ENGINEERING AND R&D SERVICES

Business Impact through Product Engineering

2 Engineering experiences

Introduction

HCL - A $6 Billion Global Enterprise

HCL Technologies brings IT and engineering services expertise under one roof to solve complex business problems for its clients. Leveraging our extensive global offshore infrastructure and network of offices in 31 countries, we provide holistic, multi-service delivery in industries such as financial services, manufacturing, consumer services, public services and healthcare. HCL's 35 year journey has been truly transformational.

1978
Ships in-house designed microcomputer

1980
Ventures into international market with Far East Computers in Singapore

Introduces bit slice, 16 bit processor based microcomputer

1983
Indigenously develops RDBMS, Networking OS and Client Server architecture at the same time as global IT peers

1993
Infrastructure Services Division bags their 1st order - Asia's largest stock exchange

1996
Launch networking & telecom practice

Relationship with Cisco commences

1999
HCL Technologies redefined through IPO

2000
Establishes BPO operations

First in India to offer end-to-end R&D services for medical device companies

2003
HCL Tech realigns with industry vertical focus.

First Indian company to achieve domain specific certifications: AS9100, ISO 13485, SPICE L5

2006
Exclusive software development partner for 787 Dreamliner

2008
HCL acquires AXON, largest SAP focused independent consulting firm

Acquires capital stream to enhance financial services offerings

2009
Datamonitor-Brown & Wilson ranks HCL as No.1 in "RIMO" and "Tier 1 Infrastructure Outsourcing"

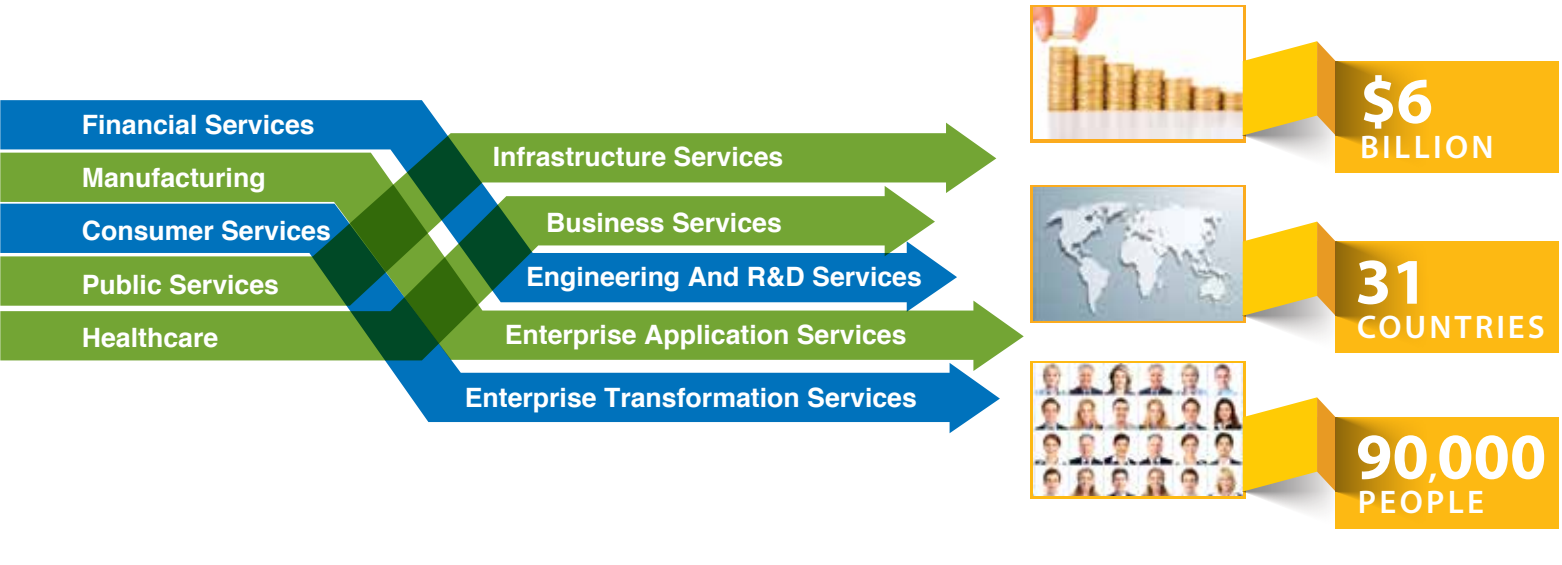
Opens global development center in Brazil

