality and simulation with clinical added value, improving the quality of surgery in an operating block, in particular laparoscopic surgery like ablation of liver tumors.
- The various monitoring devices are
  - Picado
  - Disdeo
  - VENA



**Infosys** provides software development, maintenance and independent validation services to companies in finance, insurance, manufacturing and other domains.



**1981**  
Year of Establishment



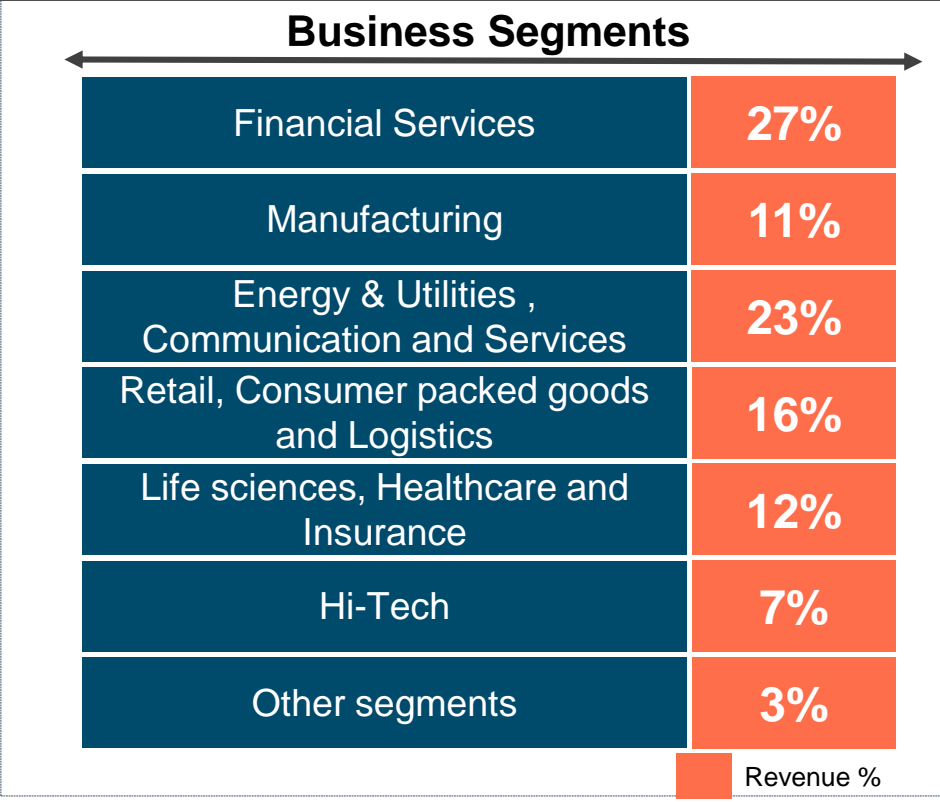
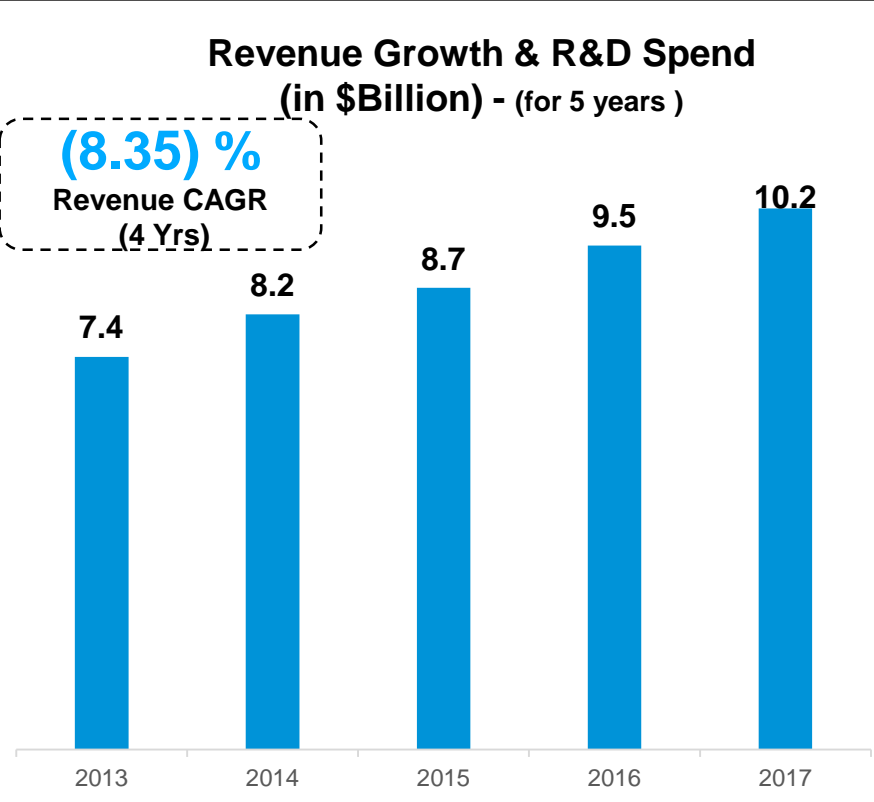
**Bengaluru, Karnataka, India**  
Company Headquarters




