

IDC PERSPECTIVE

Robotic Process Automation Game Changers Advance Financial Services Institutions Toward Intelligent Digital Workforce

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THIS IDC EXCERPT FEATURES: KRYON

EXECUTIVE SNAPSHOT

FIGURE 1

Executive Snapshot: Overview of Intelligent Digital Workforce

IDC Financial Insights' *Intelligent Digital Workforce* comprises intelligent digital workers — essentially software robots that can perform both deterministic and nondeterministic tasks by continuously understanding and analyzing structured and unstructured data. They represent rules and judgement-based automation, and, like their human counterparts, they are both self-learning and self-healing workers that can discover patterns and even offer recommendations to improve them.

Key Takeaways

- When it comes to vendor selection for automation needs, selecting an intelligent digital workforce solution based on six core characteristics — simple, usable, and reusable by business users, ability to deliver enterprisewide scale, security and governance as the foundational tenets, availability of "real-time" operations analytics, intelligence powered by cognitive/AI technologies and innovative tools, and strong support extended by the ecosystem — typically delivers more favorable results.
- By 2021, we expect that every 60% of tier-1 Asia/Pacific banks and insurance companies will deploy intelligent digital workforce solutions for increased automation, intelligent decision making, and improved operational efficiencies to achieve an exceptional business value and deliver a more real-time and contextual CX.

Recommended Actions

- Change management is critical for the success of any automation project.
- Institutions will have to address the legacy way of doing work to achieve best results from their intelligent digital workforce solutions. It is important to redesign most of the workflows and processes to make them suitable for automation.
- Institutions must carefully evaluate how the shortlisted vendors can fundamentally solve their business problems and optimally support them in their intent to achieve hyperscale and hyper-performance with automation.
- As the new approach to intelligent automation (particularly AI) takes hold, the institution will create demand for new roles and skills and must also be ready for a level of reskilling it has never seen before.

Source: IDC, 2019

IN THIS EXCERPT

The content for this excerpt was taken directly from IDC Perspective: “Robotic Process Automation Game Changers Advance Financial Services Institutions Toward Intelligent Digital Workforce” (Doc #AP44597519). All or parts of the following sections are included in this excerpt: Situation Overview, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

SITUATION OVERVIEW

IDC Financial Insights continues our series of reports on automation in financial services. This report is second in the series, where we start by looking at robotic process automation (RPA), and how the proposition around it has steadily moved toward intelligent automation and leveraging an intelligent digital workforce. In our report *Robotic Process Automation in Asia/Pacific Financial Services: Key Learnings from 10 Early Adopters* (IDC #AP43545718, February 2018), we emphasized that RPA has often been cited as the essential first step toward automation but could more accurately be described as part of a continuum of technology-enabled initiatives to bring intelligence into the automation of business processes. IDC defines this continuum of technology-based initiatives focused on process automation capabilities as the Intelligent Automation Value Chain. This value chain underscores a notable evolution of demand toward an intelligent digital workforce from the rules-based digital workforce.

Many financial services institutions (FSIs) in Asia/Pacific (excluding Japan) that embraced RPA have not been able to scale their automation deployments. Moreover, many early adopters that tried to imbue intelligence with Cognitive/AI technologies and innovative tools in the automation of their business processes haven't gotten the value they expected from their intelligent automation initiatives. The purpose of this IDC Perspective is to support Asia/Pacific financial services institutions (FSIs) in their automation journey by addressing these challenges and assisting them, especially in their vendor selection exercise, by identifying and analyzing the core characteristics of a good intelligent digital workforce solution. This report also presents the profiles of eight vendors that provide intelligent automation offerings in the region for the financial services industry. The perspective focuses on their unique propositions and capabilities around the core characteristics and their resolve to deliver an end-to-end intelligent automation and optimization for their customers. This IDC Perspective addresses the following three questions:

- What are the core characteristics of a good intelligent digital workforce solution?
- Who are the key vendors in this region and what are their unique capabilities?
- What are the key considerations for financial services institutions when they embark on and/or advance in their automation journey?

Although we expect to see most of the traction and advancement (in terms of currency) toward intelligent automation from leading FSIs, we will also see a compelling growth in demand from small to midsize institutions that are about to take their first step in embracing digital workforce solutions. In our opinion, the markets to watch out for both intelligent and digital workforce solutions in the region are Australia, Singapore, India, South Korea, Thailand, Hong Kong, Malaysia, Indonesia, and the Philippines (with Australia and Singapore quickly advancing further toward intelligent digital workforce). These markets are hotspots for various digital trends, driving institutions to invest in everything digital to increase business growth, enhance customer engagement, and improve operational efficiencies.

Defining Intelligent Digital Workforce

The financial services industry in Asia/Pacific is transforming at an ever-increasing pace. Equipped with innovative tools and rapidly evolving technologies, the industry is now intent on achieving hyperscale and hyper-performance with an "intelligent digital workforce." This report series points to the growing interest of institutions to pursue an intelligent digital workforce to help them deliver better customer engagement and experience while reducing their operating inefficiencies, improving their employee productivity and morale, and ensuring robust security, governance, and compliance.