Next gen Green Data Center ,New Jersey, US, expand delivery footprint

2012
HCL ranks #3 in 'The 2012 Global Outsourcing 100'

With Cisco, HCL launches South Africa Glocal Centre of Excellence for customer and partner support throughout Africa

HCL Technologies is fueled by Employees First, a unique management approach that unshackles the creative energies of our employees, and puts this collective force to work in the service of customers' business problems. By engaging HCL employees in a way that allows them to deliver business value – whether it involves enterprise application services, IT infrastructure management, custom application services, engineering and R&D services, business services or enterprise transformation services - we turn technology into a distinct competitive advantage for our customers.



Engineering Services at HCL

HCL ERS – The #1 Engineering Services Provider from India

NORTH AMERICA
- $40B+ product revenue enabled
- Three US based Engineering Development Centers with 50% local employees and 20+ offices

EUROPE
- Presence in four regions in Europe
- 15 of the 50 top tier companies are HCL's customers
- A Development Center in Europe, 80% local employees

JAPAN
- Focus verticals are Consumer Electronics, Medical Devices, Office Automation, Automotive and Industrial Manufacturing
- Multi-lingual engagement teams based out of centers in Tokyo and Osaka

INDIA
- $25M+ investment in engineering labs
- 100+ development centers (dedicated and shared)
- Presence in 6 cities. Among the largest globally in engineering strength

Successful products are those that provide winning experiences. HCL's Engineering and R&D Services (ERS) business unit has helped some of the most innovative and successful organizations in the world launch winning engineering experiences. A combination of a heritage in engineering, out-of-the-box thinking and a solid foundation of talent, processes, systems, frameworks and tools are just few of the reasons why some of the largest global ESO (Engineering Services Outsourcing) partnerships are with HCL ERS.

We love engineering. From helping build next generation airplanes, microscopic medical devices, smart or consumer devices; we love to help our customers realize their business strategy through product engineering, platform solutions and unique engineering experiences. Being part of a computing product company that started more than three decades ago, HCL ERS itself has helped 300+ customers launch over thousands of products in the last ten years. Our passion for helping our customers succeed in the global market through engineering innovation and experience has helped HCL ERS to be one of the largest global engineering services providers.

"HCLT's Product-focused History Gives It the Tools to be Successful in ESO"
- TBR

"The EOOTB Results were impressive. The ERS division had grown during 2009 and 2010 at a compound annual rate of 26 percent, and business in the pipeline had grown by 83 percent."
- Ivey

"As HCL Technologies' ERS team continues to consolidate HCL's position in the R&D/product engineering services market, it needs to keep a close watch on the company's traditional and new competitors. HCL's EOOTB methodology packages key strategic components that influence customer adoption positively, and the strategy is good for the near term."
- IDC

"Nature of innovation changing in the future as more and more R&D partners like HCL are able to play a more active role in the innovation of its customers' products. HCL also has what it calls "productized solutions," which are the company's own proprietary technologies developed in-house which can be incorporated into its clients' designs."
- Frost & Sullivan

Vertical Presence

Presence in Ten industries

HCL ERS has been instrumental in engineering multiple products for 300+ customers across 10 industry verticals. Our engineering services straddle the entire product development lifecycle from new product introduction to end of lifecycle.

Aerospace & Defense

Work with 7 of the top 10 aerospace firms.
Complete reengineering of a 25-year-old complex flight test system, impacting 4 of the most popular commercial aircrafts generating $30B+ of annual revenue.

Automotive

14+ years of automotive electronics and engineering design experience. Investments in next generation technologies and advanced engineering solutions.
22% saved for a Tier 1 global automotive company. Steering systems cost reduction from $38 to $30 by proposing alternative design, alternative components and alternate sourcing.

