Future of RPA

A Look at the Next Few Years

Back in 1965, when computers were still in the formative stages of development, Gordon Moore came up with "Moore's Law" that postulated that the number of transistors on a chip would double about every two years. While it was somewhat off – the timing is usually about 18 months or so – it was still revolutionary. Moore's Law showed the incredible transformative power of computers.

But there was something else about his law – that is, it is one of the few things in the technology world that has been highly predictable. The pace of change and innovation can be mind-boggling.

Keep in mind that many of the top tech founders and visionaries have been wide off the mark on their predictions. For example, when Apple launched the iPhone in 2007, Microsoft CEO Steve Ballmer had this to say: "There's no chance that the iPhone is going to get any significant market share."[1]

Or how about the time when Digital Equipment Corp. president Ken Olsen said in 1977: "There is no reason anyone would want a computer in their home."[2]

So yes, making predictions about the future is a hazardous activity! But then again, it is important to try.

Consolidation and IPOs

As seen with operators like UiPath, Automation Anywhere, and Blue Prism, there has already been a pickup in acquisitions. Yet this is likely to accelerate. It certainly helps that the large companies have substantial amounts of cash on their balance sheets.

The acquisitions will be essentially to help expand the RPA technology stack, to move into new industries, and pick up customers. "RPA vendors need to diversify beyond their own niche technologies and core products to grow their position in the industry," said Dr. Gero Decker, who is the CEO of Signavio.

There will also likely be some IPOs. Currently, the only pure-play public company is Blue Prism. But in the next few years, will likely see Automation Anywhere and UiPath pull off IPOs.

This will not just be about raising capital, either. After all, there has been little trouble with this. But being public provides other benefits, including the following:

- **Prestige:** Not many companies have what it takes to be public. Often, there must be high levels of revenues, a diverse customer base, an extensive product line, and a path to profitability. Being public also raises a company's visibility with the media and analysts.
- **Liquidity:** Employees may have taken lower salaries in exchange for equity in a company. Because of this, they eventually want to see a return on this – which is much easier when a company is publicly traded.
- **Transparency**: With many RPA companies private, it is difficult to gauge the industry. What really are the revenues? Is there customer concentration? Any issues with the core infrastructure? For the most part, a public company is legally required to provide full disclosure of material information. It also builds confidence with larger customers.

Microsoft

Historically, Microsoft has been a follower when it comes to new technologies.

Microsoft has enormous advantages: seemingly unlimited capital, a trusted global brand, a strong ecosystem of partners, and a massive customer base.

The company leveraged its Power Platform – which allows for BI, low code, and workflow management – to create Power Automate. It also uses Selenium, which is an open source application that allows for the recording and automating of web applications.

It comes with more than 275 prebuilt connectors to apps and services. There are also AI capabilities and of course native integrations with Office 365, Dynamics 365, and Azure. While there is some coding needed, it is still high level and there is a drag-and-drop system to create the workflows.

Power Automate is definitely a solid offering. However, it still lacks enterprise-grade features, such as identity management. But such things will likely be added in the next couple years. If anything, Power Automate will allow Microsoft to learn and iterate on RPA systems.

Attended Automation

RPA technology has been mostly about unattended automation. And this should not be surprising. This type of automation is easier to handle. But attended automation has much potential for making a huge difference. An employee, for example, can leverage the intelligence of a bot while using his or her own skills to solve problems. Attended automation should lead to much synergy – the best of humans and machines.

The good news is that the technology is starting to get better, especially with improved integration and AI.

Barry Cooper, who is the enterprise group president at NICE, agrees with this thesis. “We’re starting to see a shift as enterprises are beginning to understand and embrace the benefits of automation and view it as a way to improve the overall workload and performance of their employees,” he said.

To get a sense of this, consider Automation Anywhere, which has acquired Klevops, a start-up based in Paris.

According to the deal’s press release: “Automation Anywhere fast forwards the RPA category to Attended Automation 2.0, where managers can easily orchestrate workstreams across a team of employees and bots, driving a higher level of employee productivity and improved customer experience. This enables customers to automate more processes than ever before, with the same level of central governance, security and analytic capability for which Automation Anywhere has always been known.”

The RPA Career

Even though the emergence of the Internet has resulted in the reduction of certain jobs, there have been new professions created like digital marketing. Something similar is happening with RPA.

