

Intelligent Automation – Reinventing Efficiency

#InnovativeSolutions

As the post-crisis regulatory framework has gradually established itself, financial institutions have had to adjust their business models and processes accordingly. In parallel, the past decade has seen a number of technological advances impacting financial services on a variety of levels. As terms like “Fintech”, “Big Data” and “Blockchain Technology” have overtaken the headlines, it is becoming increasingly clear that technological change is driving innovation and disruption in the financial ecosystem today.

Evolving in the shadow of the media hyped “Artificial Intelligence”, Intelligent Automation has made its way from theory to practice by becoming an important part of the new business models as disclosed in the press of major banks such as Deutsche Bank or Citigroup. Its implementation and potential to modify today’s workplace by inherently changing the way simple processes are handled, has made it very attractive to the banking world.

From lowering costs, to alleviating communication issues between different IT systems and relieving the human workforce of time consuming tasks, Intelligent Automation presents a myriad of opportunities to optimize a company’s efficiency. A couple of questions remain however: how exactly does Intelligent Automation work and how can the financial services sector benefit from its full potential? What are the strategic benefits of Intelligent Automation processes for banks and where should it be applied?



“This is less about the latest trend in software. It’s more about the new digital version of the white collar worker. It’s really a reinvention of how work gets done.”
– Frank Casale (Founder and Chairman Emeritus of the Institute for RPA)

Historically, the constant improvement of productivity has been a cross-industry priority for businesses. Although considered as a fairly modern phenomenon (and a new possible threat to employment), proof of mankind’s interest in automation and mechanization can be traced back as far as the Greek civilization. From the mention of Hephaestus’ self-operating mechanic helpers “Automatons” in Homer’s Iliad, to the Industrial Revolution in the 1800s and the actual coining of the term automation by Ford’s Vice President Delmer S. Harder in 1948, automation has been a central component of the business world.

Innovation in terms of automation today largely stems from robotics. Whether it is simple automation tools or deep machine learning, robotics are beginning to have a profound impact on businesses and there is a shared view that their growing capabilities will trigger big changes in operational models. Applied more specifically to the financial sector, the shift will largely be prompted by the daily use of intelligent automation tools. Intelligent automation tools combine Artificial Intelligence elements with automation. Software like Robotic Process Automation and more cognitive applications such as natural language processing are intelligent automation instruments, which increasingly offer new operational and strategic perspectives for financial services.

Robotic Process Automation Basic Facts

Robotic Process Automation (RPA) is an application of technology that allows employees to configure computer software - or a “robot” - to capture and interpret existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. An example of RPA is automatic verification of the enrollment or the eligibility clients may have to an insurance scheme or loyalty program. RPA can be considered as a more reliable technical evolution of a particular form of Data or Screen Scraping. Recently, it has developed from theory to practice and more and more, RPA solutions are being sold to a variety of industries – from telecommunication firms to financial institutions.

RPA software mimics the activity of a human being in carrying out a task within a process by operating on the user interface (UI) the same way a human would. Software robots are configured, as opposed to being programmed with code-based instructions. The intention is to provide an easily configured “virtual worker” to non-technical business users with limited programming skills, and without it interfering with the company’s existing IT infrastructure. The robot is therefore "trained" to complete simple, repetitive and high-volume tasks and its efficiency increases the more it repeats the process it is trained to execute. For instance, a robot trained in KYC could analyze data in order to single out exceptions that need to be verified by an employee who can then decide whether to escalate or not, making the exception processing a lot faster.

⇒ Main RPA Technologies

Web Scraping



What is it? (Web harvesting or web data extraction) is data scraping used for extracting data from websites. Web scraping software may access the World Wide Web directly using the Hypertext Transfer Protocol, or through a web browser.



How? It works with a Web Scrapping bot. Screen scraping robots extract unstructured data from the web on the presentation layer and transform it into structured data for use.