Industrial Manufacturing

Collaborative engineering and system solutions for HVAC, ORV, O&G and E&U customers across the globe and value engineering for full lifecycle product engineering projects.
End-to-end development of monocular handheld infrared camera. Accelerated product release by nine months, a 25% reduction in time to market at less than half the price of its previous version. Highest sales volume and faster ROI for the company – sold more than 40% of its projections.

Consumer Electronics

12+ years of experience across white goods, digital imaging, mobile and AV systems.
Four year relationship with a global consumer electronics leader across eight product families and 110+ products. Responsible for over 95% of SQA for DTV. Impacted 23% of overall company revenue.

Medical Devices

11+ years of experience and involvement in over 100+ device developments across therapeutic segments, including 6 Class III medical devices.
Concept to realization of a Class III medical device for a medical devices manufacturer; created a unique implantable drug delivery system, integrated sensor for drug usage & delivery and extended battery life to 8yrs.

Office Automation

Product engineering of six product lines of multifunctional printers; 32 invention disclosures filed in the last one year.
HCL runs the world's largest ESO engagement in this space. Covers operations optimization to invention across multiple product lines spanning four continents.

Networking & Telecom

Investments in future growth areas – Ethernet, OSS/NMS, automation, mobility, analytics, virtualization. Partnerships with leading chip vendors; ISVs & EMS vendors ensuring optimized CAPEX / OPEX spending for our customers across the value chain.
15 years of engagement with a leading telecom OEM. Development, testing and sustenance of an industry leading switching portfolio, deployed by more than 35,000 customers with a business impact of $4B+.

Semiconductors

#1 in semiconductor equipment engineering – 13 years and 5000 man-years of expertise with a 70% market share.
End-to-end engineering of automated test equipment with over 6 million lines of code for a global semiconductor equipment manufacturer. Over 500 man-years of windows and driver experience in semiconductor ATE Domain.

Servers & Storage

10+ years of expertise in server & storage product spectrum. Technology expertise across solid state drive, de-duplication, FCoE, FS, SAS/SATA, ISCSI high performance computing and server virtualization.
HCL is 25% of client's overall engineering team and supports growth in futuristic areas. HCL also provided security implementation (TCG) for next generation client SSD.

ISV and Online

Engagements with 150+ software and Internet properties. End-to-end service offerings covering product and platform engineering. CoEs in emerging technologies like Mobilty, Cloud, Social and Analytics.
Reduced advertiser churn by 20% through behavior analysis leveraging our PI expertise for one of the largest SW and Online companies in the world. 20% improved cross sell, up sell and DM are leveraged by HCL PI and hot fixes and patches are reduced by 30%.

We have earned our customers' trust because of our unwavering focus on the 4 'C's of successful product engineering – Completeness, Complexity, Criticality and Cost.

Completeness: Full product lifecycle engineering with expert domain-specific services in all engineering disciplines - hardware, embedded, mechanical and software.

Complexity: Running global engineering and support operations for products with significant and complex footprint across multiple industries like Aerospace, Medical, Automotive, Industrial, Hi-Tech and Energy.

Criticality: Bringing stringent world-class quality into critical products which your customers trust with their businesses and lives, be it in Medical devices, Avionics, Automotive or Industrial and technology systems.

Cost: Reducing total cost of ownership of products significantly through efficient engineering operations; solution accelerators and overall product cost reduction whether it's for NPI or mature products.

Horizontal Services

Six Core Engineering Areas with Three Decades of Expertise

The breadth of horizontal services at HCL ranges from embedded systems to mechanical design.

HCL is a leader in developing embedded software and systems with expertise in safety-critical systems for medical devices, automotive electronics and aircraft components. Our DSP expertise and IPs aid us in developing fast embedded middleware, rich applications and interactive GUIs for consumer electronics and telecom majors.

HCL also offers domain-specific hardware engineering and design services in areas such as VLSI, ASIC, FPGA and SoC engineering, prototyping and value-added services.

1. **FPGA, ASIC and SoC Design**
2. **Embedded Systems**
3. **Hardware and System Design**
4. **Mechanical Design**
5. **Software Product and Platform Engineering**
6. **Product QA and V&V**

HCL's mechanical engineering services help customers develop complex mechanical designs and products, significantly reducing their time-to-market and helping them penetrate both emerging and existing markets. Our capabilities include concept design, industrial and mechanical engineering design, CAD modeling and detailing, simulation, analysis and prototyping & testing.