**\$10.2 Billion**  
Revenue (FY'17)




**~2,00,364**  
Employees (FY'17)





 ~ \$20 – 40 Mn  
Revenue (FY'17)

 ~ 500 – 600  
Head Count (FY'17)

 2%  
Onsite Percentage

Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

Key Clients



Key Developments

- Medical Data Analysis & Alerts Processing
- Verification, Validation & Test Automation
- Wearable devices. Remote Data Collection for Sleep Diagnosis and compliance management. VR App for Interventional Radiology. The App allows radiologist to play, pause, zoom, pan functionality through voice commands. It also allows doctor to stop and blank the HoloLens screen whenever not required to look only at patient.

### Imaging Diagnostics

- Next Gen data management solution design and development for a leading sleep disorder solution.
- Production test firmware development for automating the production testing of CPAP medical devices for treatment of Obstructive Sleep Apnea.
- Development of remote monitoring solution for patients in ICU/OTs for pre-operative and post-operative care with PGIMER

### Non-Imaging Diagnostics

- Glucometer device Configuration application design for a pharmaceuticals and health care products company.
- Insulin pump configuration app development for a pharmaceuticals and health care products company.
- Integration of Mobile based Diabetic patient's logbook data comprising of meals, exercises, medication etc. to a central clinician portal.
- Hospital use Glucometer with barcode readers to validate patient and tester allowing multiple patients to be recorded in one go and then update the same by docking station to send the collected data to Laboratory information System for recording and to HIS for billing.

### Surgical Devices

- CAD / FEA analysis work done along with SCTIMST for low cost stent modeling
- Verification testing of emergency room programming equipment for implanted cardiac devices for leading cardiac devices company

### Monitoring Devices

- Design, tool development, firmware design and development for collecting data from implanted device, unit testing, verification protocol writing and automation for the implanted device testing. Main domains include Pacemakers, defibrillators, CRT devices and also pain management and deep brain stimulation devices area.
- Design, development and verification of remote monitoring of patients with implanted devices. Every night data is collected and alerts and alarms are sent to doctor's for quick action.
- Development of a screening application for identification of patients to be recommended for cardiac implant devices.
- Cardiac pacemakers and ICD firmware tools and system verification for global manufacturer of medical equipment.


### Other Therapeutic Devices

- Insulin pump configuration app development for a pharmaceuticals and health care products company
- Ecosystem connect with hospitals and institutes.







- **Tech Mahindra Limited** is an Indian multinational provider of information technology (IT), networking technology solutions and Business Process Outsourcing (BPO) to various industry verticals and horizontals.
- They are Developing on **cutting-edge technology solutions** and plain areas of Blockchain, Artificial Intelligence / Machine learning, Virtual Reality, Augmented Reality and the Internet of Things, to equip customers in their digital journey.

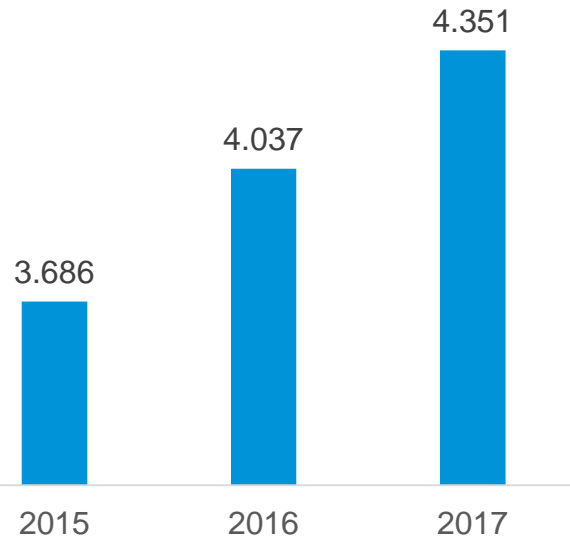
 **1986**  
Year of Incorporation

 **Pune, India**  
Company Headquarters

 **\$ 4.3 Billion**  
Revenue (FY'17)

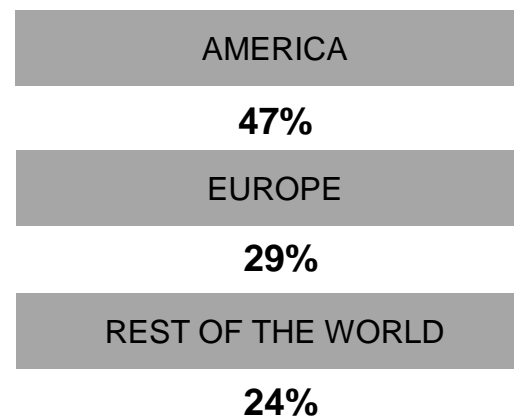
 **~ 112,807**  
Employees (FY'18)