What is digital workforce in financial services? Broadly defined, IDC Financial Insights' *Digital Workforce* comprises digital workers – essentially software robots that, when initiated at predefined times or triggered by an external event, can automatically execute deterministic, repetitive, standardized, high-volume, and rules-based tasks by capturing and analyzing structured data and working across several interoperable systems (such as applications and other technologies). The term "RPA" is also used by the industry to point to digital workforce. Treated like their human counterparts, the digital workers are assigned separate IDs and passwords to sign in to company applications to complete their allocated tasks. We have seen examples of banks and insurance companies that are anthropomorphizing their digital workers (making them more human-like) by naming them and making them accountable for security and governance purposes. For example, OCBC Bank (Singapore) in 2017 named its first digital workers "Bob" and "Zac." Other examples include "Amy" and "Eve" at UOB Bank (Singapore), and "Alex" at AXA Affin General Insurance (Malaysia). Some of the tasks performed by digital workers in financial services include billings and collections, loans processing, credit card applications processing, performance and financial reporting, insurance claims handling, and policy administration and servicing.

The digital workers help to significantly reduce the turnaround time to complete a process – early indicators point to a reduction of 50-90% (see *Robotic Process Automation in Asia/Pacific Financial Services: Key Learnings from 10 Early Adopters*, IDC #AP43545718, February 2018, for more benefits for Asia/Pacific financial services). Employees are freed up from mundane tasks, allowing them to focus on more critical initiatives that require judgement and complex decision-making. For example, they can now focus more on improving customer engagement or engaging in business development. Deploying a digital workforce helps improve employee morale by awarding more enriching and rewarding jobs to human employees. Digital workforce can also be seen as a preemptive action considering the future workforce, as there seems to be little to no inclination from younger talent to do mundane, repetitive tasks that can be easily executed with the help of technology. It is important to note that these digital workers can exist in both attended and unattended forms and can be delivered on-premise or on the cloud.

But what is intelligent digital workforce? IDC Financial Insights' *Intelligent Digital Workforce* comprises intelligent digital workers – essentially software robots that can perform both deterministic and nondeterministic tasks by continuously understanding and analyzing structured and unstructured data. They represent rules and judgement-based automation, and, like their human counterparts, they are both self-learning and self-healing workers that can discover patterns to predict decisions and even offer recommendations to improve them. In other words, the intelligent digital workforce is progressively graduating from merely mimicking human actions to augmenting human intelligence, as well as evolving quickly to achieve the potential of autonomously emulating this intelligence. The term "Intelligent Automation" is also used by the industry to point to intelligent digital workforce. This workforce has the potential of delivering meaningful customer support, improved decision making, and valuable customer insights. Some of the key enabling technologies for intelligent digital workforce

solutions are message-oriented middleware, RPA software, API management, predictive analytics, business process management, workflow management, content management, streaming integration, screen scraping, optical character recognition (OCR), cognitive/AI, rules engines, and data management. For more clarity on the definition of AI, IDC defines *cognitive/artificial intelligence* as systems that learn, reason, and self-correct. The system hypothesizes and formulates possible answers based on available evidence, can be trained through the ingestion of vast amounts of content, and automatically adapts and learns from its mistakes and failures. Some of the technology components of cognitive/AI include machine learning, or ML (both supervised and unsupervised machine learning), natural language processing (NLP), Q&A processing, dialogue-based interactions, natural language generation, structured data analysis, speech recognition, and visual processing.

It is worth noting that, before we get to a future state where the use of AI is more pragmatic, responsible, and customer-centric, there are many considerations that need to be addressed (e.g., customer consent, data quality, biases, ethics, and security) to realize its truly transformational results. Although we do have some time before we experience that state of truly ethical and infallible AI (which we will cover in our next report), there is a burgeoning interest from FSIs to understand and experience how AI can help them to create new products and services, improve customer engagement, and deliver exceptional business value.

Based on IDC Financial Insights' various discussions with FSIs and leading vendors and service providers in the market, we list below some noteworthy trends that are shaping the automation market, especially in relation to the buildup of both digital workforce and intelligent digital workforce:

- **Rising demand for intelligent digital workforce.** IDC Financial Insights is currently seeing considerable interest from FSIs in evaluating and leveraging an intelligent digital workforce to solve their business problems. One of the top 5 priorities for management teams across Asia/Pacific FSIs is to drive significant business value, improved operational efficiencies, and enhanced customer engagement with intelligent automation. Line-of-business (LOB) and IT teams need to analyze and evaluate which automation solution (from among a variety of options: for example, digital workforce solution, intelligent workforce solution, document and data capture solution, and so forth) will be best suited to solve their problems at hand.
- **Rise of bot marketplaces and vertical/function-specific offerings.** Many vendors are helping their FSI customers to speed up the time to realize business value and avoid a redundancy of resources by launching prebuilt bots that can be downloaded from bot stores or bot marketplaces. These bot stores also address the demand for vertical- and function-specific offerings for automating vertical and functional processes. For instance, leading vendors have prebuilt bots for "order to cash," "procure to pay," and document processing. They have also launched bots that connect with various applications such as SAP, Salesforce, and Oracle to automate repetitive tasks.
- **Introduction of process mining and discovery features.** Built on a collection of log files (dark data) of human employees' or digital workers' keystrokes, mouse clicks, and applications accessed, process mining and discovery features identify and recommend processes that are suitable for automation with a higher probability of delivering targeted business results. Although process mining is not new, it has definitely become much easier now with the availability of structured log files and the inclusion of client-side logging in some RPA solutions.
- **Introduction of mobile apps, free trials, and trainings.** As a corollary of the aforementioned trend, many vendors in the region are trying hard to differentiate their offerings and improve their market competitiveness. As the game to win customers intensifies, 2019 will see more

mobile apps, free product trials, and free trainings being launched. Mobile apps will allow business users to manage and control their digital workforce from their mobile devices, as well as monitor their performance in real time. Free trials are being offered by some leading vendors to allow more customers to experience their solutions. Even free access to trainings and certifications for developers and professionals has become a notable trend. This is done particularly to address the shortage of automation talent in the Asia/Pacific region.

