HCL

HCL'S DOCUMENT & PRINT TECHNOLOGY

EXTENDING CONCEPT TO END-OF-LIFE SUPPORT

With over 12 years of experience, HCL's document and print technology (DPT) practice has gained a reputation for helping enterprises achieve a competitive edge. Our engagements have involved new product development, reengineering, solutions development, test automation, and sustenance engineering. Leveraging more than 10 partnerships with prototype manufacturers and environmental test and certification labs for document technology, digital imaging technology, and printhead development, we have always focused on offering solutions that enterprises seek.

HCL has over 1,800 highly experienced professionals spread across geographies such as the US, the UK, India, Japan, and Malaysia. Over the years, we have launched around 40 products with more than 100,000 installations.

DOMAIN COMPETENCY

HCL's competencies in the DPT domain include infrastructure support, full product engineering, design controller S/W, QA and testing, sustenance engineering, manufacturing engineering services, and supply chain services.

- Production & Office Printer Design & Development
- Production RIP/DFE & Office Controllers Development
- Imaging, Color, Image Quality
- Solutions Development (Cloud & App)
- Testing & Quality Assurance
- Label Printer Design & Development

HCL DPT Competency

MECHATRONICS

HCL Mechatronic Systems Center of Excellence (CoE) is a highly experienced group of more than 3,400 professionals working flexibly across multiple disciplines and specializations. The team focuses on the delivery of high-value innovation from research through to product launch and beyond.

The center has three focus areas:

Innovation:

- More than 110 patents for customers

- Advanced skills in niche areas such as product styling, packaging, feasibility research and overall design directions, value engineering, and technical publication

Infrastructure:

- State-of-the-art delivery centers (India: Bangalore, Chennai, Hyderabad, Pune, and Madurai; USA: Webster, NY; UK: Welwyn Garden City)

- Four customer-dedicated labs, two teardown labs, and one mechanical verification lab

- More than $15 million investment in test labs, prototyping, and manufacturing infrastructure

Value creation:

- Over $700 million saved for HCL customers through value-managed services

- Over 10,000 cost analysis reports

- Delivered average net engineering cost savings of 25% to 35% to our customers

CAPABILITIES

HCL has the capabilities and resources to create robust industrial design, develop advanced paper path technology, drive industry-changing custom power supplies, write embedded software, and implement sensor controls, imaging, and drivers. In effect, we have proven skills in developing complete end-to-end, world-class printers and document technology.
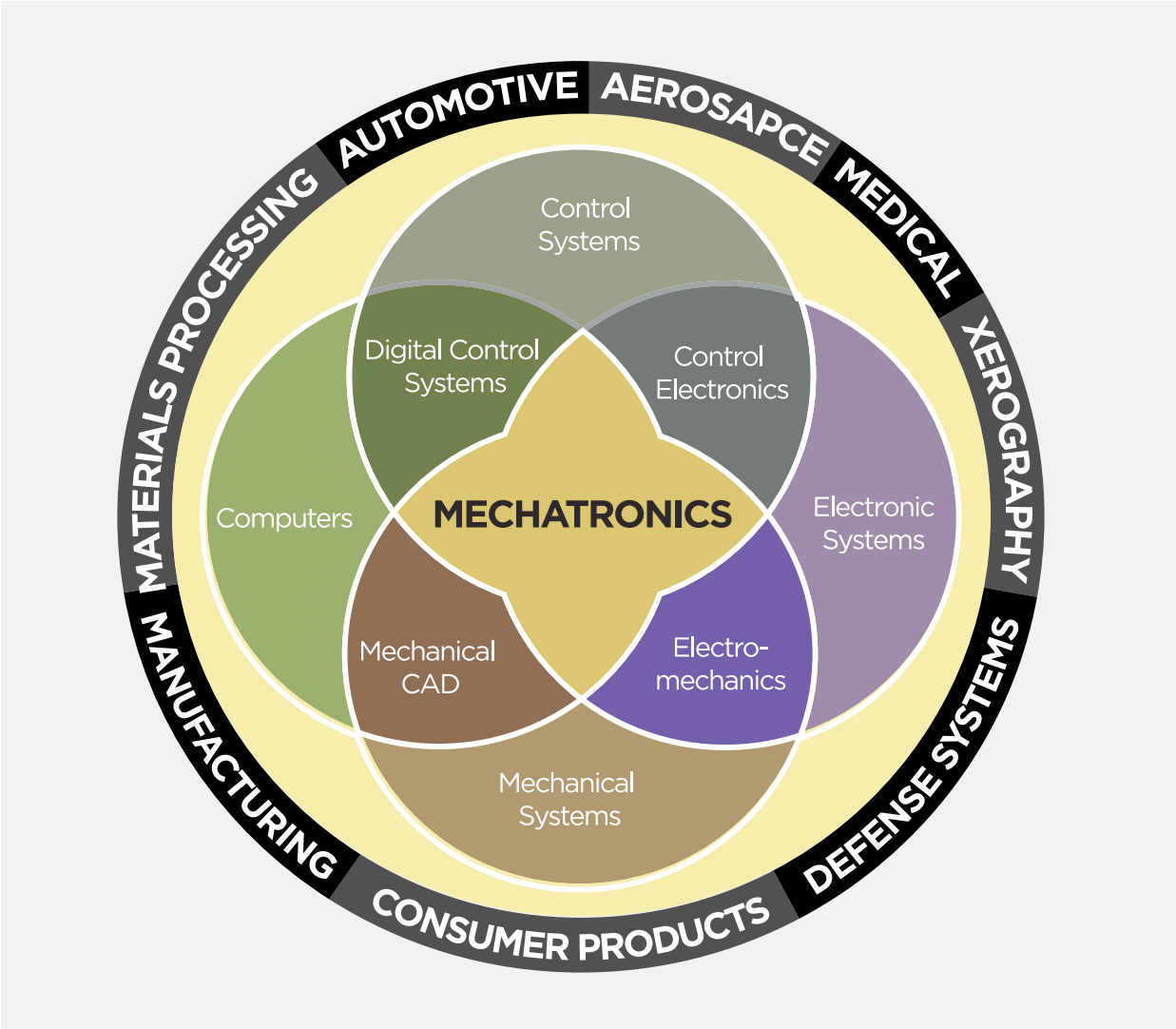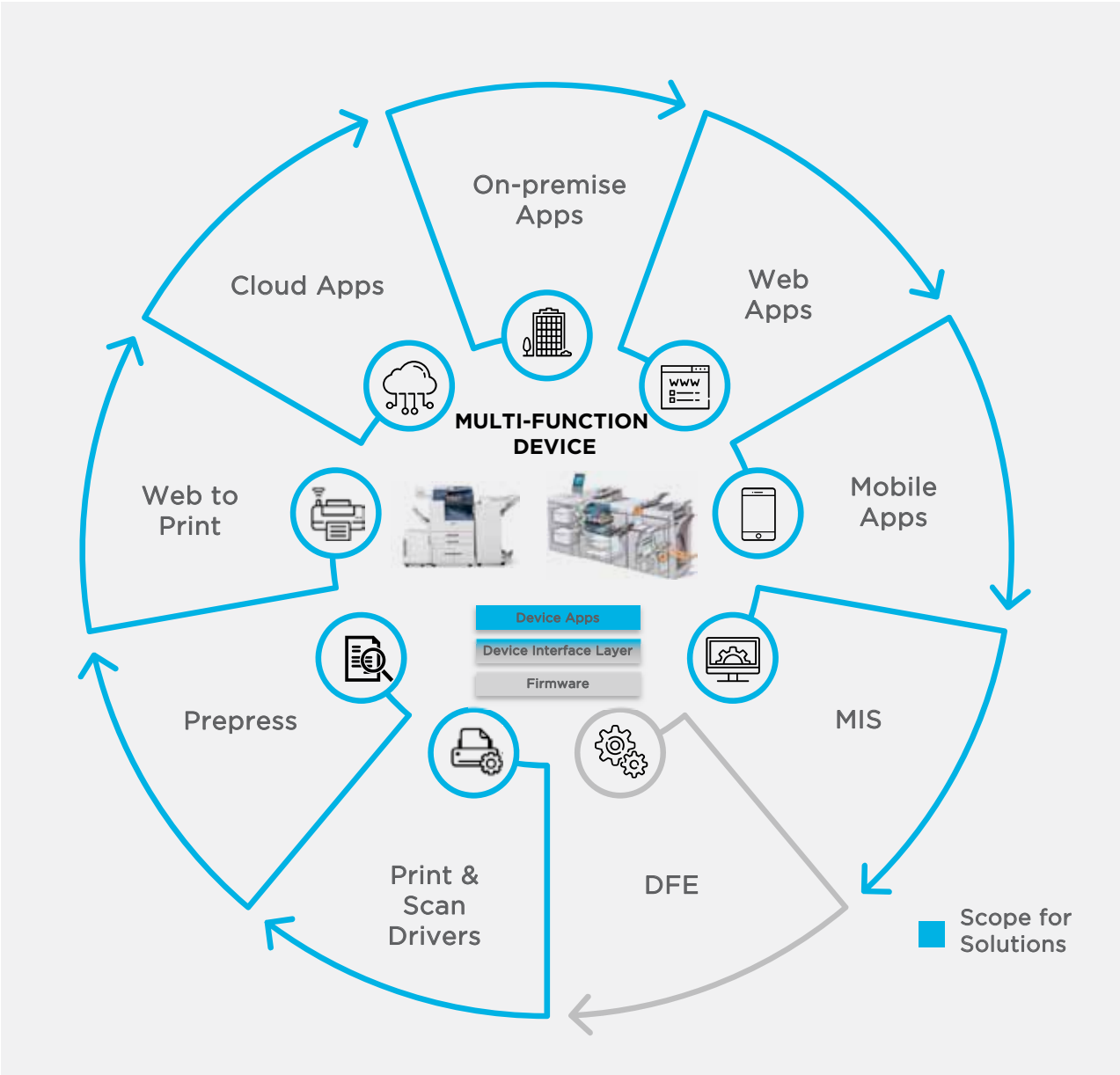
PREPRESS AND SOLUTIONS