**Revenue Growth**  
(in \$ Billion) - (for 3 years )

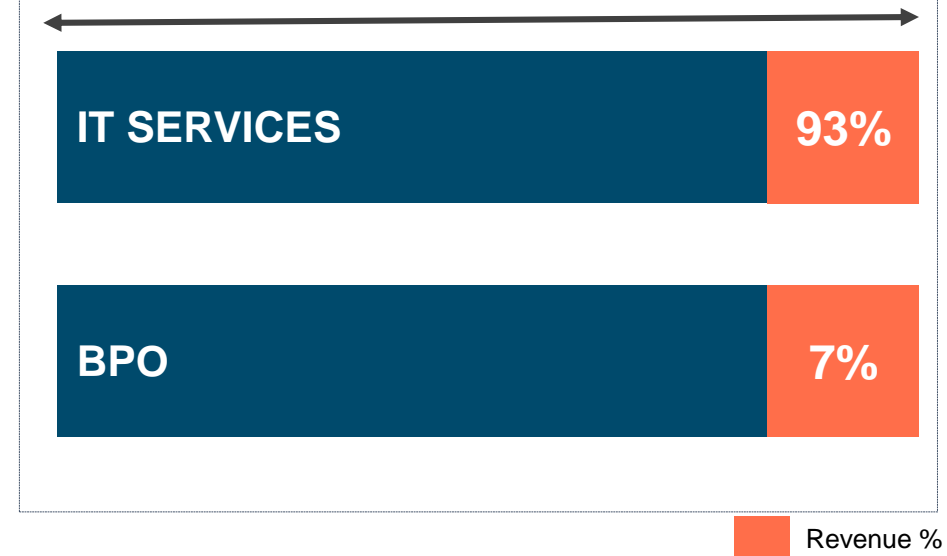


**8.65%**  
Revenue  
CAGR  
(3 Yrs)


**Revenue by Geography (FY 2017)**




**Business Segments**





 ~ \$15 – 25 Mn  
Revenue (FY'17)

 ~ 400 – 500K  
Head Count (FY'17)

 92%  
Onsite Percentage

Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

Key Clients



GE Healthcare



Key Developments

- Telehealth remote patient consultation.
- Wearable smart devices

## Imaging Diagnostics

- Automation of Ultrasound imaging

## Non-Imaging Diagnostics

- Development of RFID features for Whole blood processing.

## Surgical Devices

- Design and development of surgical devices and also involved in prototype building and testing of re-usable components such as staplers.

## Monitoring Devices

- Vital Sync Home Product is a remote patient monitoring (RPM) solution designed to monitor multiple patients while delivering updates and event-driven physiological alerts to a central station for use by clinical care teams

## Prosthetics


- Cloud connectivity solutions for next generation ECG product platform.


## Other Therapeutic Devices


- Cloud connectivity solutions for diabetic care. Preparing the BDD test case to automate the Test case fast




- **Tata Consultancy Services Limited (TCS)** is an Indian multinational information technology (IT) service, consulting company, placed 2<sup>nd</sup> among the most valuable IT services brands worldwide.
- **TCS** and its **67** subsidiaries provide a wide range of information technology-related products and services including application development, business process outsourcing, capacity planning, consulting, enterprise software, hardware sizing, payment processing, software management and technology education services.

 **1968**  
Year of Incorporation

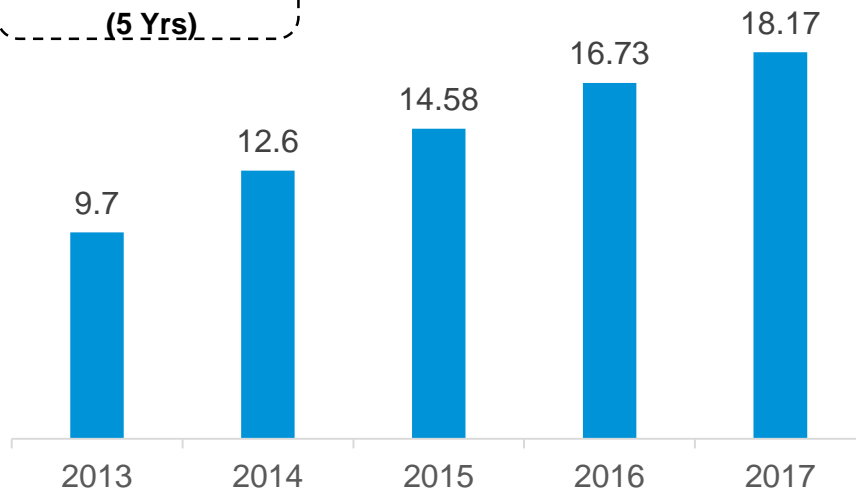
 **Mumbai, Maharashtra, India**  
Company Headquarters