“Hiring for RPA skills will explode across all industries and job functions,” said Prince Kohli, who is the CTO of Automation Anywhere. “With more than 5,000 RPA jobs in the U.S., there is already incredibly high demand for RPA specialists”

This will not just be for developers, business analysts, and managers. There will also be growth for those who have experience in verticals, such as IT, BPO, HR, education, and insurance.

Scaling RPA

While the early stages of an RPA implementation are generally successful, it usually gets more difficult to scale the technology. What winds up happening is that there is a hodgepodge of bots throughout an organization, which often means not getting the maximum results.

“As more and more organizations adopt RPA, we have yet to see an enterprise-wide adoption of more than 50–100 bots,” said Harel Tayeb, who is the CEO of Kryon Systems.

To help improve things, RPA vendors are retooling their systems to help achieve scale, such as by adding AI and process mining. “With the benefits of RPA, corporations are looking for scalability and are struggling in two areas related directly to processes – inability to identify candidates for automation after tackling the ‘low hanging fruit’ and

dealing with bad processes," said Ray LeBlanc, who is the product strategy manager at Verint. "Process mining is the logical solution; however, the solutions are expensive, still take considerable time, and don't truly align with RPA."

"RPA began as a stand-alone technology, but the future of RPA is clearly integration into larger end-to-end process automation platforms and programs," said Michael Beckely, who is the CTO of Appian.

He notes that the financial services industry – which was an early adopter of RPA – is already shifting toward a holistic approach. "Whereas RPA was sometimes started as a way to bypass overburdened IT departments, as RPA projects scale, IT is increasingly taking charge," said Beckely. His company has built a system, called the Robotic Workforce Manager, that uses low code to enable the scaling of RPA projects to hundreds and even thousands of bots. For example, Union Bank – one of the largest banks in the Philippines – has used this, along with UiPath, for the unification of its automation initiatives. The company was able to deploy over 400 automated applications in under three months and accelerated processing times by 300%. "Through this process of digital transformation, UBP achieved 97% digitization," said Beckely. "Business executives require real-time visibility into robotic workforce operations so they can analyze bot value by process and department and achieve greater business impact through end-to-end automation. RPA business users need better ways to automate human-in-the-loop activities and self-service controls to start and schedule robotic processes on-demand. With end-to-end process visibility across people and robots, users can confidently tackle much greater workloads than ever before."

Vertical-Specific Companies

As RPA starts to mature, there will likely be more vertical-based players. Customers will want a more specialized approach, as there will usually be unique use cases.

Just look at Olive, which is targeting the healthcare industry.

The founder and CEO – Sean Lane – has an interesting background. He started his career as an intelligence officer in the Air Force working at the National Security Agency. There he had valuable experience dealing with enormous engineering challenges. He even completed five tours of duty in Afghanistan and Iraq.

But when he returned home, he saw another devastation: the impact of the opioid addiction crisis. To do something about this, he looked at how he could leverage his experience with finding insights from data.

When he started learning about the healthcare system, he realized the enterprise systems were highly proprietary and would not talk to each other. The technologies were also unintuitive and often required hiring consultants and outsourcing firms to add new capabilities. This made it particularly difficult to do cutting-edge initiatives like AI.

Because of this, he saw there was an opportunity to bring automation to the industry.

"My focus was on building an AI-powered digital workforce," said Lane. "Instead of building new software to replace disparate systems, we would create the first healthcare-specific digital employee to automate robotic, error-prone workflows, emulating the manual tasks employees had once done – only faster and more accurately. With Olive, I've set out to carve a trillion dollars out of the cost of healthcare while improving the human experience."

The name Olive is the "digital person" that provides the automation. She is quick and does her work in a confidential manner, helping with tasks like collections, coding, and credentials. There is also a deep understanding of the complex language of healthcare as well as the EHRs, patient accounting systems, and third-party clearinghouses.

"If something breaks?" said Lane, "Olive proactively fixes it. If a payer portal changes? Olive will adapt her workflow. And if Olive gleans a cost-saving insight from the large amounts of data she's processing? She'll surface it and e-mail her manager about it. This all-in-one approach makes it so automations work for our customers."

The healthcare industry is certainly a prime target for RPA. Note that an estimated $1 trillion in spending in the United States goes to administration. And unfortunately, an employee will engage in mundane tasks like filing folders or moving data across a myriad of systems and interfaces. Considering this, is it any wonder that burnout and boredom are the leading causes of turnover and that attrition in the healthcare industry is so high?

"Imagine what we could accomplish if we eliminated even 1% of the burden of time and cost," said Lane. "The research that could be funded, the treatments that could be developed, the cures that could be found."

