



HCL's Approach to Business Process Automation October 2017

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1

Introduction

HCL follows a “3 lever approach” to automation, which forms the basis of their “strategic automation intervention in business processes”. In this approach, HCL emphasizes the importance of including risk & control analysis as the first lever. This helps organizations develop a point of view on the enhanced risks and controls library when the robots are introduced into their process landscape. This is followed by value stream mapping as the second lever, wherein, process improvements are recommended on the basis of Lean and Six Sigma recommendations. The third lever of RPA & AI enabled automation is then applied to automate the improved business processes. This results in breaking down organizational silos by bringing the Office of Regulatory Compliance, Process Improvement team & Office of Automation together to develop a single & unified view of the to-be process and implement a more strategic process optimization than would be achieved by carrying out automation in isolation.

In addition to the above 3 levers, the orchestration of the business process is done through HCL's enhanced Toscana© 2.0 platform which, in its latest version, has been enhanced from workflow and case management to additionally encompass automation technologies in support of digital transformation. As part of its digitalization approach, HCL develops multi-channel integration in support of the mobility, social media and analytics initiatives of the client. The HCL automation and orchestration philosophy is derived from its wider DRYICE™ framework which services all integration layers within an organization from IT service management and infrastructure management, to applications and business processes.

This paper analyzes HCL's approach to business process automation and the deployment of its orchestration toolset together with front office automation to enable digital transformation across various industries like capital markets, retail & commercial banking, telecoms, life sciences & healthcare, energy & utilities etc.

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Executive Summary

HCL Emphasizes its 3 Lever Approach to Business Process Automation using Risk & Control Analysis, Lean & Six Sigma and Cognitive Automation

- The 3 lever approach forms HCL's basis for any "strategic automation intervention in business processes". The automation is done using third-party RPA technologies together with a number of proprietary HCL tools including Exacto, a cutting-edge Computer Vision and Machine Learning based tool, and iAutomate for run book automation
- HCL has partnered with a leading U.S. University to develop its own AI algorithms for intelligent data extraction and interpretation for solving industry level problems, including specialist algorithms in support of trade processing, contract management, healthcare document triage, KYC, and invoice processing.
- The orchestration of business processes is being done using HCL's proprietary orchestration platform, Toscana©. Toscana© supports collaboration, analytics, case management, and process discovery and incorporates a content manager, a business rules management system, a process simulator, a process modeler, process execution engines, and integrated multi-channel offering including social media monitoring & management
- HCL has undertaken ~200 automation use cases across horizontal business processes, such as finance & accounting, customer contact, and product support, and vertical industry-specific business processes, such as retail banking customer onboarding, telecom network management, and claims processing
- Trade processing is one of the major areas of focus for HCL. Within capital markets trade capture, HCL has developed an AI/ML solution Exacto | Trade. This solution is able to capture inputs from incoming fax based transaction instructions for various trade classes such as Derivatives, FX, Margins, etc. with accuracy of over 99%
- HCL has developed a cognitive solution for Intelligent Product Support based on a cognitive agent LUCY, Intelligent Autonomics using iAutomate for run book automation, and Smart Analytics with MyXalytics for dashboards and predictive analytics. LUCY is currently being used in support for IT services by major CPG, pharmaceuticals, and high-tech firms and in support of customer service for a major bank and a telecoms operator
- HCL is embarking on digital transformation through this approach and has created predefined domain-specific templates in areas including retail banking, commercial lending, mortgages, and supply chain management. Within account opening for a bank, HCL has achieved ~ 80% reduction in AHT and a 40% reduction in headcount.

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HCL Approach to Business Process Automation

A. The 3 Lever Approach

In the current digital era, disruptive changes in the industry are forcing companies to change their business models. Companies now have to adopt newer ways of service delivery incorporating much more customer-centric approaches and become more responsive and agile in response to changing customer behavior. Accordingly, the services, existing IT systems, and workflows which support their business operations have to be optimized to enable business agility.

Robotic Process Automation (RPA) is a proven technology for eliminating manual effort from business processes. In addition to cost reduction, RPA assists organizations in reducing process turnaround times and in reducing error rates.

However, so far companies have typically used RPA as a tactical tool to apply quick fixes to pain points in their business processes. This approach delivers short-term benefit but the robotic solution becomes harder to maintain as the number of bots increases and the architectural integrity of processes can be disturbed due to the range of local solutions. In addition, it presents challenges in governance. Bots aren't often configured to handle small changes in the underlying applications and a change in one application may render several bots useless if they are improperly governed.



Figure 1: HCL's 3 Lever Automation Approach

While organizations are increasingly encouraging the involvement of their re-engineering group in RPA & AI assessments and implementations, RPA is sometimes still implemented over unnecessary process steps and it can be easy to overlook the need to review and update process controls which may change as a result of process re-engineering and automation. Indeed, there remains a danger that these three activities are treated by organizations as separate initiatives with separate teams, with the possibility that the risk compliance team, lacking involvement, might raise serious concerns over step elimination or the tactical RPA implementation.