 **\$ 18.17 Billion**  
Revenue (FY'17)

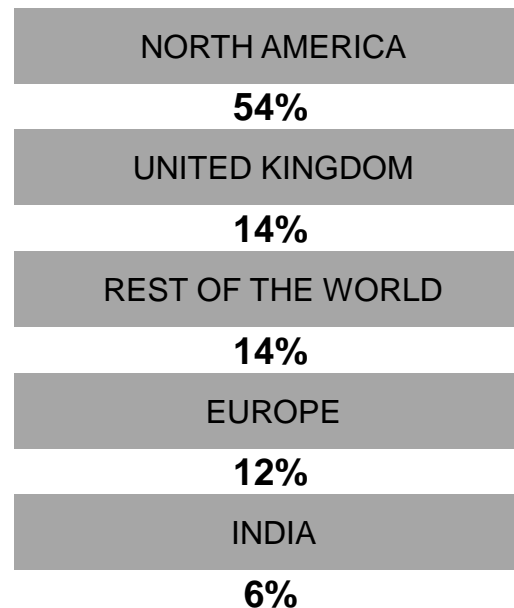
 **~ 395,000**  
Employees (FY'18)

**Revenue Growth**  
(in \$ Billion) - (for 5 years)

**16.99%**  
Revenue CAGR  
(5 Yrs)



**Revenue by Geography (FY 2017)**




**Business Segments**



 Revenue %



 ~ 1000 – 1500  
Head Count (FY'17)

 15%  
Onsite Percentage

## Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

## Key Clients



## Key Developments

- Design & development of Injection Port Device for delivering Insulin.
- Value engineering of a Blood Glucose meter.
- Software Application Development for Tissue Processing Equipment
- Design and development work flow management Software for Tissue Diagnostics equipment
- Design and Development of a Syringe Pump

### Imaging Diagnostics

- Design and Development of Patient specific devices for a Orthopedic patients.
- Development of Intra – Oral 3D Scanner: Due Diligence and Initial Recommendations on program approach. Reusable Image Processing Algorithms, S/W solution for reusable microscopic software, DICOM Compliant Radiological Image Processing, Dedicated Imaging COE for continuous skill Upgradation & developing Solution accelerators.
- GUI & HMI development for DICOM based Solution
- Cloud based Pathology imaging tool
- Digital Templating Software solution to enable surgeon and sales rep's to pre-operatively plan for the implants and instruments that are needed for the orthopedic surgeries.

### Non-Imaging Diagnostics

- Re-engineering of a Middleware that automates data transfer between DNA/RNA sequencing instruments, and LIMS. Re-architecture of existing advanced staining software platform running the Tissue Diagnostic instruments for a US based OEM that manufactures Tissue Diagnostic Equipment. Agile Based Design and Development.
- .NET Adoption that helps in Easy addition of features and maintenance of software.
- Troubleshooting of manufacturing defects and tolerance analysis.
- Verification & Validation of design changes.

### Surgical Devices

- End to end product development of electro mechanical Class-III capital equipment.
- Design and development of Next generation Biopsy devices.
- Design and development of automated cutting guide for minimally invasive computer assisted surgery with interface to tracking technology.
- Design and development of electromechanical, power assisted, hand held stapler-cutter for minimally invasive surgery.

### Monitoring Devices

- Software developing, monitoring and analytics solution for Life care Solution Modality.
- Design and development of Communication Interface hardware and Application System of ECG machine.
- Industrial Design Engineering and Value Engineering of Anesthesia Delivery System.
- Design support for Portable Infant Resuscitation system which also involves packaging of the final product.
- Pulse oximeter Hotspot detection Test Infrastructure. This includes transfer of patient vital sign records (e.g. ECG, pulse, blood oxygen etc.) from Patient Monitoring Interface to clinical information system periodically during treatment while in an ambulance.

### Prosthetics

- Remediation of design documentation for Class-II and Class III medical devices.
- Enhancing product portfolio by developing new family of Implants for Japanese Market.

### Other Therapeutic Devices

- Design & development of Injection Port Device for delivering Insulin.
- Value engineering of a Blood Glucose meter.
- Software Application Development for Tissue Processing Equipment
- Design and development work flow management Software for Tissue Diagnostics equipment
- Design and Development of a Syringe Pump





HCL provides end user computing including application management services, managed print services, and managed desktop services



1981  
Year of Establishment



Noida, India  
Company Headquarters



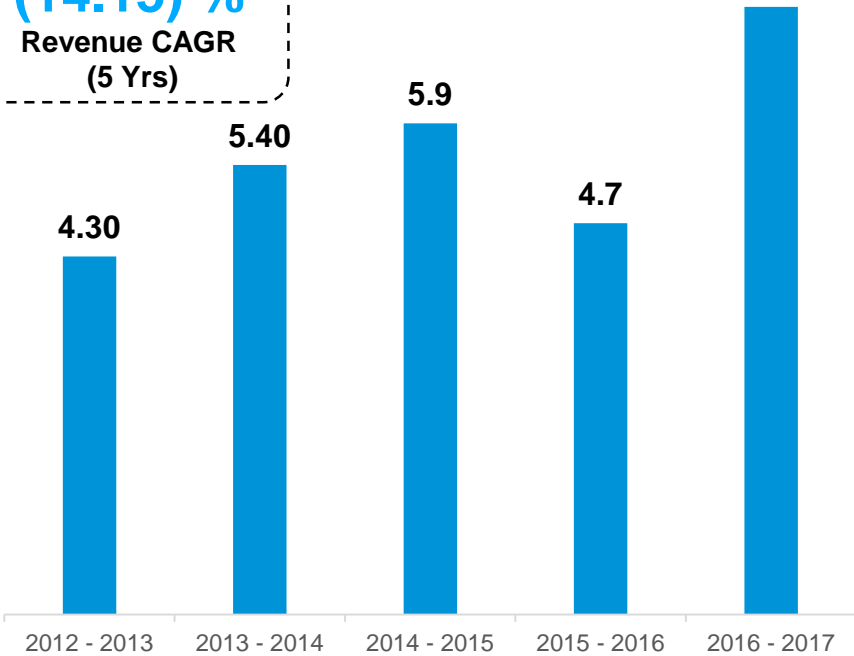
\$7.3 Billion  
Revenue (FY'17)