Hype Factor

Back in 1995, Gartner analyst Jackie Fenn developed the "Hype Cycle," which caught a lot of attention. The irony is that her framework was, well, hyped quite a bit!

Her premise: Major technologies undergo predictable cycles. In fact, the Hype Cycle has five of them, which include the following:

- **The Technology Trigger**: There emerges a transformative technology that quickly gets the attention of the media, entrepreneurs, and VCs. There are some prototypes for proof of concepts. But the commercial viability of the technology has yet to be established.
- **Peak of Inflated Expectations**: At this stage, the technology has shown to be effective and this gins up lots of excitement. This can happen rapidly, especially with the power of social media and the availability of huge amounts of cash to fund new technologies. As should be no surprise, the hype gets to giddy levels. You will hear things like "game changer," "inflection point," and so on.
- **Trough of Disillusionment**: There begin to be signs that the enthusiasm is evaporating. Some of the companies in the space are failing or not meeting expectations. Stock prices are getting hit. Customers are realizing that the new technology is not generating the promised ROI.
- **Slope of Enlightenment**: Despite the issues and problems, the technology nonetheless gets more refined. The result is that the impact gets stronger. But the media no longer shows much interest and is focused on other red-hot categories.
- **Plateau of Productivity**: Here the technology becomes mainstream and there are standards of its use. It is just a natural part of the business world.

This framework is far from perfect. Consider that Gartner has had some flubs with its own predictions, such as with BPM and cloud computing. But the 5-step cycle is still useful. It's a way to allow for a longer-term perspective and to avoid being too early when it comes to adopting technologies. According to Gartner: "If there are too many unanswered questions around the commercial viability of an emerging technology, it may be better to wait until others have been able to deliver tangible value."

Then where is RPA on the Gartner Hype Cycle? This is tough to answer! One of the things to note is that RPA has been around for two decades, and it was not until six or seven years ago that it really started to accelerate.

But in my opinion, I think the industry is beyond stage two and may actually be entering the early phases of stage three. The media attention is intense. The funding has been plentiful. But at the same time, there are some signs of disillusionment. As noted in this chapter, there are challenges with scaling RPA as well as combining technologies like AI.

And some of the large players are experiencing growing pains. For example, in late October, Forbes published an interesting article that showed that UiPath laid off around 300 to 400 employees or 11% of the workforce.

This is not to imply that UiPath is in big trouble. Far from it. The company remains in a strong position – in terms of its product line, customer base, and financials.

But Wall Street is putting much more emphasis on a path to profitability. The implosion of WeWork – which lost billions of dollars in market value and almost went bust – was a wake-up call to many in the tech world.

Software-as-a-Service (SaaS) and Open Source

RPA software is still mostly on-premise. But there will probably be a transition toward a SaaS model. Part of this will be about having a cloud-native platform, which will make it easier for upgrades and data access.

"When the software robot becomes a commodity, we will start to see the next wave of adoption in RPA," said Antti Karjalainen, who is the founder and CEO of Robocorp. "SMBs (small and medium size businesses) will want to have access to business process automation but they will not always have the required sophistication to adopt the technology. This gives an opening to a new type of service provider, a robotics-as-a-service (RaaS) operator, that can help SMEs by automating their business routines and maintaining the software robots for them. These RaaS operators can either focus on certain verticals, like car dealers or real estate agents, or they can work as general automation providers in their local area."

As RPA scales, the costs can get prohibitive because of the per-bot fees. So, customers will be looking for alternatives, say, a subscription approach. Companies like SAP, Intellibot, and Nintex have been offering lower-priced strategies to get traction in the crowded RPA market, for example.

Companies may also look to the open-source approach to deal with this as well. But of course, there are other benefits, such as a strong ecosystem of developers who keep innovating the platform.

Granted, the landscape for open-source software is fragmented. The projects tend to be small in terms of adoption – and the technology is not extensive.

But this is expected to change. As seen with other industries, open source has become ubiquitous.

If anything, open source is likely to be critical for the RPA category. "Open source is a central pillar of modern cloud stacks, and if RPA is to have a role in hybrid cloud infrastructure, it must be open source as well," said Phil Simpson, who is the product marketing manager for process automation at Red Hat. "A number of open-source RPA projects are available today, but few at this point can compare to proprietary products in the market currently, particularly around providing enterprise-grade support. With that said, the industry is moving toward a more open and flexible model, and I anticipate we'll soon see parity between the two models, giving customers the ultimate in flexibility and choice."