- **Emergence of new automation roles.** Now this is big. As FSIs expand their automation to multiple teams and take an enterprisewide approach, we will see the rise of new formal roles such as Executive Sponsor, Automation Change Manager, Automation Program Manager, Automation Process Analyst, Automation Trainer, Automation Developer, Head of Intelligent Automation CoE, and even Chief Automation Officer. This will be visible especially in FSIs that are serious about achieving significant business value from their automation strategy.
- **Growing inclination toward multivendor strategy:** IDC Financial Insights expects that a multivendor strategy will gain more prominence in the next two years. Institutions will choose to work with more than one vendor for their different automation needs and a multitude of reasons, some of these being the growing demand for more intelligent automation offerings and key capabilities (especially around core characteristics), the need to reduce concentration risk on a single vendor, and to achieve better licensing terms. However, exceptions will exist here, and there would still be those that prefer to work with one vendor for all their automation requirements. This decision will entirely depend on the institution's vision for its automation and the ability of its vendor to offer end-to-end intelligent automation.
- **Market consolidation.** As the demand for automation is advancing quickly along with the convergence of business process management (BPM) and RPA tools and the emergence of new automation vendors, there is significant overcrowding in the market. Though the consolidation has been unexpectedly slow to date, IDC Financial Insights believes that this overcrowding will lead to more mergers and acquisitions in the automation space (for both software and services players) in the next two to three years. One recent and notable acquisition happened in November 2018, when Contextor SAS, a European leader in the design and integration of RPA, was acquired by SAP. With this acquisition, SAP intends to help accelerate the development and expansion of its SAP Leonardo Machine Learning portfolio and offer more automation capabilities out of the box. 2019 is expected to see similar acquisitions by other players that are looking to expand their current solutions portfolio and existing capabilities in automation.
- **Pressure on licensing fees.** Multiple factors and trends such as market overcrowding, adoption of multivendor strategy, introduction of free trials, and increased commoditization will place a downward pressure on licensing fees. Concurrently, these factors will also enhance the quality of automation offerings by vendors and raise the automation efficiency and capacity utilization of FSIs.
- **Increasing focus on co-innovation through ecosystem partners.** Automation vendors are increasingly focusing on co-innovation through their ecosystem partners to deliver an end-to-end automation solution for their customers. To build and deliver an expansive intelligent solution, they are partnering and incorporating solutions from third-party technologies and applications vendors. For example, they are integrating and embedding capabilities and solutions for data analytics and business intelligence (BI), cognitive/AI, and cloud deployments. They are also partnering with consulting and advisory firms and systems integrators (SIs) on the services side.

The Six Core Characteristics of an Intelligent Digital Workforce Solution

This section focuses on the six core characteristics of an intelligent digital workforce solution. IDC Financial Insights highlights that FSIs that have chosen an intelligent digital workforce solution based on the below listed characteristics have typically achieved more favorable results from their automation deployments.

Simple, Usable, and Reusable by Business Users

Although many in the automation landscape prefer to discount or completely ignore the advantage of simplicity, it is a characteristic crucial to an automation solution when a business user is trying to build and train a bot to perform a series of tasks based on predetermined rules. Consequently, this need for simplicity also drives more demand for no-code automation. This does not mean that the IT team should not be involved and support business users for automation projects; rather, the objective is to reduce the dependency on IT when it comes to identifying the right processes to automate, defining the business logic in the workflow, and training and governing the bots. The argument holds up even for global in-house centers (shared-services centers) of FSIs, where the digital workforce tries to address the "swivel chair" activities that involve working across multiple applications to solve customer questions or requests. As aforementioned, many leading vendors are now offering free trials to encourage potential customers to experience the simplicity and usability of their solutions. Moreover, we are seeing more announcements related to the launch of bot marketplaces or bot stores, where reusable preconfigured bots with process-specific knowledge and capability are available to handle simple, as well as complex, tasks among dependent applications and help to avoid a repetition of efforts and redundancy of resources. IDC Financial Insights acknowledges that the availability of reusable components encourages faster robot design, testing, and deployment. For instance, for a process that handles a million transactions per day, the use of reusable components for automation can deliver extra substantial savings in time, effort, and costs.

Many solutions offer a recorder capability that monitors, records, and stores the actions and manual steps of a user – which are then repeated in production with the help of automation. In other and more complex cases, solutions offer a graphical tool (model-driven) that provide a mechanism to drag and drop an action object into a low-code environment and wire that to a next action and onward until the automation is completed, tested, and moved into production by deploying the automation into the desktop agent (see *Robotic Process Automation Software Overview*, #US43927018, for more details). Additionally, the solution must include a systematic and smart sequence for escalation and resolution assignment to a human employee for rules-based exception handling.

It is important for institutions to note that when they advance toward an intelligent digital workforce solution (from a digital workforce solution), they might face initial complexities and challenges due to greater use of cognitive/AI technologies and innovative tools. This would also call for improving data quality, redesigning processes and automation workflows, interoperability and integration with the core systems and strategy, and finding the right talent, among other things. However, over time, we will see these complexities gradually diminish as better-connected systems and data are set in place and enough talent becomes available and trained in handling complex situations. We also believe that the advanced training and certifications offered by the vendors will play an important role in addressing this rapidly evolving environment.