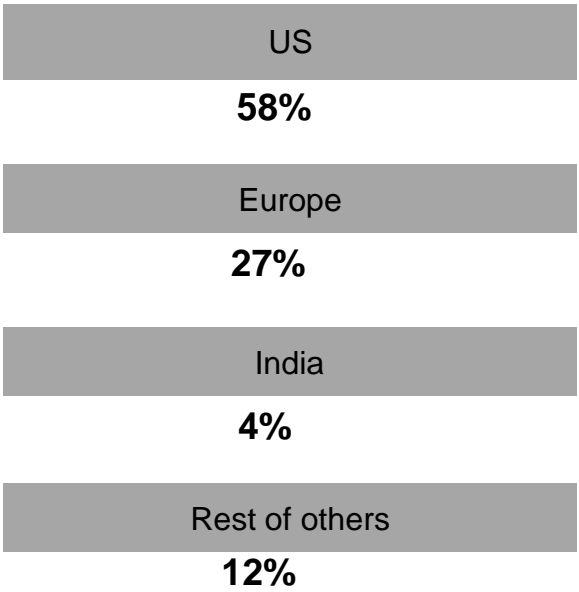
~117,781  
Employees (FY'17)

Revenue Growth  
(in \$Billion) - (for 5 years )

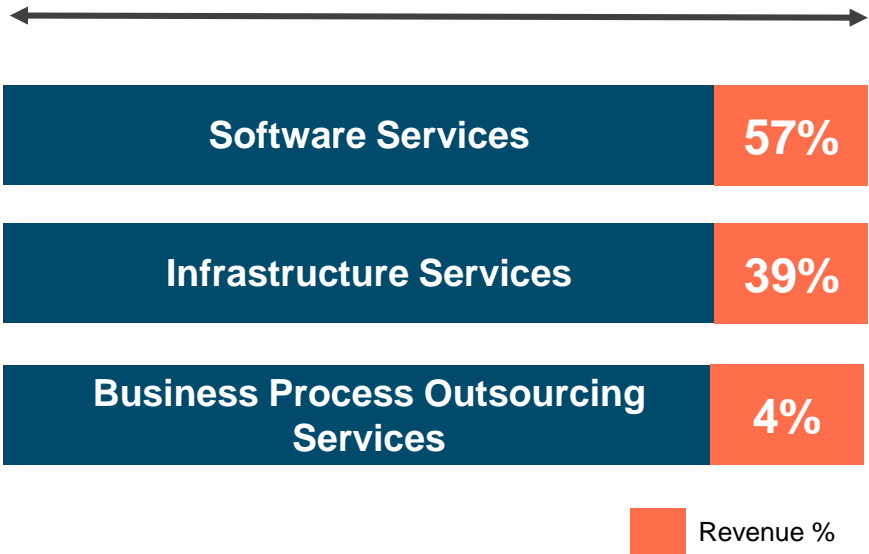
(14.15) %  
Revenue CAGR  
(5 Yrs)



Revenue by Geography (FY 2017)




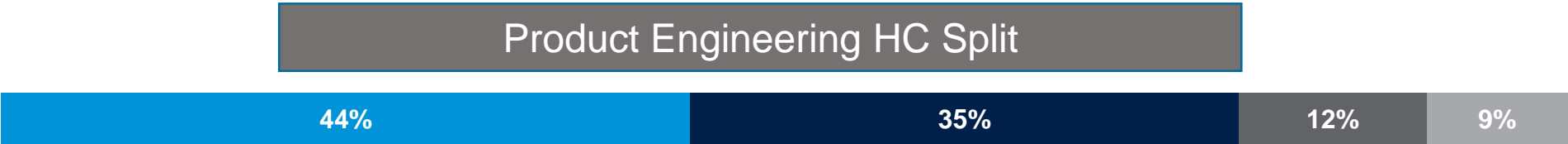
Business Segments





 ~ 2000 – 2500  
Head Count (FY'17)

 20%  
Onsite Percentage



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services



Key Developments

- Design and Development of Class 2 Medical Devices for Diabetes Care Platform.
- Design and Development of Plastic Disposable and Electro-Mechanical Medical Devices.
- Development of application for Hemodialysis Machine to collect and display the data received from an electro mechanical subsystem.
- Developing GUI desktop app for a provider of brackets and aligners for dental services.