Web Automation



What is it? It helps with form filling, screen scraping, data extraction and transfer between applications, website testing, and periodic report generation are major.



How? It works with a built-in recorder that can read and enact web-based activities. It works with HTML, Flash, AJAX, Java, Silverlight, and PDF.

Desktop Automation



What is it? It allows automation of rule-based repetitive IT and Business processes.



How? It works with automation scripts.

GUI Automation



What is it? It is a support tool for screen scraping, automated testing, automated data entry, application integration, and content migration.



How? It is the process of simulating mouse and keyboard actions on windows and controls. It recognizes graphical objects by their platform-specific attributes, and it provides a unified GUI automation API that works the same way.

Screen Scraping Software



What is it? Screen Scraping is the process of collecting screen display data from one application and translating it for another application. Normally performed to capture data from a legacy application in order to display it using a more modern user interface.



How? Programming that translates between legacy application programs (written to communicate with now generally obsolete input/output devices and user interfaces) and new user interfaces so that the logic and data associated with the legacy programs can be continue to be used.

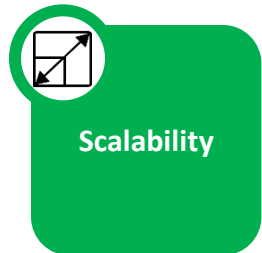
⇒ RPA Benefits



- A software robot license is likely to cost less than a staff member: low costs and fast implementation
- At Sia Partners, we have observed that an optimized RPA robot could represent a 1/3 of the cost of an FTE
- It does not require constant monitoring by an IT professional, thus freeing up the latter for other tasks
- The software can work 24/7



- RPA is relevant for all business industries and functions, as it can be applied to any methodical and repetitive process
- Robots can be scheduled and reassigned easily to different tasks



- RPA is code-free and thus easily implemented in departments because it does not require programming skills and business users can be trained
- A robotic workforce can be scaled to demand, and additional robots can be deployed for no additional cost



- Robot-based performances are more reliable and predictable and thus less prone to error than humans



- RPA software does not require fundamental process redesign usually associated with IT-driven transformation, because RPA addresses the presentation layer of information systems
- RPA is not an integrated part of a company's IT infrastructure, it places itself "on top"






- Anything performed by RPA can be recorded consistently thus providing a solid audit trail and data pool
- Those key analytics can be used to optimize processes, improve the customer experience or generate performance statistics

Natural Language Processing Basic Facts

Natural Language Processing (NLP) is a technology based on the understanding and interpretation of human language by a computer, and is usually associated with the analysis of large pools of information, such as legal documentation. In reality, thanks to its capacity to organize and structure data, NLP has a variety of uses such as automatic summarization, name/word recognition, or topic segmentation among others.

How can a machine understand language? Technically, it does not. The computer will simulate understanding by using two types of approaches: **symbolic** (human-developed rules and lexicon) and **statistical** (by identifying recurring themes in large samples of text the computer system can develop its own linguistic rules that it will use to analyze future input and/or the generation of language output).

⇒ NLP Benefits

-  **Time Reduction**
 - NLP can facilitate an employee's work by carrying out fastidious task such as going through client information to single out discrepancies or summarizing lengthy documents (e.g. financial regulations)
-  **Improved Customer Service**
 - NLP today is based on machine learning which enables it to simulate human behavior through statistical methods
 - The interactions between customers and companies contain useful information to highlight customer needs and causes for possible dissatisfaction
-  **Detailed Data Capture**
 - NLP enables the monitoring and the gathering of real time data on a large scale and from a variety of sources

Why is Intelligent Automation relevant to the Financial Sector?

The financial industry as a whole has been undergoing significant change in the past decade, whether customer-related, technological or regulatory. Although regulatory compliance has been a high area of focus and growth in terms of head count, response to these changes have been strongly influenced by technological innovations. Cognitive tools are a perfect example of this influence, as they increasingly present a practical opportunity to change the way financial institutions are executing their processes. For instance, Systems from Digital Reasoning are automating internal fraud investigations and IpSoft's Amelia is focused in part on facilitating compliance in customer conversations. Banks are thus positioning themselves for long-term growth and are turning to RPA or NLP tools to improve the productivity of their departments.