Ability to Deliver Enterprisewide Scale

In 2019, we expect to see more and more Asia/Pacific FSIs agreeing that a piecemeal approach to automation will only accrue limited results and in some cases, even outright failure. This acceptance

has encouraged management and business teams to expand these deployments from a single team or few teams to an enterprisewide scale. In addition, IDC Financial Insights highlights a massive change in the perception of capabilities of RPA tools and a greater realization among institutions that RPA is an essential step toward achieving a more successful intelligent automation. For all these reasons, there is a rapidly growing demand for an automation solution that can offer a single unified platform with a centralized view and management of enterprise-level automation across various IT systems and technologies. The centralized management ensures that when an institution expands from a couple of bots to hundreds or thousands of them, the implementation and maintenance along with associated risks can still be centrally managed and controlled. Otherwise, think of a situation where the business users must individually start, monitor, and stop each of the hundreds or thousands of bots. This centralized management also means better governance and compliance in an enterprisewide automation. And thanks to the feature of queue management, these users can schedule and delegate jobs and automate the distribution of the intelligent digital workers for their efficient utilization, whenever the workload changes.

It is important that the solution should offer scalability in a true sense – both the ability to scale up and scale down centrally. Reliability will also play an important role: what happens when things start to change in the environment, for example, there are new versions of automation solutions or updates in enterprise applications. A reliable solution will ensure that there is a systematic contingency plan and workflow process for handling such chaotic situations and maintaining the health of the systems. Most of the leading solutions now offer integration and compatibility with multiple technologies such as Mainframes, Java, and .Net; enterprise applications such as SAP and Oracle; and virtual environments such as Citrix. They also offer business continuity with high availability (HA)/disaster recovery (DR) enterprisewide, where a recovery mechanism is offered for each digital worker and each automated process across multiple locations. Currently, vendors in the market support on-premise, hybrid, and cloud-based delivery models. With these discussions around scale, the option for cloud and as-a-service models is timely. IDC Financial Insights foresees greater demand for the cloud model as part of a bigger enterprise move by Asia/Pacific banks as they up the ante for cloud utilization and consider it a critical foundation for present and future technology innovation. It is worth noting that with greater automation efforts, FSIs must expand and change their internal infrastructure to operate effectively. Network and server latency can become critical bottlenecks when an institution is building its intelligent digital workforce.

In the next two years, we will also see more investments from FSIs in establishing centers of excellence (CoE) to drive best practices in automation and enable a more robust management and control, security and audit, and overall governance of the intelligent digital workforce. With a CoE setup, the institutions will enjoy the leverage and knowledge in negotiating with the vendors, setting up KPIs, executing maintenance of solutions, and developing training methodologies. We will also see institutions focus more on change management, redesigning business processes, and reskilling/upskilling to achieve enterprisewide scale.

Security and Governance as the Foundational Tenets

The mere utterance of the terms "artificial intelligence" and "robotics" in boardroom meetings or in fact any meeting is enough to bring up unrelenting questions about security and governance, including concerns about securing customers and their data and even the institution itself against rogue automation. Contrary to popular opinion, robots improve the accuracy and consistency in transactions and processes as they do not commit human-like errors and operate within well-defined rules. In the past, FSIs have paid a huge price for costly errors or incorrect reporting, especially in regulatory

reporting and compliance. The use of digital workers ensures that there is better compliance with higher due diligence and precision. With new regulatory compliance mandates that focus on the governance of business processes, there is a strong, supportive view of how a digital workforce can ease compliance for institutions. However, all these are based on an underlying assumption that institutions can ensure stricter security and governance controls to secure the automation from bad internal and external actors – basically machines work as planned and these actors do not influence them for their own advantage. To build more confidence in their security and audit controls, many vendors are voluntarily complying with data security and privacy regulations such as the General Data Protection Regulation (GDPR), Federal Information Security Management Act (FISMA), Health Insurance Portability and Accountability Act (HIPAA), and European Union Agency for Network and Information Security (ENISA). The competence of the intelligent digital workforce to deliver best quality outcomes, advice, and decisions also depends on institutions' ability to address the issues around data quality, data usability, and data governance.

Our advancement toward a more digital world and digital workforce fundamentally requires that we start treating our digital workers like our human employees. Like our human employees, digital workers must be accountable and responsible for their actions and therefore, all security parameters including access, control, and auditability must apply to them as well. To support this viewpoint, vendors offer granular role-based access, control, and management across all key aspects of the solution. The role-based access approach ensures that only the authorized users can access sensitive data and/or execute bots. The objective is to provide a secure and effective way for an institution to manage its digital workforce. More so for the financial services industry, it is absolutely critical that the vendors ensure that no sensitive data is stored by the automation solution. It must also provide a secure storage of credentials in the credential vault. All credentials and sensitive data, including data at rest and data in motion, must be encrypted; even all channels and communication between servers, applications, and bots must be protected by encryption and SSL protocols. Most solutions offer full integration with existing LDAP/Active Directory Identify Infrastructure to maintain single sign-on credentials. A good digital workforce solution must offer comprehensive audit logs for all user and system activity. To achieve auditability and traceability, the solution must track changes made to a bot, data, system, and user's permissions. These logs will not only help identify errors and bottlenecks in the automation process but also detect fraud or misuse by bad actors.

Availability of "Real-Time" Operations Analytics

With operations analytics embedded into their intelligent digital workforce solutions and made available via dashboards, the vendors are making it easier and seamless for the institutions to monitor and evaluate their workloads in real time. This way, teams can gain insights on the performance (e.g., volume of transactions, utilization, efficiency) of their digital workers and factually decide on how to optimize their workforce. When combined with audit trails and logs, these actionable insights can provide process intelligence and streamline automation by identifying bottlenecks and errors for improvements. These insights can also help to make faster informed decisions and more accurately predict future outcomes. Most of the leading solutions also support integration with third-party BI tools for customized reporting and data visualization with highly personalized dashboards.