## Non-Imaging Diagnostics

- Design, develop and test Homechoice Claria for automated Peritoneal Dialysis. An optional alternative to the Freestyle Libre reader that enables a customer to scan their Freestyle Libre sensor with a compatible smartphone (initially, devices running Android 4.0 or higher with NFC capabilities). Class III App, receives data from the sensor via BLE, displays current glucose, trend arrow and 3, 6, 12 and 24 hours views of the recent glucose history trace. Features configurable alerts triggered by different glucose conditions. Designed and implemented software for low energy device used for continuous blood glucose monitoring.

## Surgical Devices

- Designed and developed an Endoscope Disinfection system.
- Design verification for the complete BD Medical Surgical System (MSS) products as per ISO Standards.
- Working on testing and enhancement of Internet-Of-Things - Surgical Kit Tracking Application.

## Other Therapeutic Devices

- Designed and developed a complex drug delivery system for Class III medical devices.
- Designed and developed CSF shunt (Implantable miniature mechanical valve).
- New Product Development of Class III Implantable Pump.
- Reengineering of Myocardial Protection System.



- **GlobalLogic** is an IT outsourcing firm that is privately owned by Partners Group and Canadian Pension Plan Investment Board.
- It has already acquired 8 companies and is planning to acquire more companies in the near future.



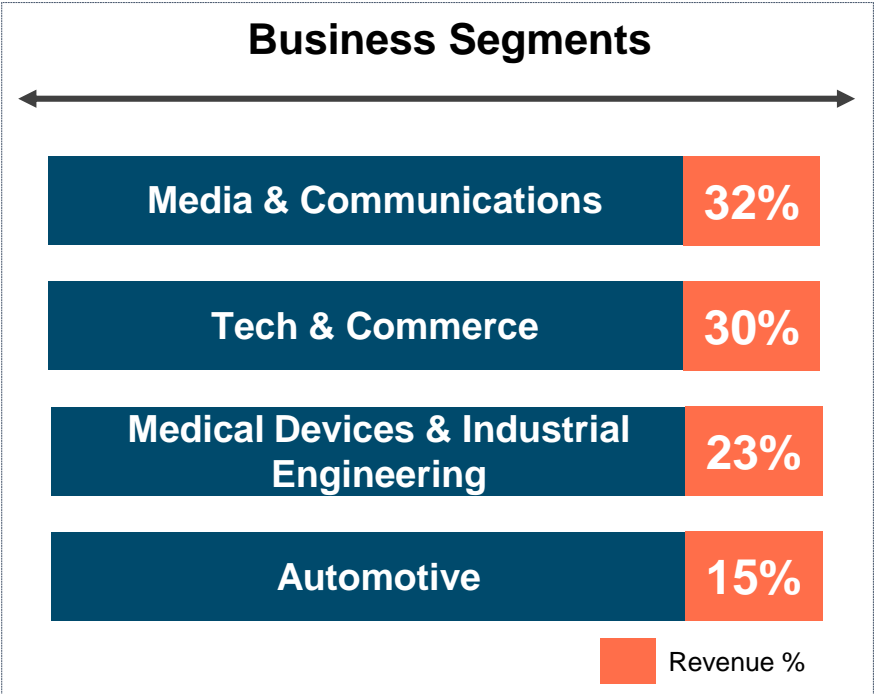
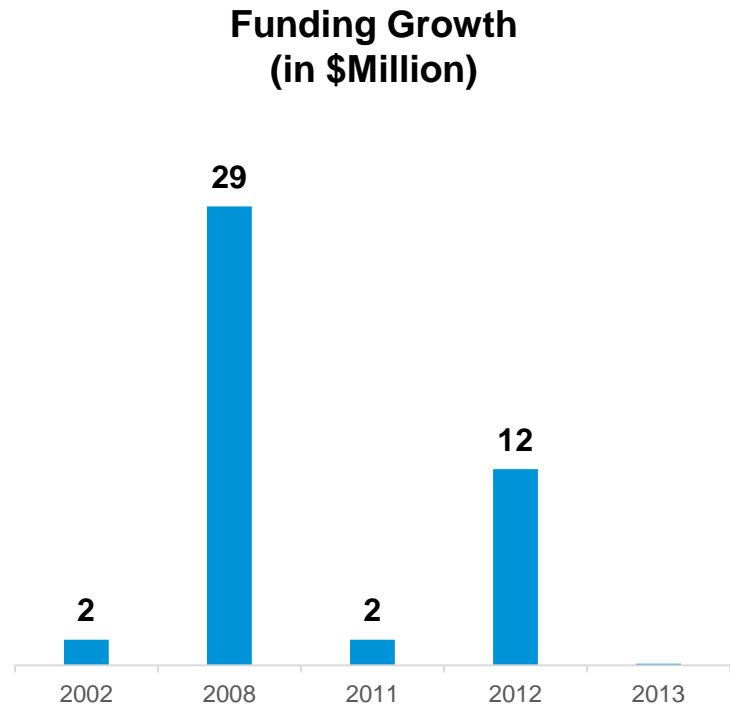
**2000**  
Year of Establishment



**San Jose, California,  
United States**  
Company Headquarters



**~12000**  
Employees (FY'17)



**Key points**

- The organic growth rate of the company is 20-24%.
- Hired merger and acquisition specialist Jonathan Rothenberg to double the number of acquisitions.
- It is looking for the companies that are worth 20-75Mn USD in areas like IoT, 5G, autonomous driving and machine learning.

