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1. Executive summary

Increasing volatility and an uncertain macro environment have increased the complexity of doing business, globally. Organizations are investing in innovative technologies to tackle the rise in labor costs and lack of skilled resources. Existing enterprise resource planning (ERP) systems have their own limitations, such as lengthy implementation life cycles, and also require significant human intervention and change management. Businesses are therefore approaching a new era of human–machine interface to transform business processes and reduce costs.

“Robots” are software tools that have emerged to simplify business process delivery. The technology behind this development is called robotic process automation (RPA). These software robots offer improved business efficiency, data security and effectiveness by mimicking human actions and automating repetitive tasks across multiple business applications without altering existing infrastructure and systems. Enhanced productivity, reduced cycle time, and improved accuracy and compliance are some of the benefits of this technology.

Today, high-volume, highly repetitive, multistep tasks with many validation rules, and manual processes, are automated end-to-end using RPA. This revolutionary technology will continue to leverage elements of artificial intelligence for sophisticated decision-making in the future too. For example, within a few years, RPA will operate more like a human brain, which can adapt and assess, and perform cognitive tasks by sensing, predicting and inferring; it might even have a certain level of emotional intelligence. In short, it is all about “giving power to the robot.”

RPA is increasingly the innovation of the day, with a renewed focus on efficiency, cost reduction, compliance and deploying employees on high-value tasks. The scope for RPA is wide and encompasses many sectors. However, reaching this potential might take time, and business cultures and societies will be affected once they adopt it. Robots will have an effect on social agendas, tax policies, talent management strategies and global business services (GBS) sourcing strategies, among others. Hence, businesses should start preparing for, and understanding, the potential impacts of this technology according to their needs.

This white paper focuses on software robots, and hopes to educate you on the coming tsunami, so that you stay relevant, are proactive, and become part of the conversation at the front end rather than being reactive. Embracing what is coming and leveraging your company’s culture to accelerate its adoption will give you more control over your destiny and enable you to use robotics to support your company’s strategy.
2. What makes RPA different?

The Institute for Robotic Process Automation (IRPA) defines RPA as the application of a technology. This technology allows employees in a company to configure computer software or a robot to capture and interpret the existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems.¹

So what is RPA? RPA might be the most disruptive technology that many have never heard about. It is an overnight sensation developed over the last 10 plus years. Some say, “Hold on! It is just the relabeling of scripting or other automation tools, which have been around for 20 years.” Others say, “RPA will change the way we look at work forever.” Today, it is probably somewhere in between, but leaning toward the latter.

RPA emulates a “virtual human,” and takes artificial intelligence and expert systems to a higher level. The ability of a software robot to adapt to circumstances and situations, compared with traditional automation systems, make it eligible for almost any function in an organization, in any sector. RPA holds the top position in any company’s information technology infrastructure. It drives the existing application software in the same way as a human employee would do, with the same access rights. This allows any organization to implement the technology quickly and efficiently, without changing underlying systems and processes.

As markets and technology change and evolve, so do systems and processes. RPA enables companies to react quickly, without recoding or reconfiguring projects or developing new interfaces. RPA in one form or another will be around for a long time for this reason.

In short, RPA is automation. However, it is not desktop automation like scripting, screen scraping or macros, which are easy labels to categorize it, or diminish or dismiss its impact. These labels also make it easy to “understand” where it fits in the technology stack. RPA is not cognitive automation, but is definitely moving in that direction so, at the moment, it is somewhere between the two.

Organizations at the forefront of ‘innovations’ will automate now. Others will slowly follow as the technology matures. 

There are three classes of RPA technology.² The first one is basic process automation, which focuses on automating tasks that depend on structured data (data in spreadsheets, CSV and XML). Easier implementation and management of Class I automation is being increasingly adopted. Class II, or enhanced and intelligent process automation, works largely with unstructured data as input (e.g., email and documents). This type of automation can learn from experience and apply the knowledge to process different requirements. The third class, of cognitive platforms, can understand customers’ queries and execute tasks which previously required human intervention.

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**Classes of RPA technology and estimated cost savings:**

<table>
<thead>
<tr>
<th>Level</th>
<th>Types of RPA technology</th>
<th>Description</th>
<th>Estimated cost saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Basic process automation</td>
<td>Macros, screen scraping and business workflow technologies in the presentation layer; not integrated into the IT system</td>
<td>10%-20%</td>
</tr>
<tr>
<td>Class II</td>
<td>Enhanced and intelligent process automation</td>
<td>Technologies using natural language processing; able to understand unstructured data and apply it to process automation</td>
<td>35%-50%</td>
</tr>
<tr>
<td>Class III</td>
<td>Cognitive platforms</td>
<td>Cognitive computing systems that essentially attempt to solve problems in the same way as humans, by learning from experience and acting on that learning</td>
<td>&gt;60%</td>
</tr>
</tbody>
</table>
3. Building a better working world with RPA

RPA supports the corporate strategy of building a better working world at EY. Our Global Delivery Network (GDN), which comprises more than 13,000 people, our Global Business Services (GBS) and our client-facing talent hubs, are currently implementing robots.