Accordingly, HCL strongly emphasizes integrating these three activities within its 3-lever approach to combine risk analysis, Lean studies, and automation using RPA and AI within a single framework. HCL perceives that the three studies have different goals but the steps to achieving them are almost same – Process Mapping.

In particular, HCL initially conducts a risk and compliance study across three lines of defense i.e. at a project level, central risk and compliance office level, and at internal audit level to ensure that all risk mitigation plans are in place. This study helps to identify those control points which need to be redefined when RPA is introduced. HCL then conducts a value stream mapping for the processes to identify any wasteful steps. Then, on the improved process, HCL implements RPA to further eliminate manual processing. Accordingly, HCL using its 3-lever automation technique, aims to deliver enterprise level solutions which are lean, error-free, fully compliant and cost-efficient. This 3-lever approach also helps in establishing highly resilient and large-scale RPA deployments with proper governance and change management for the bot farms.

B. RPA and AI Consulting & Implementation

HCL has undertaken ~200 use cases spanning finance & accounting, contact, product support and cross-industry customer onboarding, and claims processing, using products including Automation Anywhere, Blue Prism, UiPath, WorkFusion, and HCL's proprietary AI tool Exacto. Examples of the use of HCL's application of RPA are listed in Chapter 4.

HCL starts by conducting a 3-lever automation study and then creates comprehensive to-be process maps. As part of this 3-lever study, HCL also conducts complexity analysis to create the RPA and AI roadmap for organizations using its process discovery toolkit. For example, HCL has looked at their entire process repository for several major banks and classified their business processes into four quadrants based on scale and level of standardization. These quadrants are:

- Quadrant 1 (upper right) RPA Phase 1: covers standardized processes with high yield and with low effort due to use of reusable components
- Quadrant 4 (lower right) Intelligent Automation: processes with high yield but low standardization requiring a custom solution for automation. Examples include business process such as trade processing, contract management, and healthcare document management which typically require additional NLP and/or ML technologies in addition to RPA
- Quadrant 2 (upper left) RPA Phase 2: covers standardized process with a moderate yield
- Quadrant 3 (lower left) Deprioritize: covers processes with low standardization and low yield.

HCL's RPA implementations are then divided into the following stages:

- Ideation, involving functional & technical architects to develop a high-level solution & business case
- Design & implementation including technical design and process design
- Testing, including integration testing & validation
- Roll-out and handover.

When generating the “to be” process map, HCL’s Integrated Process Discovery Technique places a high emphasis on ensuring appropriate levels of compliance for the automated processes and on avoiding the automation of process steps that can be eliminated and incorporates:

- Risk & compliance evaluation
- Lean six sigma to identify process efficiencies using techniques such as value stream analysis
- Evaluation of the applicability of technologies such as Workflows, BPM, RPA and AI/ML.

HCL typically carries out evaluations across all its engagements to ensure value realization on deployment and recommends establishing an automation lab at a client location to implement RPA and AI into the business process on an ongoing “factory” basis.

C. Exacto – Artificial Intelligence based Information Extraction from Faxes/Images

HCL’s proprietary AI enabled, machine learning solution is used to automatically extract and interpret information from a variety of information sources. It also has *natural language and image based automated knowledge extraction capabilities*. It has the following key features:

- An emphasis on extracting language based objects, which may exist in isolation or embedded within an image
- An ability to operate with structured, unstructured, and handwritten data
- Natural language understanding capability to assist in “understanding” the inputs
- An ability to handle missing, unseen, and ill-formed data through an adaptive learning process
- A planned capability to extract information as required from a variety of scenarios and render the information available for downstream consumption in a variety of formats (JSON, XML, plain text, etc.)

HCL’s AI/ML trade processing solution – Exacto | Trade is a trained version of Exacto capable of understanding fax based trades in all formats and across most of the security types, e.g. Derivatives, FX, margin etc. It has been trained and tested using ~100,000 trade faxes and can work with digital and handwritten text formats. It also supports signature validation and does not require training for newer formats of trade faxes.

The other business domains where the tool is being trained and customized include document triage in healthcare, contract processing, and invoice processing.

D. Intelligent Product Support

The automation of product support is another key area for HCL. To provide “Intelligent Product Support”, HCL is combining a Watson-based cognitive agent, LUCY, incorporating NLP and machine learning with intelligent runbooks and smart analytics both to identify contact drivers and customer segments and to provide a performance & SLA management dashboard. HCL estimates that it can automate 20%-25% of L1 and L2 transactions and has begun automating internal IT infrastructure help-desks.

The LUCY cognitive agent can be voice enabled using solutions such as Alexa and integrated with platforms such as ServiceNow, BMC Remedy, Salesforce, and SuccessFactors.