Leveraging our software product engineering experience and expertise, we provide services along the lifecycle of a software product to enable our clients to innovate faster and to optimize the realization of innovation. Our capabilities in platform ecosystem development, user experience engineering, performance engineering and automation of platform testing are designed to help our customers accelerate solutions to the market.

Our product quality assurance and V&V services are committed to providing high application and system quality, creating an environment where risk is minimized and safety is ensured.

Engineering Experiences

Business Impact through Product Engineering

HCL ERS understands that our success as an engineering partner is dependent on the success of our customers' products and solutions. We, at HCL, combine our passion for engineering with an unwavering focus on delivering to specific real-world business objectives such as accelerating time to market, reducing cost of ownership and leveraging new technology for increased user adoption.

e2 Engineering experiences

ACCELERATION | VALUE | TECHNOLOGY

Business Impact through Engineering is all about…

Accelerated product development

A

Product Launch and Acceleration

- Adapting to rapidly changing technology
- Customization for local markets
- Ability to deliver differentiation
- Ability to monetize rapidly

Platform Build and Acceleration

- Address time-to-market challenges
- Standardization across platforms
- Address code hardening challenges
- Performance engineering capabilities

Delivered at an incredible Value

V

Value Engineering

- Improved product performance
- BOM optimization
- Extended product lifecycle
- Customization for emerging markets

Product Sustaining and Support

- Optimizing the cost of quality
- Optimizing sustaining cost
- Maintaining product margins
- Flexible engineering capacity

Product Quality Compliance

- Optimizing cost of high availability and high performance
- Address critical safety needs
- Cash consideration/ optimization
- Establish automated or efficient processes

Enabled by the latest Technologies

T

Mobility

- Commercialization of smart phones
- Mobile apps management - testing and certification

Smart Products

- M2M communication implementation
- Convergence of domains
- Business Intelligence implementation

Solutions and Service Accelerators

E2 solutions power delivery organizations

Accelerated Functional Testing

Acceleration Function Testing (AFT) is a system engineering approach to software testing for telecom, extending from functionality testing to regression testing and test automation. It provides differentiated methodologies such as risk based testing and change based testing to organizations looking to improve speed, efficiency, scale and maturity in their testing initiatives.

Application Test Factory

HCL's Application Test Factory (ATF) is a systematic and automated approach for testing mobile applications on 500+ devices including Android, iOS, Windows and Blackberry. It is an on demand solution that uses various predefined testing triggers such as app updates, OS updates, new device releases, etc. ATF can help our customers to ensure quality, decrease time to market and reduce permanent investments for testing mobile apps.

eDAT

eDAT automates the arduous manual test processes of electronic devices to increase test coverage, reduce time to market, and reduce costs. It enables test automation using a black box approach through hardware and software accelerators.

Intelligent Tech Support

HCL's Intelligent Tech Support (ITS) combines the best practices of customer support with the transforming potential of intelligence and predictive analytics so as to bring the next evolutionary step in tech support. ITS will not only allow you to run tech support operations with best-in-class cost, efficiency and effectiveness, but will also empower tech support to add value in other areas such as a proactive problem solving and new business generation.

Multi-tenant Platform Acceleration Suit

Multi-tenant Platform Acceleration Suite is HCL's hierarchical multi-tenant platform that has all the components like rule engines, libraries, workflows, tools, etc. built-in, that can make the apps 100% multi-tenant and can streamline the process of building apps by up to 40%. The hierarchical model allows deployment and consumption of apps globally through a multi-tier authentication and provisioning method. It has the potential to redefine the way our customers manage their application portfolios.

Performance Engineering

This solution delivers core services of performance measurement, performance analysis and performance optimization. It is a one-stop-shop for all performance engineering services with strong capability to take end to end ownership.

Product Intelligence (PI)

HCL's Product Intelligence (PI) framework helps its customers to deliver more competitive products in the market and realize higher ROI through accelerated innovation. This framework automates data collection of usage history of the product, converts it into intelligence and delivers inputs to Product Managers/Engineering Heads to plan future iterations.