Chatbots

Sometimes there is confusion between chatbots and RPA. While both involve the use of software bots, there are clear differences. A chatbot is a system that uses NLP (natural language processing) to communicate with people. In the consumer world, this would be Siri or Cortana. But of course, many companies are using chatbots for handling customer service.

The market for this technology is growing quickly. According to research from Reports and Data, the spending on chatbots is forecasted to go from $1.17 billion in 2018 to $10.8 billion by 2026, which represents a compound annual growth rate of 30.9%. Some of the biggest drivers include the pervasive use of social media and smartphones.

Chatbots are expected to have a notable impact on the bottom line too. A research study from Juniper Research points out that the cost savings will hit $7.3 billion by 2023, up from only $209 million in 2019.

Then what does RPA have to do with chatbots? There are several use cases. First, a chatbot can be used internally as an assistant to help employees with gaining access to information or getting insights. But RPA can also help automate processes that deal with customer interactions.

Look at Aflac. The company, which has been around for more than 55 years, is a top provider of financial protection for health matters. There are over 50 million customers.

No doubt, Aflac has had to find ways to help automate processes. "We have been working with RPA for quite some time," said Keith Farley, who is the VP of US innovation at Aflac. "We have worked with screen scraping and other techniques – even before it was called RPA."

But it was in 2017 that the company implemented two systems from RPA vendors, which involved the help of a consultant. The first bot was for handling wellness claims, which was a quick success. Aflac has since gone on to

create 28 more bots. One of the workers whose processes were partially automated became a manager of the RPA system.

"We have reached a point of maturity," said Farley. "We are now looking at the next stage for automation."

A big part of the strategy is the use of chatbots. At first, Aflac leveraged the Facebook Messenger bot service. It was built to address common questions and would route to call center people when the chatbot did not have an answer.

But in the end, it failed, and Aflac took it down. But the company did not give up. "We embraced the failure and talked about new approaches," said Farley.

One of the problems was that Facebook Messenger could not identify the user, which made it impossible to provide personalized answers. Next, the database of Q&A information was subpar.

"We thought the solution was to bring people back into the loop," said Farley. "We started using a chatbot system where our employees would answer the questions. By doing this, we were able to create the right kind of data."

This proved to be spot-on. The new chatbot system had a login to identify the users and a much richer database, with the number of question types going from 500 to over 20,000. The result has been a higher level of satisfaction from customers and reduced call center volume during peak times.

"The second iteration was a big success," said Farley. "But we realized that the chatbot was not a replacement for employees. There are certain times when customers want to talk with a person. This is especially the case with our own business, where we deal with wrenching situations with illness and disease."

Artificial Intelligence

AI is likely to be the most important driver for RPA. Based on research from PwC, this technology is expected to add a whopping $15.7 trillion to global GDP by 2030, which is more than the combined output of China and India. According to the authors of the report: "AI touches almost every aspect of our lives. And it's only just getting started."

Despite this, AI is still limited and narrow. Consider your smartphone that has Alexa or Siri installed on it. While the technology is powerful, the core functionality is about handling simple commands. It will not be until many years that we will be able to have a free-form conversation with an AI device.

In other words, when thinking about AI and RPA, look for clear-cut business use cases. According to a report from PwC, the focus should be on solving "boring" problems. The report highlights that executives are starting to realize this as they run into challenges with implementing projects. The PwC survey shows that – for 2020 – only 4% of companies plan to scale this technology across their organizations. Rather, the priority will be on functions like finance, HR, tax, and compliance. It may be as easy as something like intelligently extracting key information from a form. The survey also shows that 44% of executives see AI to operate more efficiently and 42% believe it will lead to better productivity.

Even before thinking of putting together an AI project or buying a new software platform, it makes more sense to look at your existing systems. Keep in mind that they already likely have AI features built in! For example, companies like Oracle, Salesforce.com, and Microsoft have been investing heavily in revamping their software offerings. So the first step is to try out the new features. This should not only lead to improvements in automation but also provide some understanding of how to work with AI.

Many of the RPA vendors are also aggressively adding AI features (this is often referred to as intelligent automation or IA). But do not rush with these either. Take the time to operationalize the AI within your workflows. What is relevant for your company? What types of AI can be effectively managed?

Granted, it's a lot of work and there will be the need for extensive planning – but this will be well worth it.