# GlobalLogic



~ \$30 – 50 Mn  
Revenue (FY'17)



~ 600 – 800  
Head Count (FY'17)



5%  
Onsite Percentage

## Product Engineering HC Split



- Design & Development
- Testing & Automation
- Sustenance & Maintenance
- Regulatory Compliance & Support Services

## Key Clients



## Key Developments

- Design and development for over 10 various IoMT platforms for remote monitoring, therapy management and asset management.
- A heart failure risk advisory solution that provides analytics based on continuous heart rate and weight monitoring.
- Implemented a number of big data and analytics solutions for diagnosis support, post-event retrospective analysis of treatment effectiveness, and medical device predictive maintenance.
- A machine learning-based solution for complex visual object recognition. AI/ML predictive analytics and image recognition solutions, augmented reality implementation for care assistance and remote consultation.

### Imaging Diagnostics

- GlobalLogic develops both embedded software for medical imaging devices and supporting software systems (PACS, viewers, analyzers) for ultrasound, X-ray, CT, MRI and surgical navigation equipment.
- Working on R&D in the field of machine learning usage for complex image recognition.
- Development of mobile application that captures an image of a rapid test strip, removes background noise, selects the signal bands, plots the pixel density ratio of the bands and measures the area underneath each pick. Test result is immediately reported on the mobile device.

### Surgical Devices

- Developing supporting systems such as instrument tracking and management systems, remote consultation software, and surgical navigation systems. GlobalLogic collaborated with its Product Experience Design subsidiary Method to develop a concept and a prototype of an augmented reality wearable device for in-surgery assistance. It is a set of wirelessly connected devices allowing healthcare professionals to improve real time patient life-signs monitoring in the operating room. The set includes a gateway which gathers info from health monitoring equipment, and a Head Mounted Display (glasses) projecting visual data onto retina.

### Monitoring Devices

- ECG monitoring, breathing frequency monitoring, blood pressure monitoring and pulse oximetry, remote patient monitoring and telemedicine solutions development.

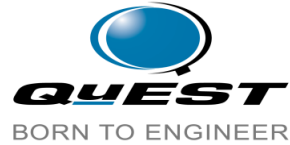
### Non-Imaging Diagnostics

- GlobalLogic designed multiple laboratory diagnostics support applications, such as a SaaS-based application for rapid identification of microorganisms, that is used for infectious disease diagnostics, public health surveillance, food safety inspections, pharmaceutical discovery, and microbiome analysis for health and wellness.

### Other Therapeutic Devices

- Specifically in such areas as diabetes and COPD management. developed a prototype of a touchscreen embedded into the next generation insulin pump. The system consists of a touchscreen panel, touchscreen controller and software driver.





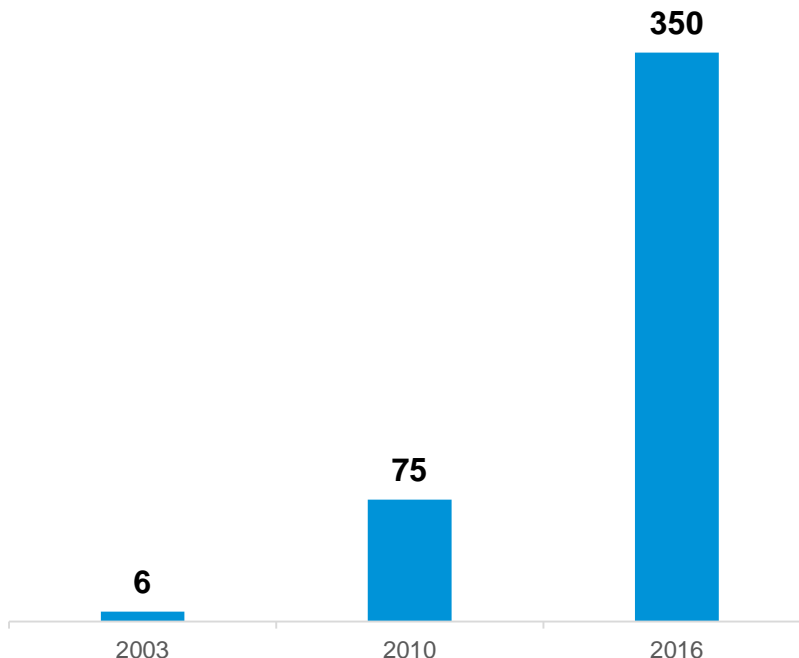
**Quest Global** offers civil engineering, design automation, drafting and 3D modelling services for aerospace, medical, automotive, oil and gas industries.