Process mining and discovery can help identify tasks that are ripe for automation. Process mining collects and processes log files to produce a statistical as-is perspective of a process, including the applications used in the process and how much statistical variance there is in process execution. Process mining provides a clear, fact-based path to organize task automation priorities by the highest value, whether automation is aimed at a single application or a set of applications that combine to

execute a process, and should be a key planning tool that creates a business case for why a particular automation is needed. Client-side mining and separate server-side process mining solutions can be combined for a total view of process performance. We will see more vendors add process mining and discovery in their automation solutions in 2019. In our opinion, process mining will not be replacing large-scale engineering but only serve as a prelude to it.

Intelligence Powered by Cognitive/AI Technologies and Innovative Tools

To be sure, most of the deployments in Asia/Pacific FSIs until now are at the basic level of automation, which is not at all a bad thing for a start. We are steadily advancing toward a future state where the use of an intelligent digital workforce will be more common and an efficient automation of complex, non-standardized, and less-repetitive tasks will be possible. As mentioned earlier in the report, this workforce has the potential of delivering decision-centric process automation by solving nondeterministic tasks. We will soon see more intelligent digital workers in FSIs in the form of intelligent robo-advisors, intelligent chatbots, and virtual agents that are self-learning and self-adapting and offer intelligent assistance and advisory services to improve customer retention and loyalty. With its ability to deal with various types of data (both structured and unstructured) from multiple and disparate sources, this intelligent digital workforce can recommend, design, and launch on-demand, usage-based products that align with current market expectations. FSIs can also deliver improved onboarding experience across channels and greater personalization of services. It can also speed up decision-making by sharing valuable information and improve the responsiveness of customer service. In the case of insurance, intelligent digital workforce can be used to develop predictive models for insurance claims, expense management, and loss analysis. Next-generation security will also gain attention, as these workers can monitor activity in real time and capture "bad actor" transactions even if they are outside of the rules-based or heuristic capabilities of other fraud prevention systems. Additionally, the convergence of automation technologies, especially AI with other technologies such as big data, IoT, and blockchain, will also deliver transformational results for FSIs – however, as noted earlier in the document, it can be difficult and time-consuming to achieve these results.

Today, most of the leading solutions in the market have added technologies such as ML, NLP, and machine vision. One particular use case where FSIs have started to see improved results is intelligent invoice processing, where the information is extracted from a physical or unstructured format with the use of OCR and ML. OCR captures and digitizes data from documents and images, and may also include text analytics capabilities, while ML analyzes, groups, and looks for patterns in invoice data to enable faster and more accurate processing. When exceptions arise, they are still addressed by humans but fed back to the ML algorithm, so it can continuously learn and make improvements. This allows for more complete and accurate data to be processed by the invoice payment system using various automation and data capture technologies. It is important to note that most of the vendors offer these capabilities through third-party partnerships; only few have proprietary solutions. Where the vendors do not have proprietary solutions, they offer integration with other applications and workflow processes with REST API/web services.

Even if the institutions do not intend to use the "intelligent" element of the intelligent digital workforce solution in the near term, it is still important that they evaluate today the current intelligent automation capabilities of their shortlisted solutions, as well as the product road map toward adding and enhancing these capabilities in their vendor selection and analysis process. Currently, vendors offer their intelligent digital workforce solution in the market either as a separate offering (with a higher price tag and a separate set of KPIs) or as a more advanced version of their current digital workforce offering. IDC Financial Insights expects that these intelligent digital workforce offerings will accelerate

how AI is consumed within financial services. We should also emphasize that jumping straight to using autonomous AI might not be a good idea for FSIs that have not even started with RPA. The latter will deliver quick wins, optimize processes, reduce cultural resistance against the use of robotics and AI, and concurrently, develop automation talent. Subsequently, progressing to more advanced automation technologies will stand a higher chance of delivering better business value and success.

Strong Support Extended by the Ecosystem

IDC Financial Insights believes that the strength and depth of the support extended by the ecosystem will be one of the key differentiating factors that will drive the demand of one automation solution over another. Like any other ecosystem, the most important component of the intelligent digital workforce ecosystem is partners, which offer related services and technologies that complement the features and functionalities of the solution. It is necessary for institutions to now evaluate the overall ecosystem of the shortlisted vendors in their vendor selection process. The vendors will continue to form alliances and partnerships with both local and global consulting, advisory, and services partners, as well as third-party vendors (for OCR, ML, AI, NLP, and BPM) to expand their market presence and reach, as well as enhance their solutions' features and capabilities. We are also seeing leading AI platform vendors such as Google, IBM, and Microsoft undertaking partnerships with intelligent digital workforce vendors at the same time that they are developing their own cognitive/AI-enabled process automation capabilities. IDC expects that these efforts and partnerships will accelerate throughout 2019 and into 2020.

Finding the right automation talent is a challenge faced by many institutions in Asia/Pacific. To address this challenge, vendors have launched their own certification programs (both online and offline) to instill confidence in end users that the certified professionals are both available and competent in their solutions. They are also forming alliances with training institutes and schools to accelerate the availability of this talent. Leading vendors have also launched their own universities and academies to show their commitment to building automation skills in the market. Although these courses are mostly available in English, many are also in the process of building the content in other languages such as Spanish, Japanese, and Korean. To underline their focus on customer experience, some vendors assign a dedicated point of contact to each of their customers – this employee manages overall customer experience and becomes a go-to-person for customer service and support needs.