Natural Language Processing in Financial Services

NLP software gives financial institutions the opportunity of exploiting unstructured data (information that usually cannot be understood by computers) stemming from social media, email, audio files, Word documents, PDFs and other sources. Financial service activities not only depend on information being gathered from a variety of sources but also on having it available as close to real-time as possible. NLP enables the collection and exploitation of this data in a variety of ways, making it a versatile tool for banks – especially when combined with RPA processes.

⇒ **NLP possible uses**

NLP USE	EXPECTED OUTCOME
Market Intelligence	<ul style="list-style-type: none"> Markets are highly influenced by news sources: NLP software is a way of leveraging that information and strategically acting upon it.
Company Reputation Monitoring	<ul style="list-style-type: none"> What is outside a company is just as important as what is inside: an organization can review its processes in order to boost their efficiency but if its reputation is low, business will still not expand. Analysis of unstructured data by NLP helps companies scan the web for mention of their products, their brand or their customer service.
Reporting Quality	<ul style="list-style-type: none"> Analysts are able to write more detailed reports when NLP provides them with the ability to access relevant and filtered information.
Regulatory Compliance	<ul style="list-style-type: none"> NLP can help employees go through lengthy regulations, monitor any changes or updates made by regulators, or help with KYC. Regulators are applying automation to the way they write and structure regulations by using common vocabularies or ontologies for instance.
Trade Surveillance	<ul style="list-style-type: none"> Potential improper behavior can be tracked by applying NLP to traders' emails. NLP queries can identify possible incremental sale/purchase of insider shares.

Robotic Process Automation in Financial Services

The substantial benefits of an efficient RPA process make the technology very attractive to banks. The best applications of RPA are generally highly manual and rule-based processes that have a low exception rate and are subject to high operational risk. RPA software can help financial institutions improve customer experience, optimize business processes and costs but also address regulatory imperatives more efficiently. Moreover, it is a lightweight and very adaptable tool, which makes it accessible and a quick win for banks with limited investments.

On one hand, RPA can be implemented in parallel to IT because it enables organizations to find easily implemented solutions by automating specific process steps where heavier IT solutions do not pay off. Robots and employees could work side-by-side thanks to a temporary workload system for instance: the department would not be entirely run by RPA software but it can be used to assist employees when the workload is particularly heavy. On the other hand, IT is also one of the departments that financial services and banking leaders seem to be most committed to automating.

⇒ RPA possible uses

RPA is a good match for Compliance Services considering the latter is rule-based and can be high-volume nature. Common examples of possible areas of use are:

- Client onboarding
- Know your customer (KYC)
- Customer due diligence
- Identification checks
- Data quality testing
- Reporting

Another possible use for RPA is ALM because of the large amount of manual processes involved and the information gathered from various systems, which is time-consuming. Being assisted by a robot can alleviate that workload. The CEO of QuantaVerse, David McLaughlin, estimates that about 75% of the human work related to investigations could be automated.

In addition, this would also give more time to investigators for coping with the high number of false positives. If software can analyze the majority of the data and make a first judgment on whether a case should be pursued, employees can focus on cases that are more complicated and have more time to make decisions to close or move the investigation along.

Intelligent Automation can differentiate banks, as the markets become increasingly saturated. Fast and reliable processes enable the rapid development of products and offers, which in turn gives banks an opportunity to stand out, without having to go through the process of modifying backend processes.

