

Transforming the semiconductor ecosystem with digital technologies





HCLTech, with its long-term strategic engagement with top OEMs, Fabs and OSAT (Outsourced Semiconductor Assembly and Test) vendors, has strong experience in managing diverse software projects. From owning equipment software releases to developing Yield management software, OEE dashboards, Inventory management, MES, ADC and APC systems for Fabs/OSATs – we do it all. Today, Fabs and OSATs heavily focus on software that enables smart manufacturing and Industry 4.0. With our strong capabilities, solutions and partnerships in digital technologies (IoT/ Sensors, Data engineering/ AI, Cloud/ Edge computing, Cybersecurity, AR/ VR, Digital Twin, DevOps), we are rightly positioned in the industry and are the trusted technology partner for driving digital transformation journey for top semiconductor companies.

								New digital capabilities
Blockchain	IoT/IOT	Automation	Cloud	Cybersecurity	AI/ML	5G	AR/VR	

CB Analyzer	ACE Micro	CB Migrate	PICASSO™	Pangea	Action	AI.ON	HCL OneTest	Solution frameworks
			OPTIMUS	iTS	Unison	iStudio	Cloud Works	

Agile	Performance Engineering and SRE	User Experience	Mobile & Wearable	Big Data Analytics	IoT Works	CoEs
DevOps		Cloud Engineering	Technology Focus Group	5G	Industry 4.0	

Google Cloud	Amazon Web Services	Cloud Foundry	VMware	Intel	Cisco	Siemens	Atlassian	Partner ecosystems
Azure		OpenStack	OpenText	Apigee	ServiceNow	SAP	Moogsoft	

Our recognitions

We are consistently rated as a Leader in Everest's Software Product Engineering Services PEAK Matrix Assessment 2023. Our innovative services and solutions help us in driving business outcomes for our clients globally.

Our quality process is CMMI Level 5 certified and we are equipped to deliver products right the first time. With strong focus and continued investments in developing innovative AI/ML based test automation solutions, we are committed to deliver quality software on time.

Recognized as a Leader in Software Product Engineering Services
Everest Group PEAK Matrix® Assessment 2023

Semiconductor equipment software

A typical equipment software has GUI, Control system and Factory automation components. Our equipment software teams leverage customer equipment hosted in the labs at our facilities for software development and validation. We have strong capabilities in developing simulators and running test automation with DevOps pipelines to improve quality and enable early defect detection. The infographic below showcases our software expertise in semiconductor equipment in detail.

Software Engineering capabilities for SEMI Equipment



GUI



Equipment UI, Data Visualization, Web, Mobile, SEMI UI standards, UI/UX design, HID

Control system



Control system, Calibration and Diagnostics, Algorithm development, Design, Architecture, Cluster Software

Digital



IoT/Sensors, Data engineering/ AI, Cloud/Edge computing, Cybersecurity, AR/VR, Digital Twin, DevOps

Factory automation



Factory automation, SEMI standards implementation, Customization, FA compliance, Solution accelerators- IPs

Testing



Manual testing, Test process improvement, Test automation, Reliability testing, Regression testing, Performance testing

New Product Introduction



Design and Integration of S/W, Common architecture, Transfer of Technology, Prototyping and Product definition, Design and Development

Sustenance – EOL, Product support



Re-engineering, Migration and Porting, End customer support, Engineering Change Management, Code Re-factoring, SEMI standards compliance, L1/L2 support, Simulator development

Success stories

1

A leading US-based Automatic Test Equipment (ATE) company

- Enabled core legacy software re-engineering for a leading US-based ATE (Automatic test equipment) company
- Re-designed and refactored the core software
- Optimized the software setup time and reduced the memory footprint by 30%
- Improved software performance by 70% and increased user productivity
- Improved product utilization by 5% and increased Overall Equipment Effectiveness (OEE)

2

A leading Inspection OEM

- Reduced inspecting time through swath optimization
- Increased wafer throughput by up to 10%

3

A leading Inspection and Metrology company

- Increased manufacturing productivity through end-to-end support and refurbishment for legacy equipment
- Supported 7 product families having 16 legacy products with 25+ software releases and field deployments

4

A US based customer

- Helped with predicting Remaining Useful Life (RUL) of source
- Using AI/ML of an Ion implanter

Customer perspective



We wanted a 100 percent tool automation in our Fab unit to reduce wafer scraps and improve Fab yield. The HCLTech team supported us in achieving the goal, while we were ramping up the Fab capability and increasing production levels at the same time. Their contribution is greatly appreciated.



**Fab IT Manager @ Leading linear
and mixed signal IC manufacturer**

Fab/OSAT software

Fabs/ OSATs are making great strides by adopting Industry 4.0 and Smart Manufacturing technologies and by embracing sustainable manufacturing practices. We work with leading Manufacturing, Energy, and Oil & Gas enterprises globally to help them achieve their sustainability goals using Net Zero Intelligent Operations solution. We are recognized as a leader in Everest group's Industry 4.0 services PEAK Matrix Assessment 2022 with a strong portfolio of solution accelerators like Real-time Manufacturing Insights which can stream data from equipment/ IoT/ sensors in Fab/ OSAT to gain insights into production data. We have strong expertise in integrating, upgrading and sustaining MES, RPA, Semi Standards compliance, Yield Management, Automated Process Control and Automated Defect Classification software.

Smart factory

IoT/Sensors | Data Engineering | Data visualization | Edge/Cloud computing | AI/ML | Imaging | Robotics | MLOps platform | AR/VR | Digital Twin | E187 Compliance | Secure Manufacturing

Sustainability

Net Zero Intelligent Solution | HCLTech Twanalytics

MES (Rollout, Upgrade, Migration) | Factory Automation | Semi Standards | RPA | Yield Management | ADC | APC | Inventory/Asset Tracking | OEE Dashboard



MES expertise snapshot



Total Fab Automation

Customer profile

A leading linear and mixed signal IC manufacturer

Total Fab Automation solution from HCLTech integrates tools and equipment across sites. Its technology platform enhances predictability, compatibility, and automation.

Key benefits

- Improved yield
- Waste reduction
- Overall productivity improvement



Legacy MES upgrade

Customer profile

A high volume CMOS foundry in APAC

HCLTech's MES upgrade solution protects from unstable production environments occurring due to obsolete and disparate shop floor systems.

Key benefits

- Seamless zero-disruption upgrade
- 5x throughput gains
- 3x reduction in SLA compliance time



24x7 support

Customer profile

A leading North American semiconductor manufacturer

24x7 multi-site support and 800+ application support services from HCLTech helped the customer improve their overall customer satisfaction.

Key benefits

- 20 bps improvement in first level resolutions
- Reduction in ticket volumes by 40%
- 50% reduction in field reported Emergency Response Time (ERT)

HCLTech | Supercharging Progress™

Contact us

Learn more about how HCLTech can help you in supercharging your semiconductor innovation journey.
Contact us at hclsemi@hcl.com.

HCLTech is a global technology company, home to 225,900+ people across 60 countries, delivering industry-leading capabilities centered around digital, engineering and cloud, powered by a broad portfolio of technology services and products. We work with clients across all major verticals, providing industry solutions for Financial Services, Manufacturing, Life Sciences and Healthcare, Technology and Services, Telecom and Media, Retail and CPG, and Public Services. Consolidated revenues as of 12 months ending March 2023 totaled \$12.6 billion. To learn how we can supercharge progress for you, visit hcltech.com

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