Ready Propositions for Intelligent Digital Workforce Solution

Based on our research on automation projects in the Asia/Pacific region, IDC Financial Insights highlights that the early adopters in the region are choosing their automation solutions based on the core characteristics, demonstrated use cases, local references, licensing terms, and the availability of local support and skills. In this Excerpt, we look at the proposition of Kryon, one of the eight players that offers intelligent digital workforce solutions for the financial services industry in this region.

Kryon

Founded in 2008, Kryon offers integrated business-friendly RPA with an intuitive interface, one-touch process-recording capability, and Kryon Process Discovery technology for accelerated deployment and continuous process optimization. Its AI-driven platform is currently used by a wide variety of enterprises worldwide, including financial institutions such as AIG Insurance, Allianz, Ascensus, LTCG, and Validus. The platform empowers businesses to maximize their ROI through their choice of desktop-based attended automation, virtual-machine-based unattended automation, and a hybrid combination of attended and unattended automation. Headquartered in Tel Aviv, Israel, Kryon currently holds five patents for AI technology, including image recognition (IMR), OCR, and ML. Its

solutions have incorporated proprietary OCR and IMR algorithms since 2009. For all of its solutions, customers pay an annual fee for each robot, plus a flat annual rate for access to the platform.

Kryon's enterprise RPA solution has a drag-and-drop interface and one-touch process-recording capability for simplicity and usability. Once the automation workflows of work processes have been created, an RPA manager can use the Kryon Console to delegate, prioritize, and schedule these tasks. Processes can be triggered by specific events, scheduled to run at certain times, or both, and then, the Kryon Console can automatically assign a task to the next available robot (or, if the customer prefers, to either a specific robot or the next available robot from a given group of robots). The automatic queue management assigns a priority level to each task without any need for coding. With server-side triggering of automated processes based on changes to databases, folders, or email servers, there is no need to assign a robot to monitor systems and initiate processes. Kryon's solutions work seamlessly with Citrix, legacy systems, and any other computer application. With analytics, customers can monitor the digital workers' performance and task success and utilization of attended, unattended, and hybrid workforces, including automatically generated audit trails and system logs (with no need for overhead RPA development). Moreover, Kryon Process Discovery evaluates identified processes, recommends which one to automate next based on key criteria affecting potential ROI, and creates an automation workflow for each process, working far more quickly than process mining tools and saving customers the time-consuming step of creating a workflow from scratch. This helps customers to scale these deployments enterprisewide quickly and easily. Apart from customizable report templates, the Kryon Console includes multiple dashboards displaying both real-time smart analytics and historical data on robot activity, performance, and availability. Kryon supports RESTful APIs right out of the box, even for easy out-of-the-box (OOTB) integration with any third-party BI tool for customized reporting.

Kryon offers role-based permissions, single sign-on, username/password management, and a credentials vault that enables digital workers to enter usernames and passwords (with a proprietary visual algorithm preventing them from entering passwords into nonpassword fields). The permissions mechanism allows administrators to establish permissions per user or group for creating, editing, publishing, and/or executing automation workflows. Kryon is compliant with Federal Information Processing Standard (FIPS), supports SSL/TLS security, and periodically uses a third-party service to check for product penetration. It allows RPA managers to easily govern their automated processes on an enterprise scale with capabilities including separation of concerns, roles, and permissions. Additionally, Kryon Studio tracks user actions, continuously logs automation workflow changes, and displays the change history for each workflow, including the time/date and owner of each change. For RPA, Kryon's attended robots run on a user's desktop, while the customer can choose whether to run unattended robots on-premises, on a private cloud, or on Kryon's secure cloud. For Process Discovery, discovery robots run on the user's desktop (monitoring actions performed on desktop-based software, web-based applications, or virtual machines), and the customer can choose whether to run the Process Discovery server on-premises, on a private cloud, or on Kryon's secure cloud.

Kryon's ability to work with structured and unstructured information helps financial institutions to manage their paperwork more efficiently, while ensuring compliance with relevant rules and regulations. Because of the proprietary computer vision embedded in its RPA and Process Discovery solutions, Kryon robots are able to work with any computer program or set of programs. Furthermore, its platform supports multi-tenancy and offers customers the option of grouping their robots into teams. Among other uses, finance and accounting departments can utilize these capabilities to automate the processing of printed invoices and tax forms. The platform also supports integrations with third-party NLP technologies, enabling robots to manipulate unstructured information such as emails, instant

messages, and other types of text. In 2019, Kryon plans to introduce an in-platform center of excellence designed to streamline the communication between a customer's RPA developers, RPA managers, and relevant stakeholders while helping them to follow RPA best practices. The aim is to develop and manage processes that are better organized, more transparent, and executed faster. It plans to introduce a web-based version of its development studio, launch a catalog of various prefabricated automation workflows for different verticals, and enhance the scope of processes that Process Discovery can identify automatically by extracting the business logic of customers' decision trees and identifying the events that trigger specific work processes. Kryon is working on enhancing Process Discovery's recommendation engine, so it can recommend the best processes to automate to optimize a specific business objective (such as maximizing output, maximizing speed, or minimizing worktime). It will also augment its OOTB analytics and management capabilities.