SDN

SDN framework accelerates SDN application development by providing an API specific test framework and provides a scalable infrastructure to expedite the testing and integration process with SDN controllers. HCL has engineering ownership for SDN enablement, and therefore establishes process for faster knowledge transition to accelerate time to market.

Video

Video Services render solutions, accelerators and frameworks for the video content creation, publishing, delivery, optimization and consumption of the video. HCL has been involved across multiple engagements with major studios, content aggregators and video service providers in precisely assessing their media workflow requirements along with ecosystem dependencies and instrumenting optimized workflow solutions to meet their current and future needs.

No. 1 ESO player from India

#1 ESO provider from India

Recognized by Frost & Sullivan and Zinnov

PDLC centric propositions

9 Service Lines

Highest growth and market share gain

500 bps in 3 years

EOOTB strategy for productized solutions

20+ solutions, 1200+ patents filed for customers

Industrialized delivery model

100+ frameworks and tools

Global recognition as a Thought Leader

Recognized by Gartner, F&S and TBR

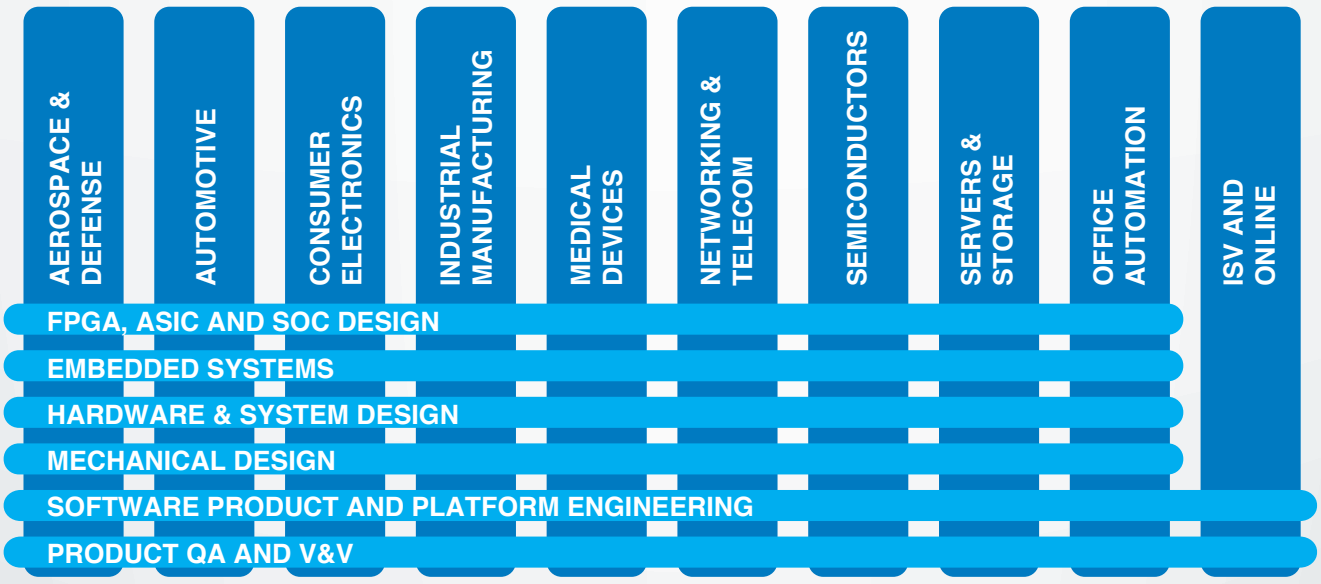
e2 Engineering experiences

Customers include 53 of the top 100 R&D companies

Engineering partners for customers across 10 verticals and 6 horizontals

$45B of product revenue enabled in the last 5 years

4 continents, 100+ development centers



Hello, I'm from HCL's Engineering and R&D Services. We enable technology led organizations to go to market with innovative products and solutions. We partner with our customers in building world class products and creating associated solution delivery ecosystems to help bring market leadership. We develop engineering products, solutions and platforms across Aerospace and Defense, Automotive, Consumer Electronics, Software, Online, Industrial Manufacturing, Medical Devices, Networking and Telecom, Office Automation, Semiconductor and Servers & Storage for our customers.

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