Overall, if implemented well, both RPA and NLP are efficient approaches to produce quality improvement, cost reduction and productivity increases for banks. The combination of the two can make strong systems able to act as “smart assistants” for human employees. As a result, they should not only be seen as a tool but also as a tactical strategy: if put to good use, they can induce organizational shifts, which have to be well thought out. Cognitive tools in general are still growing and will not so much take over jobs versus changing the way they are organized. What used to be an employee task can now become automated, leaving the person time to tackle other issues. This however implies strong change management and a good deployment of Intelligent Automation in order to maximize its efficiency.

Example of potential Robotic Process Automation use at a Bank

Foreign Bank KYC Client on boarding:

Thomson Reuters 2016 Know Your Customer Surveys revealed a single clear message: the costs and complexity of KYC are rising, and are having a negative financial impact on businesses. While financial firms' average costs to meet their obligations are \$60 million, some are spending up to \$500 million on compliance with KYC and Customer Due Diligence (CDD).




Recognizing the added value of using RPA to automate bank processes, Sia Partners has explored possible applications of this technology to KYC Client Onboarding.

Our experience in KYC Onboarding has led us to think about ways to improve the process of On Boarding a client, which is repetitive, time consuming and prone to errors.




Indeed, at Sia Partners we believe that switching from a manual to Robotic Process Automation software would greatly improve this process efficiency and therefore strengthen the Bank KYC program, but also and certainly more importantly reduce KYC associated costs.

Following is a possible optimization of a financial institution's client onboarding KYC process with RPA capabilities. While each step of a KYC process can be affected by RPA, here we have chosen to highlight one particularly impacted step per each KYC phase.




Phase 1: Preparation and Initial Review of KYC Documentation

Chosen step description					
	How to?	+ & -	How to?	+ & -	
Review Client Information	<ul style="list-style-type: none"> Manually, review available customer information for accuracy and completeness, assessing all gaps 	<ul style="list-style-type: none"> -- Repetitive task prone to human error -- Time consuming task 	<ul style="list-style-type: none"> RPA software automatically review available customer information for accuracy and completeness, assessing all gaps 	<ul style="list-style-type: none"> - Set up requires time & testing - Employees training - Maintenance ++ High Reliability ++ Time Saving + Allows resources to focus on reaching out to clients more quickly 	<p>1) Web or Desktop Automation for form review Here it is important to have a standard process where all the clients use the same form in the bank system.</p> <p>2) Machine Learning for document review Diversity of documents received from clients requires a robot that can learn different types of documents to check missing information</p>

Phase 2: Collection of Outstanding KYC Documentation

Chosen step description					
	How to?	+ & -	How to?	+ & -	
Analyze customer data gathered through KYC process for added value (customer analysis, products data)	<ul style="list-style-type: none"> Non existent 	<ul style="list-style-type: none"> -- Missing relevant compliance / risk information -- Missing commercial opportunities 	<ul style="list-style-type: none"> Gather data and transform it through operational analytics capabilities with automated reports but also potentially customizable with SQL queries 	<ul style="list-style-type: none"> - Set up requires time & testing - Employees training - Maintenance +++ Very valuable tool to gather data and analyze it which consequently can guide process and business decisions 	<p>1) Operational Analytics capabilities of an RPA Software</p>

Phase 3: Completing the Final KYC Package

					
Chosen step description	How to?	+ & -	How to?	+ & -	
Screen all parties for sanctions, PEPs and negative news, and apply final risk rating based on all updated information	<ul style="list-style-type: none"> Manually 	<ul style="list-style-type: none"> - Repetitive task prone to human error - Time consuming task 	<ul style="list-style-type: none"> Automatically checks an individual's background against thousands of sites, including monitoring sanctions lists from sources such as the U.S. Treasury and Immigration and Customs Enforcement 	<ul style="list-style-type: none"> - Set up requires time & testing - Employees training - Maintenance - Potential false positives if the set up is not adequate ++ High Reliability ++ Updated in real time ++ Time Saving ++ Free up time for more value added tasks 	1) Web Automation and/or Web Scrapping and/or RPA – Internet Bot (Web spidering)

How can Sia Partners help you improve your process automation?