The Kryon Academy offers free online training courses covering RPA development and all automation solutions, where customers and developers can earn a certificate for their expertise. It also offers intensive week-long, onsite training courses to its customers to help them with the knowledge required to set up an in-house center of excellence. To date, over 300 developers have completed training and are certified. After training customers' teams, Kryon follows through with comprehensive customer support as and when needed. The Kryon Community, a free forum for customers and RPA developers, enables them to ask questions, post answers, share their knowledge, and expand their RPA skill sets.

ADVICE FOR THE TECHNOLOGY BUYER

The overall value proposition and significant benefits of automation – particularly with RPA and now even more with intelligent automation – have put many FSIs in Asia/Pacific in a frenzy to know more and even adopt these solutions. As we acknowledge that this curiosity has led to a double-digit and even triple digit-growth for many vendors, we should also note that, surprisingly, most of the automation deployments in Asia/Pacific FSIs have been for less than 15 processes. A siloed, piecemeal approach to automation is still more common than an enterprisewide strategy and it is one of the reasons, many institutions have not been able to scale these deployments. Moreover, many early adopters that tried to instill cognitive intelligence in the automation of their business processes have not been able to deliver steady and accurate results or justify ROI from these deployments. This IDC Financial Insights report tries to address these challenges by helping FSIs to identify and choose suitable intelligent digital workforce solutions based on their core characteristics and as a result, achieve successful and sustainable results with their automation deployments.

Aside from monitoring the automation implementations of over 30 early adopters, we also note many more implementations in POC and pilot stages in 2019. We are seeing many FSIs in India, South Korea, Thailand, Hong Kong, Malaysia, Indonesia, and the Philippines fervently waiting to make their first step toward digital workforce. At the same time, we are witnessing Australia and Singapore steadily progressing toward adopting intelligent digital workforce solutions. The next two to three years will be crucial as more and more institutions appreciate the achievement of significant benefits, more successful functional- and vertical-specific use cases are presented in the market, and more advanced features and product propositions are made available by the vendors. By 2021, IDC Financial Insights expects that 60% of tier-1 Asia/Pacific banks and insurance companies will deploy intelligent digital workforce solutions for increased automation, intelligent decision making, and improved operational efficiencies to achieve an exceptional business value and deliver a more real-time and contextual customer experience. As highlighted earlier in this report, we also believe that these intelligent digital

workforce solutions will significantly accelerate how cognitive/AI technologies are consumed within financial services.

As Asia/Pacific financial institutions decide to start and/or steadily progress in their automation journey, we advise them on the following considerations:

- **Change management is critical for success of any automation project.** Even though this report focuses on the technology aspect of automation, the other two key aspects: people and process just can't be ignored. One of the major roadblocks with adoption of intelligent digital workforce solutions has been the negative sentiment attached to the use of robots and AI and how they will adversely impact compensation and professional growth of human employees or even displace them. To address these concerns, institutions need to focus on concerted communications with their human employees. When the value of automation from the people, process, and technology perspectives is effectively communicated, business owners can foster a culture of automation across their teams and efficiently manage any cultural resistance that may arise. We have also seen this negative stance change when business users experience firsthand the benefits of automation and how these digital workers free them from their manual and repetitive work and help them focus on more critical initiatives.
- **To achieve best results from their intelligent digital workforce solution, the institutions will have to address legacy way of doing work.** Even with institutions trying very hard to drive ROI from their automation deployments, the human employees currently have been able to automate only part of their work. The major challenge here is the way processes have been executed by human employees for years in the institutions. In an ideal situation, the intelligent digital workforce solution, with its ability to undertake both rules- and judgement-based automation, should be able to automate the entire workflow and processes and thus, freeing employees to focus on more meaningful and valuable work. Therefore, it becomes extremely important to redesign most of the workflows and processes to make them suitable for automation, so that the institutions can truly achieve optimal and transformational results with their intelligent digital workforce solutions.
- **When it comes to vendor selection for automation needs, selecting an intelligent digital workforce solution based on six core characteristics typically delivers more favorable results.** To reiterate, these characteristics are: simple, usable, and reusable by business users, ability to deliver enterprisewide scale, security and governance as the foundational tenets, availability of "real-time" operations analytics, intelligence powered by cognitive/AI technologies and innovative tools, and strong support extended by the ecosystem. Since the solutions differ significantly in their approach to the market, it becomes important that before an institution selects a vendor, considerations must be made on how bots are built, executed, and managed; bot life-cycle capabilities; availability of enterprise-grade security and governance; types of delivery models (on-premise, hybrid, and cloud-based); and advancement toward intelligent automation. Additionally, evaluate the solution on other terms and features such as licensing costs, ecosystem support, real-time operations analytics and insights, interoperability and integration with third-party applications, and product road map. The availability of a bot store, functional- and vertical-specific offerings, and process mining and discovery features by the vendor will further shorten the time to realize business value. IDC Financial Insights recommends that the institutions carefully evaluate how the shortlisted vendors can fundamentally solve their business problems and optimally support them in their intent to achieve hyper-scale and hyper-performance with automation. The competence of intelligent digital workforce to deliver best quality outcomes, advice, and decisions will also depend on institutions' ability to address the issues around data quality, data usability, and data governance, among other things.