HCL's iAutomate tool is used for run book automation, and HCL has already automated 1,500+ run books. iAutomate uses NLP, ML, pattern matching, and text processing to recommend the "best matched" runbook for a given ticket description. HCL estimates that it currently achieves "match rates" of around 87%-88%. iAutomate uses semantic frames to parse the ticket description to extract the relevant input parameters, active learning to cluster tickets on the basis of pattern recognition, and enriches its knowledge base by incorporating knowledge from global knowledge repositories. It also automatically updates on the basis of new solutions provided by agents. iAutomate can also be used in support of proactive prevention, implementing patches automatically.

HCL's MyXalytics solution is used to provide predictive analytics and has ~250 widgets for populating data. Current uses include ITSM and cash management within BPS.

E. Digital Transformation for Retail Banking

HCL has a major presence in the banking sector and in addition to its work in trade processing for capital markets is positioning its Toscana© platform as a BPMS for driving digital transformation within retail banking.

Here, HCL has created predefined domain-specific process templates covering, for example, commercial lending and mortgages within its process modeler, which supports drag & drop-based process design and dynamic case management. Predefined processes include pre-screening, document capture, credit application, site visit & report, credit analysis, automatic creation of credit memo, credit evaluation & review, decision & approval, generation of offer letter, documentation, disbursement, and review & renewal. The solutions are integrated both with the major banking platforms, such as Fiserv and Jack Henry, and with credit bureaus and fraud databases.

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RPA Case Studies

Examples of HCL's deployment of automation together with an indication of the DRYICE™ levers used are shown in Exhibit 1.

Exhibit 1

Examples of DRYICE™ Automation

| Sector/Function | Principal deployment areas | DRYICE™ Levers Used | Benefits Achieved in key engagements |
|----------------------|---|---------------------|---|
| Commercial banking | Account opening, personal lending, card processing, maturities processing, ATM refunds | Workflow RPA | ~\$9m annualized savings |
| Investment banking | Trade processing, fund reconciliations, financial reporting, regulatory reporting, income verification | BPM RPA AI/ML | 40% FTE reduction in trade processing Enhanced controls & reduced errors |
| Insurance | Maturity claims, retirement claims, death claims, change of account, change of address | RPA | ~40%-45% FTE reduction in claims processing |
| Telecoms | Network provisioning, number range management, line testing | RPA | ~30%-40% FTE reduction in broadband provisioning |
| Finance & accounting | Accounts payable, accounts receivable, service charge accounting, month end close | AI/ML RPA | Auto booking from invoices ~50% FTE reduction |
| Procurement | eRFx creation, SOW preparation, PR to PO, shipment tracking, consignment creation, warehouse inbound & outbound | BPM RPA | Fully automated eRFx creation SOW preparation |
| Contact center | Sourcing, order entry, customer issue resolution, customer request, employee schedule creation & change | RPA Chatbot | ~50% FTE reduction Introduction of self-service |
| Product support | Account management, password management, account linking | RPA | ~70% FTE reduction in password reset |

Within Intelligent Product Support, LUCY is currently primarily being used in support of IT services, with current examples being virtual machine provisioning, Office365 support for a major CPG company, along with technical support for a major pharmaceuticals firm, and for a high-tech firm. Within BPS, LUCY is being deployed in support of the contact center for a major bank and to replace existing chat services within a telecoms operator.

In terms of bank automation, HCL has, for one major bank, reduced the absolute number of FTEs associated with card services by 48%, a 63% decrease based on the accompanying increase in the workload. Elsewhere, for another bank, HCL has undertaken a digital transformation including implementation of Toscana©, resulting in a reduction of the number of FTEs by 46%, the implementation of a single view of the customer, a reduction in cycle time of 80%, and a reduction in the "rejection rate" from 12% to 4%.

For one bank, HCL has applied RPA to account opening. Here the stages in the account opening process post-automation became:

Automated indexing and case creation using OCR

Manual matching of AML documents with incoming application, followed by automated checklist and completion check

Automated MLD update according to pre-defined business rules

Automated account opening & linking to other customer accounts

QA - call-off where system errors

Automated ordering of cards/check books etc.

This application of OCR and RPA (Blue Prism with ~100 bots) resulted in an 80% reduction in AHT and a 41% reduction in headcount.

For a U.S. based custodian, HCL conducted its 3-lever automation study in support of derivatives trade processing. The following were the individual findings from the studies:

1. Risk and Control Analysis: Found 10 different types of errors which had manual controls defined. This increased the risk in the process significantly
2. Lean & Six Sigma recommendation: 4 different process improvement recommendations were made. The most important was the introduction of a single queue of incoming trades instead of five different queues – one for each input channel.
3. RPA study: The control points were automated using RPA and the lean recommendations were included in the RPA process to reduce the number of steps that needed automation. HCL's proprietary AI/ML solution – Exacto | trade was used to book faxed trades.

Exacto | Trade reduced the manual errors within booking of faxed trades and while giving increased scalability and logging proper audit trails. The hit ratio of each type of error was logged, and RPA was implemented to automate the manual controls. In the automated process, it was found that the errors were reduced by up to 80%.