Automating processes has the potential to free a significant amount of time for Compliance and KYC teams, ensure a better data reliability and allows the possibility to analyze data in more meaningful ways by connecting different data sources and conducting data crosschecks. However, more importantly it will significantly reduce costs associated to mundane, repetitive tasks that can be automated.

To help tailor the best outcome for process automation, Sia Partners defines a three-step method:

1. Define your needs for process automation





The typical uses for RPA are Operational, Procurement, and HR but also Compliance processes. Whether, it is a global project to rebuild processes in different areas or a focus effort on specific tasks, it is important to:

- ✓ **Map out** entire end-to-end processes
- ✓ **Identify process steps** amenable to automation
- ✓ Use the **following criteria to define if a process can be automated:**
 - a. Is automation logical?
 - b. Maturity of process
 - c. Business Value
 - d. Availability of data
- ✓ **Detail exactly what output** and improvements are expected
- ✓ **Define target model** for the automated processes

2. Find the right solutions to answer the bank's needs

The RPA software market is new and diverse. Over a dozen solutions exist with different levels of maturity, scope of effectiveness, and limitations.

As one can see below, vendors have different levels of maturity and a diversity of proposed solutions:

	 Offer	 Scope	 Pricing Model	 Maturity
Automation Anywhere	Task bots: Error-free execution (reliance on structured data) Meta Bots: Facilitating scalability IQ Bots: Intelligent automation (processing unstructured data)	Mostly Back Office <ul style="list-style-type: none"> Data validation and migration Customer account management Report creation and form filling Financial claims processing Process to pay 		++++
UiPath	<ul style="list-style-type: none"> Open platform suited for complex automation No direct implementation – reliance on partnerships 	Front and Back Office	Per transaction license and usage-based licensing model	++++
Blue Prism	End-to-end process view with central control of the robots	Back Office Targets regulated industries	Strong partner focus – main revenue from license fees	+++
NICE	Attended (need for human attention) and unattended automation	Mostly contact-center based processes Queue management, call handling, scaling		++
Pegasystems	<ul style="list-style-type: none"> Merges robots, analytics and case management Combines RPA with their case management and BPM products 	<ul style="list-style-type: none"> Sales Automation Exception management for Commercial Banking Compliance and KYC Client Services 		++++
Kofax Kapow	Broad platform offering: end-to-end automation, SAP, large scale automation...	<ul style="list-style-type: none"> Data capture Accounts payable automation Automated workflow 		+++
EdgeVerve Systems	<ul style="list-style-type: none"> Service and product approach: end to end offering RPA scalable platform (AssitEdge) 	Front and Back Office Wide array of banking specific solutions combined with classic RPA		+++

Key: ● Leaders ● Next Tier ● Challengers

Our research based on publicly available information collected by Sia Partners through Google search and articles reviews revealed that several large financial institutions such as J.P.Morgan, HSBC, Societe Generale, Generali, etc,,, are using the solutions detailed in our RPA vendors table

3. Implement the right Robotic Process Automation tool

The most crucial part of an automation project and the key to its success will be the implementation of the RPA software. Indeed, as simple as it seems to set up the right parameters to automate tasks, the RPA software can determine the success or failure of the automation project. For instance, too many false positives in a KYC process due to inappropriate parameters could result in efficiency targets not being met, thus defeating project objectives.