 **1997**  
Year of Establishment

 **Singapore**  
Company Headquarters

 **~8500**  
Employees (FY'17)


**Funding Growth**  
(in \$Million)




## Key points

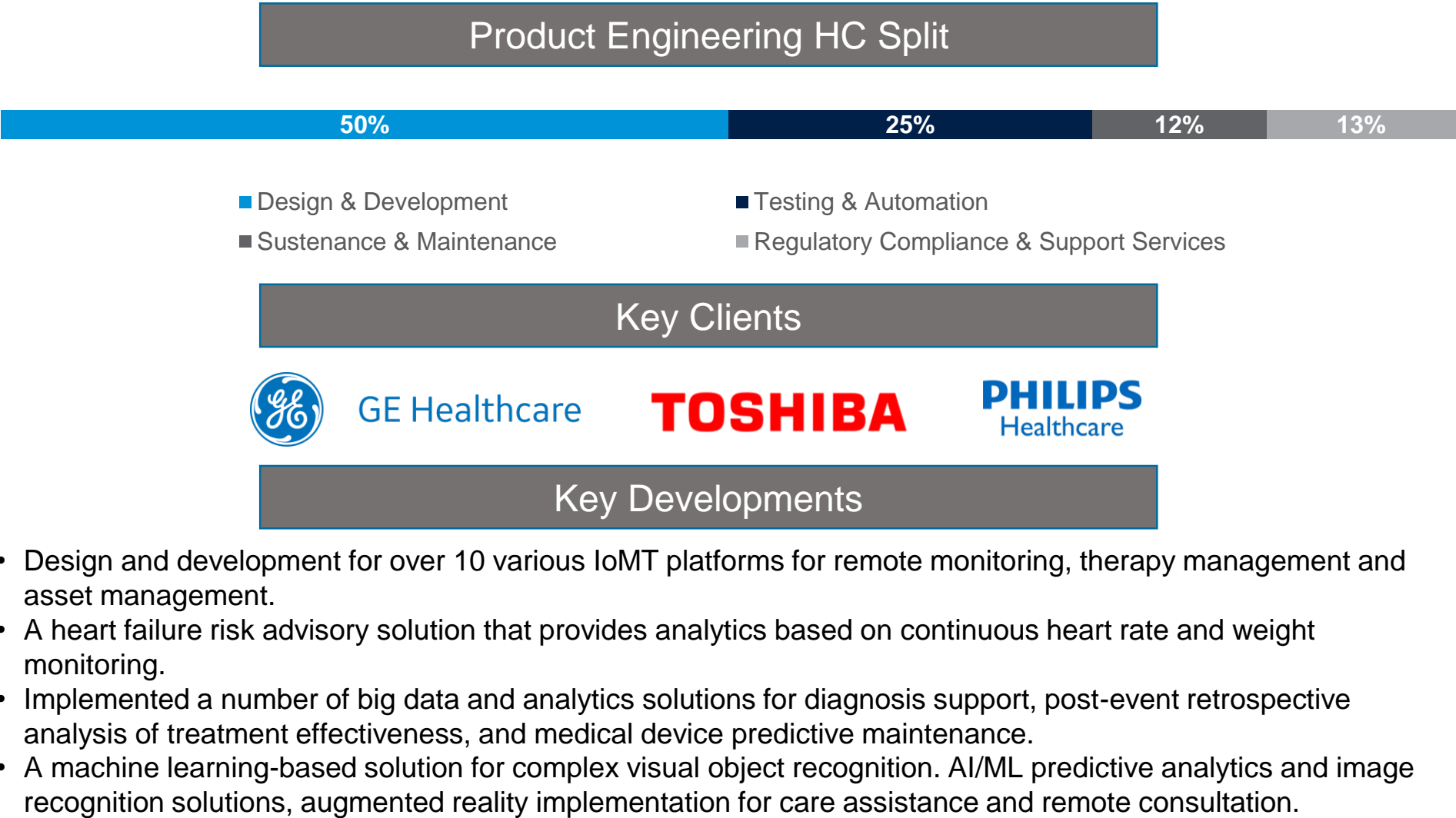
- The company has acquired 3 companies in 2018(till now) and 3 companies in 2017 which in total accounts to 8 companies.
- The company is valued at 1\$Bn after the last funding round from three venture firms, who acquired 35% stake in the company.
- The company is looking to increase the revenue to 1\$Bn by 2020 and is planning to increase the headcount of the company to 20000.
- A double increase in the headcount is planned at Thiruvananthapuram location.



 ~ \$20 – 30 Mn  
Revenue (FY'17)

 ~ 100 – 200  
Head Count (FY'17)

 95%  
Onsite Percentage



### Imaging Diagnostics

- The Project Xray-WorkFlow deals with the UI design of latest mobile and immobile XRAY- machines which are used extensively in hospitals across the world.
- The Project handles different XRAY- Machine programs like SuperBee, DragonFly, Everest series etc.
- Development of software modules that implement synchronization between images in different viewports.
- Implemented Sync by Relative Position algorithm for Mammo DBT images. Test Automation for GE healthcare domain for the CT device automation.



**D R A U P**  
POWERED BY ZINNOV

[www.draup.com](http://www.draup.com)

SANTA CLARA | HOUSTON | BANGALORE | GURGAON

© 2017 DRAUP. All Rights Reserved.

[info@draup.com](mailto:info@draup.com)