



Good things come in small packages,  
We help good become better

# SEMICONDUCTORS

HCL ENGINEERING AND R&D SERVICES



## The Environment Today

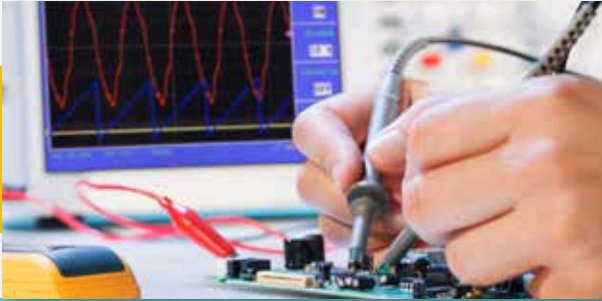
---

The cyclical nature of the semiconductor industry is proving to be quite challenging and semiconductor companies are struggling to boost the utilization of capital-intensive equipment in a time of fluctuating demand. They also face the constant threat of obsolescence from competitors with disruptive technologies. Innovative technologies can help them find the right balance between growth and profitability.

# Semiconductors Capabilities

- Feasibility Studies
- Styling & Ergonomics

- Concept Generation
- Packaging Study



## Engineering Analysis

- CAD / CAE software customization
- Process Automation

- PDM / PLM Software Services



## Manufacturing Engineering Services

- In-house test facilities



## Technical Publication

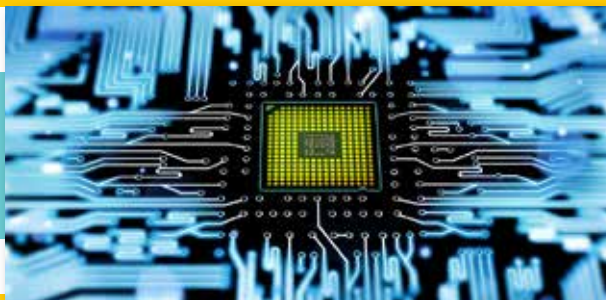
## Product Design



- Cabling, Piping & Routing schematics

- Engineering Drawing Creation / Conversion

## Engineering Automation



- In-house Prototyping machines

- Sheet metal, Plastic Jigs and Fixture design

## Testing Services



- Illustrated Parts catalogue

- Wiring and piping diagrams

# Services and Solutions

## Semi Equipment



### Mechanical Engineering

- Wafer Tester Design
- Radiation Enclosure, PDU
- Facilities, End effector
- Racks & Chassis, Gas Box
- Harness, Cabling, Piping
- CAE: FEA, FEM, CFD
- Simulation

### Hardware Engineering

- Board Design
- Device Drivers
- Control Systems
- Protocols – EtherCAT, MODBUS, DeviceNet
- Embedded Design
- Diagnostics & BSP

### Software Engineering

- Control Systems Software
- Yield Improvement
- Image processing
- Equipment Application
- Re architecture
- Recipe Creation & Management
- Legacy RTOS Porting
- SEMI UI Standards Implementation

### Life Cycle Support

- Technical Publications
- Prototyping
- Low Volume Manufacturing
- Compliance Testing
- Customer Field Support
- PDM / PLM Services
- IT Services

# Services and Solutions

## Semi Chip



# Service Line Units



## Acceleration

- Platform Acceleration Suite

## Value

- eDAT
- VAVE

## Technology

- Product Intelligence
- Internet of Things



# HCL in Semiconductors



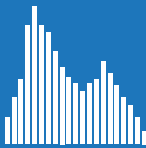
Customers include 6 out of the top 10 Semi OEMs



Highest market share of 70% among all Indian ESO players



14+ years & 5000+ person years engineering experience with Semi OEMs & Fab applications



Highest market share of 70% among all Indian ESO players

%  
PROFIT

6 Automation solutions, 4 customer awards, 450 mm focus, EtherCAT Solution framework

10,000 Sq. Ft. of Customer specific Semi Equipment Labs including Ion Implantation, Wafer Inspection, ATE

Highest investments - 5 customer labs, 10k Clean room, \$5M+ in Solution frameworks

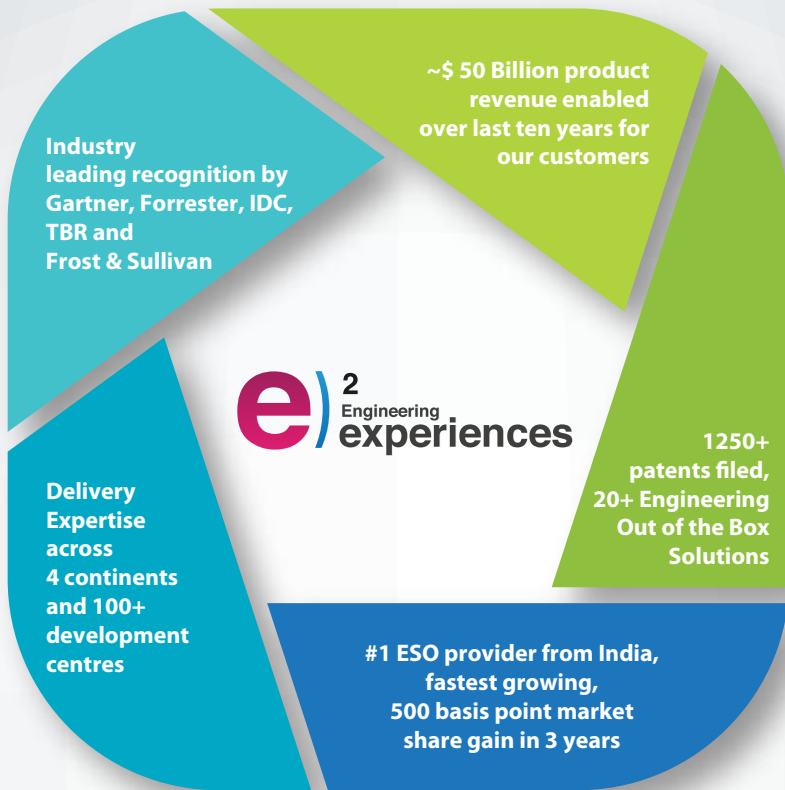
# Experiences Engineered for our customers (Case Studies)

- 1 Reduction of cost by 20% accumulating to \$60M in 10 years and acceleration migration to new platforms & reduction of time to market for leading semi ATE
- 2 Setup customer specific labs and clean rooms for autonomy of projects and established a collaborative engagement model with customer's India captive center. Cost savings of \$150M in 12 years
- 3 Balanced new product engineering vs. sustenance and non-core activities. Cyclical market impacting time to market. Final result was \$30M cumulative cost savings
- 4 Supporting Customers of a leading chip manufacturer for Porting, Bug-fixing and Enhancements of Intel Multi Application Framework for Set-Top Box and Home gateways. Redefine Build process to increase efficiency and automate wherever possible
- 5 Porting of Fedora packages on Customer Platform. Porting of Debian packages on Customer's Platform. End Customers able to put 3rd party applications on Fedora/Debian



Look here





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.

**For more details contact: [ers.info@hcl.com](mailto:ers.info@hcl.com)**  
**Follow us on twitter: <http://twitter.com/hclers> and**  
**our blog <http://www.hcltech.com/blogs/engineering-and-rd-services>**  
**Visit our website: <http://www.hcltech.com/engineering-services/>**

**HCL**