Therefore, at Sia Partners we believe that the following steps are necessary for a successful RPA implementation project:

- ✓ **Ensure proper decision making** to buy the solution but also to create the team that will drive changes.
- ✓ **Establish a dedicated, cross-functional team**, accountable to an executive sponsor, and task it to examine processes for automation, develop requirements, and report progress.
- ✓ **Apply proper finance controls** on the newly automated processes. Management should develop and approve process maps before migration to automation begins. Functional areas and individuals are typically accountable for maintaining these controls.
- ✓ **Designate a team to monitor the robotic automated process** to address potential issues, especially during the implementation phase.
- ✓ **Develop a plan to redirect freed-up staff** by developing a comprehensive change management plan as well as updating the organizational structure to redeploy staff and resources efficiently.
- ✓ **Update process maps and operating procedures to reflect the new roles** of affected employees.
- ✓ **Create a communication plan to explain how robotic automation** will affect cross functional groups to help ensure broader buy-in. It should be part of the overall change management plan to help ensure that users are tied to the success of the program.
- ✓ **Finally, creating a Testing Plan is key**, financial institutions should test the robotic automation software thoroughly before it goes live. Without effective testing, issues may crop up and errors could multiply quickly since the programs run continuously.

Sia Partners recognizes the disruptive potential of Intelligent Automation and more specifically RPA and believes automation is a key next step in the optimization of processes within banks. As a result, we have been using our knowledge and experience in the optimization of banking processes in order to further study automatable tasks and devise potential solutions, not only to automation implementations but also to associated change management.

Sources:

<https://www.thomsonreuters.com/en/press-releases/2016/may/thomson-reuters-2016-know-your-customer-surveys.html>
https://en.wikipedia.org/wiki/Web_scraping
<https://www.uipath.com/>
<https://www.edgeverve.com/>
<https://www.pega.com/>
<https://www.blueprism.com/>
<https://www.slideshare.net/UIPath/everestgroupfitmatrixforroboticprocessautomationrpatotechnology>
<https://www.ft.com/content/3da058a0-e268-11e6-8405-9e5580d6e5fb>
<https://www.linkedin.com/pulse/robotic-process-automation-financial-services-badreddine-laroussi>
http://irpaai.com/AI2015-recap-London/resources/Best%20Practices%20for%20RPA_Virtusa_BGraham.pdf
<https://www.finextra.com/blogposting/13223/financial-services-the-next-frontier-for-robotic-process-automation>
<https://hbr.org/2015/06/beyond-automation>
<https://hbr.org/2016/12/wall-street-jobs-wont-be-spared-from-automation>
<https://www.cbinsight.com/applying-robotic-process-automation-banking.html>
<https://www.americanbanker.com/news/beyond-robo-compliance-how-bots-will-soon-permeate-banking>
<https://www.atkearney.com/financial-institutions/ideas-insights/robotic-process-automation>
<https://yakidoo.com/robotic-process-automation-rpa-banking/>
<https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/operations/lu-intelligent-automation-business-world.pdf>
<https://www.capgemini.com/banking-and-capital-markets/robotic-process-automation-for-financial-services>
<https://ayehu.com/role-robotic-process-automation-banking-industry/>
<https://www.accenture.com/us-en/insight-financial-services-robotic-process-automation?src=JB-11540>
<http://www.disys.com/wp-content/uploads/2016/03/Robotics-Process-Automation.pdf>
<http://irpaai.com/robotic-process-automation-banking-secret-digital-transformation/>
<https://www.forbes.com/sites/steveculp/2017/01/09/robotic-process-automation-rpa-opens-new-doors-for-finance-and-risk/#70e3fe2a6ef8>
<http://financeandriskblog.accenture.com/regulatory-insights/how-robotic-process-automation-creates-value-for-compliance-functions>
<http://www.nice.com>
<http://www.kofax.com/>
<https://www.automationanywhere.com/>
<https://www.edgeverve.com/wp-content/uploads/2017/02/forrester-wave-robotic-process-automation.pdf>
<https://www2.deloitte.com/uk/en/pages/innovation/solutions/robotic-process-automation.html>
<https://newsroom.accenture.com/news/accenture-and-blue-prism-team-to-provide-robotic-process-automation-to-help-clients-accelerate-business-results-improve-employee-and-customer-experience.htm>
<http://www.cio.com/article/3174126/outsourcing/rpa-proving-its-transformational-value-at-deutsche-bank.html>