"AI, especially machine learning, has a big role to play in making sense of all the data that will be generated," said Ryan Duguid, who is the chief of evangelism and advanced technology at Nintex. " When you start tracking every mouse click and keystroke, the volume of data is staggering."

Then what are some of the interesting use cases for AI and RPA? Well, there are plenty. Here are just a few, from Tom Wilde, who is the CEO at Indico:

- **Corporate E-mail Inboxes:** "Most companies have a central inbox that receives lots of e-mails from customers, contractors, suppliers and the like, often with attachments. You can use RPA to detect when a new e-mail arrives with an attachment, then automatically route the e-mail to an intelligent automation tool. Machine learning can then be used to extract the attachment and 'read' it, using OCR and NLP. It can also extract relevant unstructured content such as payment terms, invoice numbers, contractual language and so on. The tool can then normalize the data in an appropriate format and send it to a downstream platform, such as a CRM or ERP tool."
- **Contract Management** : "Poor contract management can be costly. Businesses might not realize they are owed credits and they may overlook automatic renewal dates, or even fail to send invoices. The automation capabilities available in RPA platforms can address many of these issues but may also be limited in their effectiveness due to the variability of language. For example, provisions and clauses across contracts may use different language but mean the same things. AI can help by understanding context through NLP and normalizing this information so that the RPA system can automatically alert the right person to address potential issues."
- **Invoice Automation**: "For invoice processing, RPA can automate data input, reconcile error correction and make binary decisions. But the real challenge is dealing with the many formats different vendors use for their invoices. Using NLP and other machine learning techniques, AI can understand and pull-out necessary data from the invoices, normalize it to a structured format, then send it back to the RPA platform for automated data input, error handling, etc."
- **Financial Document Analysis**: "Financial firms compile lots of data for monthly and quarterly reports. RPA assists by automating data collection from various structured sources. However, once you introduce unstructured PDF documents, RPA is generally ineffective. With the OCR and NLP capabilities of an AI solution, relevant information can be automatically pulled out and converted into a structured format so the RPA tool can deal with it."
- **Insurance Claims:** "Insurance companies use RPA to automate some aspects of their claims process, such as inputting data from structured sources and ensuring all required fields are filled out. But insurance claims are full of unstructured data, such as photos showing auto damage, PDFs of drivers' licenses, or CT scans for a healthcare insurance claim. AI solutions with machine learning can be used to extract relevant information from these sources, once again adding value to the RPA tool."

With RPA and AI, you may not even have to write up reports anymore! This is possible with a technology called NLG, or natural-language generation.

"Integrating this extends the reach and impact of automation by instantly producing expertly written reports from structured data sets in the form of natural language narratives that are indistinguishable from those authored by business analysts or knowledge workers," said Sharon Daniels, who is the CEO of Arria.[19]

Privacy and Ethics

Governments are getting more aggressive in dealing with regulating the use of data, especially as AI becomes a more powerful force. Europe has enacted the wide-ranging GDPR law and California has introduced the CCPA (California Consumer Privacy Act). These will likely be a framework for new laws in other countries and states.

As RPA gets more sophisticated and goes beyond rules-based approaches, companies will certainly need to be mindful of the new laws – but also be aware of the ethical minefields. A breach can have a deleterious impact on a company, in terms of potential fines and reputational damage.

"The general scope of data privacy laws is to give consumers the right to know how, and what type of personally identifiable information (PII) is collected, and the option to take legal action in the event that they should incur damages from bias or data security breaches," said Zachary Jarvinen, who is the Head of Technology Strategy, AI and Analytics

at OpenText. “Until now, most organizations have focused their efforts on structured information, but they must also be able to understand what PII is located in textual data documents. Archived data is an especially pressing concern for most enterprises. AI-powered solutions will be instrumental in locating sensitive data and managing it through automated workflows. Organizations will also need to establish internal data governance practices to determine who is accountable for data security and enterprise-wide policy, which may include creating teams that blend technical and regulatory expertise.”[20]

There should also be steps taken to help deal with the inevitable bias in the data. To this end, models need to make sure the datasets have been cleaned up and are diverse, in terms of backgrounds and characteristics.

Next, companies will need to achieve explainability with the models. Black boxes will ultimately lead to distrust with the outcomes.

Note

Research from DataRobot shows that 59% of companies say they will invest in more sophisticated white box systems (to allow for more explainability), 54% said they will hire internal personnel to manage AI trust, and 48% will use third-party vendors for AI trust.