HCL has developed data-printing technologies, insert functionality and export capabilities, image enhancements, color management, and printer drivers. This has allowed us to accelerate time to market of products and custom applications to meet and exceed customer needs.

We also have extensive knowledge in enabling mobile-ready experiences unmatched in the industry. With the support of homegrown technology, our team can automatically discover multi-function printers (MFPs), upload/download documents to/from the cloud, enable mobile operation with speech recognition, and support PDF, JPEG, PNG, and BMG.

SOLUTIONS ECOSYSTEM

On-premise Apps

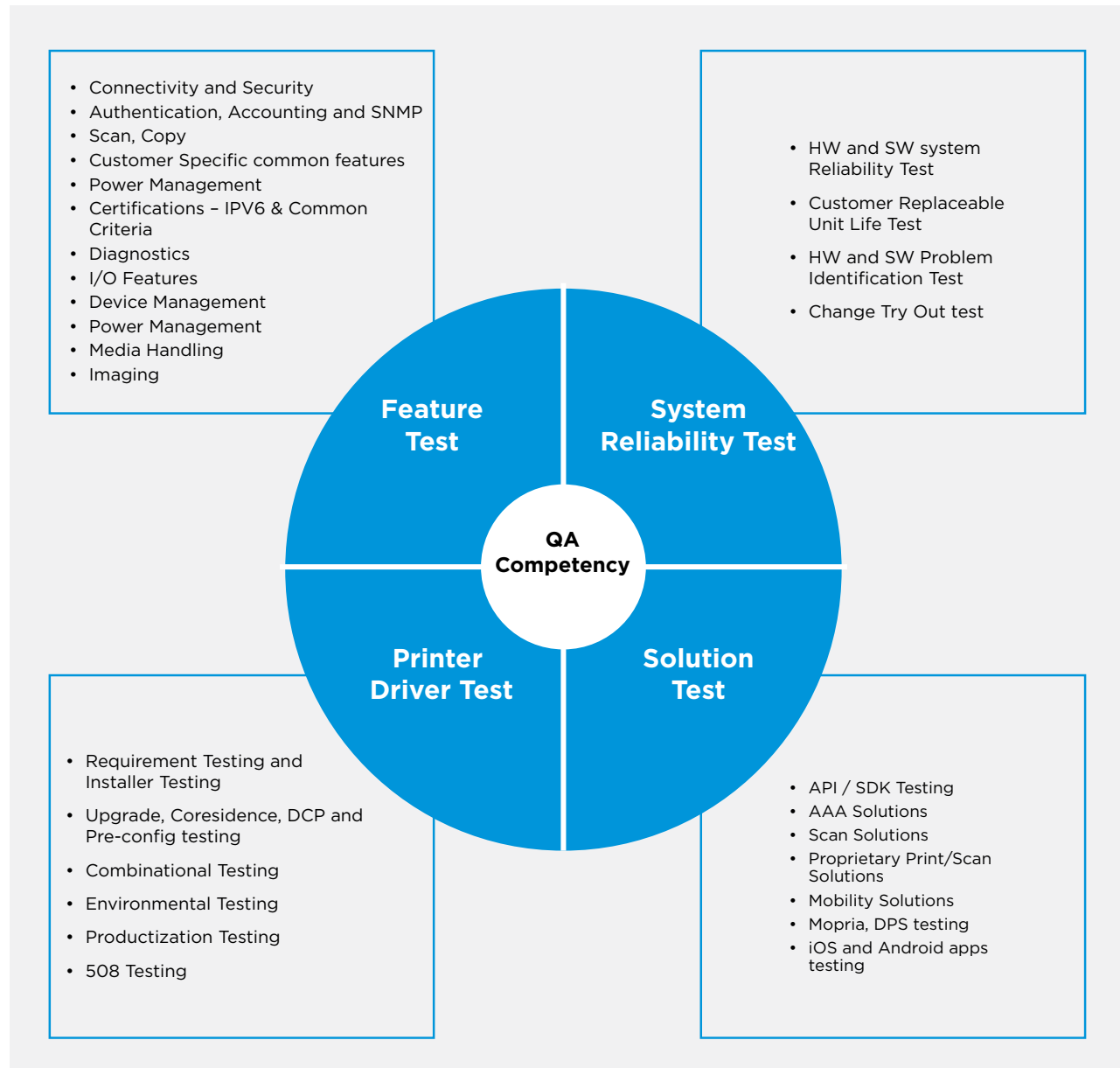Cloud Apps

Web Apps

Web to Print

MULTI-FUNCTION DEVICE

Mobile Apps

Prepress

Device Apps

Device Interface Layer

Firmware

MIS

Print & Scan Drivers

DFE

Scope for Solutions

SPECTRUM OF SOLUTIONS

Production Space (standalone or cloud hosted)

Web To Print	Pre-press	Digital Publishing	Extensions
• Order Processing • Job Costing • Accounting • Delivery Management	• Print Driver • Variable Data • Print WF • Image Enhancement • Preflight • Make Ready • Imposition • Preview • Soft proof • Job Management • Output Management • Color Management	• Channel Management • Direct Marketing	• Finishing (post-press) • Textile WF • Packaging WF • Cardboard WF • 3D Print WF • Object Printing

Enterprise Space

Cloud & On-Premise	Mobile Apps	Device Apps
• Printer Management • User Management • Authentication • Authorization • Accounting • Personalization • Device App Stores	• Print • Scan • Self-Serve Apps • Mobile Device Management (MDM) Integration • Android OS Customization	• Productivity Apps • Workflow Apps • Authentication • Authorization • Personalization

QUALITY ASSURANCE

- Connectivity and Security
- Authentication, Accounting and SNMP
- Scan, Copy
- Customer Specific common features
- Power Management
- Certifications – IPV6 & Common Criteria
- Diagnostics
- I/O Features
- Device Management
- Power Management
- Media Handling
- Imaging

- HW and SW system Reliability Test
- Customer Replaceable Unit Life Test
- HW and SW Problem Identification Test
- Change Try Out test