- We have been privy to many discussions that start with business users saying, "I want to solve this problem with AI." It is worth mentioning that **not all process automation initiatives require the use of cognitive/AI. However, its use must be considered wherever it increases the chances of attaining more robust automation.** Institutions seeking to build process automation capabilities should consider the entire intelligent automation value chain, including solutions based on self-learning and self-healing systems. IDC has seen institutions in Asia/Pacific turn to digital workforce solutions to manage volume variability, and they are currently exploring intelligent digital workforce solutions powered by cognitive/AI technologies and innovative tools to enhance their customer engagement capabilities. We do acknowledge that AI can create a pervasive impact in institutions; however, effective business buy-in often starts small and considerations (e.g., customer consent, data quality, biases, ethics, and security – which we will talk about in our next report – should be made to deliver accurate, consistent, and transformational results.
- **Invest only in projects where results can be measured.** The KPIs for an intelligent workforce solution will be different from a digital workforce solution. Therefore, it becomes very important that an institution does a more thorough cost and benefit analysis of an intelligent digital workforce solution than it would do for a digital workforce solution. The total cost of ownership (TCO) must be considered – the sum of the cost of professional services, initial and ongoing cost of software, and ongoing employee (both human and intelligent digital workers) and maintenance costs. Institutions also need to go beyond the benefit of costs savings and consider other benefits including improved customer engagement and support, improved employee morale and efficiency, improved accuracy and compliance, and the ability to deliver hyperscale and hyper-performance.
- **IDC Financial Insights expects that a multivendor strategy will gain more prominence in the next two years.** As aforementioned, this will be for FSIs' different automation needs and multitude of reasons, some of them being the growing demand for more intelligent automation offerings and key capabilities around the core characteristics, mitigate vendor concentration risk, and achieve better licensing terms. However, we will also see exceptions to this approach, where some institutions will still prefer to work with one vendor for all their automation requirements. This decision entirely depends on the institution's vision for its automation and the ability of its vendor to offer end-to-end intelligent automation. In case an institution goes ahead with a multivendor strategy, it is worth noting that it will also have to manage challenges and complexities that come with managing multiple vendors.
- **As the new approach to intelligent automation (particularly AI) takes hold, the institution will create demand for new roles and skills and must also be ready for a level of reskilling it has never seen before.** We are seeing new automation roles emerge – Executive Sponsor, Automation Change Manager, Automation Program Manager, Automation Process Analyst, Automation Trainer, Automation Developer, Head of Intelligent Automation CoE, and even Chief Automation Officer. As automation progresses within financial services – thanks to intelligent digital workforce solutions – other technology capabilities in the automation spectrum that we earlier talked about (demand for skills in several areas) will also grow: data science, cognitive/AI, big data and analytics, design thinking, cloud services, cybersecurity, risk management, and compliance and governance, just to name a few. The institutions need to now think of a new organization structure, where the teams will be reorganized to include a combination of human and intelligent digital workers (a hybrid workforce). Leaders and managers will not only have human employees but also intelligent digital workers reporting to them. Institutions will also have to address many new issues including defining new responsibilities of human employees, creating new HR policies including new approach to performance management and growth, and investing in continuous learning and training. Not

only FSIs but also Governments, educational institutions, industries, and societies across the region will have to come together to put initiatives in place to encourage and motivate their human employees to re-train and acquire new skills, as well as give them adequate time to prepare for the jobs of tomorrow.

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Related Research

- *IDC FutureScape: Worldwide Financial Services 2019 Predictions – APEJ Implications* (IDC Financial Insights #AP43051118, January 2019)
- *Oh, How Things Have Changed: A Rethink of Cloud in Asia/Pacific Banking* (IDC Financial Insights #AP43050818, October 2018)
- *Intelligent Automation Services Value Chain* (IDC #US44127518, July 2018)
- *Robotic Process Automation Software Overview* (IDC #US43927018, June 2018)
- *Robotic Process Automation in Asia/Pacific Financial Services: Key Learnings from 10 Early Adopters* (IDC Financial Insights #AP43545718, February 2018)

Synopsis

IDC Financial Insights continues our series of reports on automation in financial services. This report is second in the series, where we start by looking at robotic process automation (RPA), and how the proposition around it has steadily moved toward intelligent automation and leveraging an intelligent digital workforce. In our report *Robotic Process Automation in Asia/Pacific Financial Services: Key Learnings from 10 Early Adopters* (IDC #AP43545718, February 2018), we emphasized that RPA has often been cited as the essential first step toward automation but could more accurately be described as part of a continuum of technology-enabled initiatives to bring intelligence into the automation of business processes. IDC defines this continuum of technology-based initiatives focused on process automation capabilities as the Intelligent Automation Value Chain. This value chain underscores a notable evolution of demand toward an intelligent digital workforce from the rules-based digital workforce. IDC Financial Insights' *Intelligent Digital Workforce* comprises intelligent digital workers – essentially software robots that can perform both deterministic and nondeterministic tasks by continuously understanding and analyzing structured and unstructured data. They represent rules and judgement-based automation, and, like their human counterparts, they are both self-learning and self-healing workers that can discover patterns to predict decisions and even offer recommendations to improve them.

Aside from monitoring the automation implementations of over 30 early adopters, we note many more implementations in POC and pilot stages in 2019. We are seeing many FSIs in India, South Korea, Thailand, Hong Kong, Malaysia, Indonesia, and the Philippines fervently waiting to make their first step toward digital workforce. At the same time, we are witnessing Australia and Singapore steadily progressing toward adopting intelligent digital workforce solutions. The next two to three years will be crucial as more and more institutions appreciate the achievement of significant benefits, more successful functional- and vertical-specific use cases are presented in the market, and more advanced features and product propositions are made available by the vendors. "By 2021, we expect that 60% of tier-1 Asia/Pacific banks and insurance companies will deploy intelligent digital workforce solutions for increased automation, intelligent decision making, and improved operational efficiencies to achieve an exceptional business value and deliver a more real-time and contextual customer experience," says Sneha Kapoor, Research Manager, IDC Financial Insights.

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