Feature Test

System Reliability Test

QA Competency

Printer Driver Test

Solution Test

- Requirement Testing and Installer Testing
- Upgrade, Coresidence, DCP and Pre-config testing
- Combinational Testing
- Environmental Testing
- Productization Testing
- 508 Testing

- API / SDK Testing
- AAA Solutions
- Scan Solutions
- Proprietary Print/Scan Solutions
- Mobility Solutions
- Mopria, DPS testing
- iOS and Android apps testing

HCL'S NEXT-GEN SOLUTIONS FOR THE PRINT DOMAIN

Predictive maintenance

Remote system monitoring
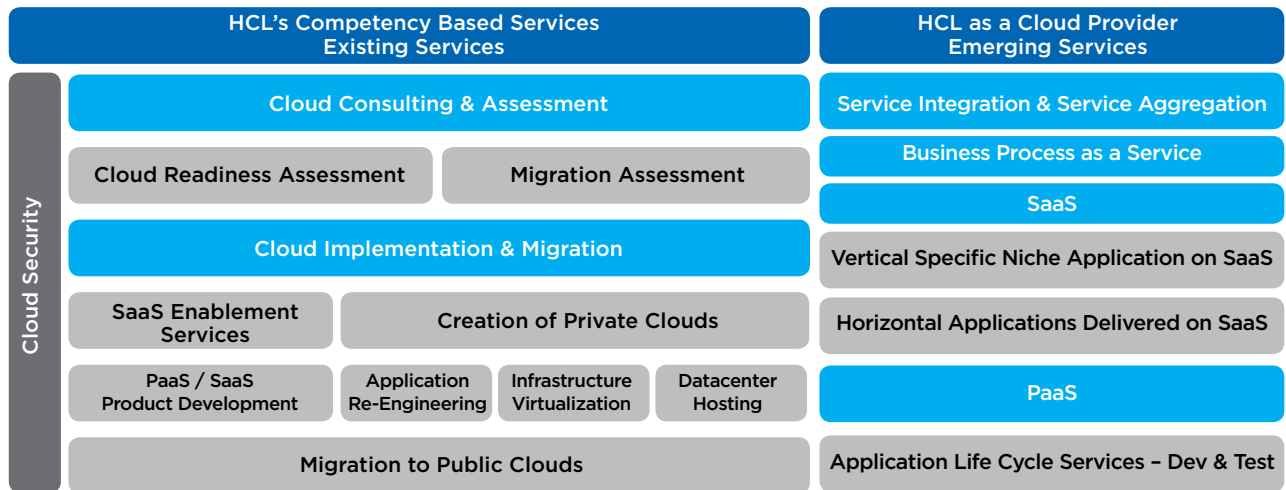

Asset track and trace

AR/VR support

Data analytics
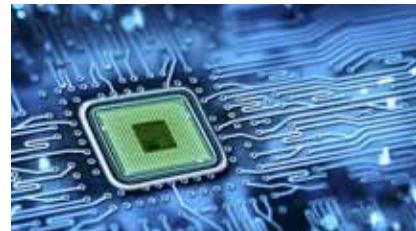
Image processing

SOLUTIONS – CLOUD PORTFOLIO

HCL's Competency Based Services Existing Services				HCL as a Cloud Provider Emerging Services
Cloud Consulting & Assessment				Service Integration & Service Aggregation
Cloud Readiness Assessment		Migration Assessment		Business Process as a Service
Cloud Implementation & Migration				SaaS
SaaS Enablement Services		Creation of Private Clouds		Vertical Specific Niche Application on SaaS
PaaS / SaaS Product Development	Application Re-Engineering	Infrastructure Virtualization	Datacenter Hosting	Horizontal Applications Delivered on SaaS
Migration to Public Clouds				PaaS
				Application Life Cycle Services – Dev & Test

Cloud Security

WHAT SETS US APART

HCL offers concept-to-end of life (EOL) support and is the largest R&D service provider globally in the document technology products space. We have created more than 390 patentable ideas for our customers and enabled savings of over $600 million in seven years for them. As many as 345 patents were filed of which 215 patents have been granted in areas such as:

ANALYTICS	PRINT SECURITY	NFC NETWORK	SECURE PRINT
GSM PRINT	ACCESSIBILITY	WEB MARKING	GREEN WEB
IMAGING	FORM SCIENCES	AUGMENTED PAPER	ANTI-COUNTERFEIT
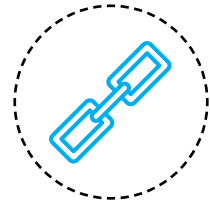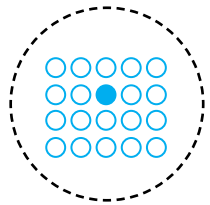
TRACK RECORD

HCL has made significant contributions in product development, production digital front end (DFE) and office controllers, solutions, printhead design, test automation, and sustenance for its clients.

End to End A3 MFP Design & Development		A3 Mono printer development with vertical paper path	20% product cost down with 26% weight reduction
DFE Windows Re-Hosting		10M LOC, new set of requirements, TTM issues, lack of support for the latest hardware	Reduced LOC by 3M and extended product to latest RIP technologies: 5-Color and Inkjet
Android App Ecosystem for a leading Office Supplies Retail Chain		Customized self-service application ecosystem for scanning, copying and printing	Integration with payment gateway
Supplies Monitoring and Replenishment Service		e-commerce platform built on HCL's Multitenant SaaS Platform	Ease of use for customers to buy printer consumables
Mopria Print Service		Print solution for mobile devices to connect to a Mopria certified printer/MFP	Dev, test and printer certification audit for multiple vendors
PDF Conversion Engine		Print driver that converts any source documents (XPS, GDI) to PDF for printing	UI interface support for user to choose available PDF settings
Test Automation Framework		Automated Testing for RIP, Imaging & Color outcomes	Over 2,000 Test Cases with 50,000 Jobs Execution daily

OTHER KEY DIFFERENTIATORS

HCL boasts of a robust infrastructure that supports its DPT product portfolio:

- 100,000 sq. ft. lab space dedicated to document and print product technology
- 10,000 sq. ft. storage space for paper, consumables, and spares
- Three environmental chambers (10C, 5%rh to 40C, 90%rh)
- Power supply configuration to support geographies
- Scrum rooms
- Hardware and software environment:
    - Windows | Linux | Unix | Mac
    - Wireless networks, IPV4, IPV6
    - Smart cards, secure access cards, foreign device interface
    - Direct connectivity to customer's public servers from HCL labs

CASE STUDIES

The client is a US-based global corporation selling document technologies to companies and governments. They required assistance with the end-to-end development of an A3 mono printer with a vertical paper path. The scope for HCL included software, mechanical, hardware, evaluation, creation and determination of specifications, and program management. The specifications encompassed A3/A4, monochrome 45/55 rpm, vertical transport, as well as consumables management with RFID.

The solution highlights include:

	Pre-Product	Product	% Reduction
Wight (lbs)	273	202	26
Footprint (Width*Depth) mm	980*640	640*640	35
UMC ($)	2791	2240	20
Run Cost ($/kp)	4.1	3.1	24

The customer benefits include:

40% faster time to market	**30%** reduction in development costs	**20%** lower production cost

- Built an industry-leading office printer in record time while significantly lowering the unit manufacturing cost (UMC)

  Result: Millions of dollars in sales within an unexpected time frame

- Designed unit shells, internal circuit boards, custom firmware, auxiliary finishers, and world-class print engines

  Result: Innovative end-to-end design streamlined the manufacturing process which, in turn, lowered the unit cost for sales channels

- Contributed to the development of an end-user client application and automation platform that helps customize the workflow for various prepress needs, including the creation of print-ready files, track files, publish files, remote proof, scan to cloud, and credit application

  Result: The workflow created a brilliant customer experience that allowed lightning fast on-demand printing through a wide variety of technologies

- Created a workflow and electronic form solution to address the paperwork needs of importing and exporting international goods utilizing software for a top-tier ECM vendor. The solution delivered was integrated and could be driven from an MFP

  Result: Delivered off-the-shelf solutions that can be launched at the MFP and integrated with an enterprise content management (ECM) system