We expect that with RPA, employees will be able to lessen the time spent on manual, repetitive and rules-based tasks, focusing more on customer service, innovation, analytics and business-value projects. This in turn will improve overall employee and client satisfaction. Upskilling of talent, improved data security and the potential to effect a better work-life balance are some other anticipated benefits. We believe our clients should also see similar results.

3.1 Automation’s next frontier: the value of RPA

Decreased operational costs

Offshore outsourcing has been the favored business strategy for reducing operational costs for the past few decades. This is because labor is very expensive in western countries compared with developing countries such as India and the Philippines. US multinational firms hired nearly 2.4 million offshore employees and cut 2.9 million jobs in the US between 2000 and 2010. Offshore has its costs, but it is not nearly as high as payroll within the US. RPA technology has proven to cut the cost of an offshore full-time equivalent (FTE) to half.³

Virtualizing workforce: the next generation of back-office efficiency

One of the most powerful benefits of RPA is the scalability of its usage across industries: it can work 24 hours a day for 365 days a year with 100% accuracy.

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³. Robotic process automation primer June 2015, IRPA.
Data analytical ability

The software robot generates process logs whenever it executes work, containing a lot of management information (MI), which can be further analyzed for improved decision-making. This is possible at both the micro and macro levels of business processes. As processes are micro-managed, this would enable companies to track gaps and deploy measures to allow further optimization.

Improved regulatory compliance

Regulatory compliance is very important for companies expanding their operations globally. A fully RPA automated process would enable them to track every step and systematically document them. This helps companies to be more compliant with industry and audit regulations.

Increased efficiency

A software robot is capable of working all day, every day a year, and does not require any time off. Typically, a single software robot can replace between two to five FTEs. Software robots can execute more work in less time, thereby gaining control of resource requirements during peak processing periods.

Increased employee productivity (flexibility and multitasking)

Employees can devote their time to complex tasks, adding value to the existing processes, while software robots handle repetitive, tedious jobs. They can be involved in activities that call for greater human intervention. This includes personal interaction, problem solving and decision-making processes. This all adds on to employee productivity and benefits the organization on a broader scale.

Reduced error rate and delivery risk

Software robots virtually eliminate processing errors if a process is properly optimized and its subprocesses are mapped. However, they require testing, training and governance to achieve desired outputs.

Increased customer satisfaction

Automation results in more efficient and error-free processes, giving employees more time for direct interaction with customers, enhancing their experience, improving customer satisfaction and building their relationship with the company.

Logistical advantages

RPA eliminates the need for offshore labor, and complications with recruiting and managing employees in different time zones, together with any cultural and language barrier among employees. Companies can also reduce training costs significantly.

3. Robotic process automation primer June 2015, IRPA.
4. **RPA versatility: opportunities galore**

Organizations are constantly identifying processes that can be automated. The best candidates for RPA have the following three key characteristics:

- Actions are consistent, with repeated steps
- Template-driven, with data entered in specific fields in a repetitive way
- Rules-based to allow decision flows to alter dynamically

The figure below illustrates the effective use of RPA by individuals and teams:

![Areas of RPA implementation](image)

4.1 **Processes: RPA in action**

With definable, repeatable and rules-based processes, RPA can make a marked difference in any industry. Industries such as health care, banking and insurance dedicate a considerable number of labor hours to handling monotonous tasks and so hold the most potential for RPA technology.

There is negligible demand for RPA in some sectors and functions now. However, uptake is expected to penetrate more widely in the near future and then increase sharply.

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RPA can be more effective at operating multistep tasks across multiple systems, including, but not limited to, the following:

<table>
<thead>
<tr>
<th>Finance and accounting</th>
<th>Supply chain</th>
<th>IT</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procure-to-pay</td>
<td>Inventory management</td>
<td>Installation</td>
<td>Payroll</td>
</tr>
<tr>
<td>Order-to-cash</td>
<td>Work order management</td>
<td>Email-related tasks</td>
<td>Onboarding</td>
</tr>
<tr>
<td>Sales order</td>
<td>Freight management</td>
<td>File management</td>
<td>Benefits</td>
</tr>
<tr>
<td>Incentive claim</td>
<td>Returns processing</td>
<td>Batch processing</td>
<td>Compliance reporting</td>
</tr>
<tr>
<td>Collection</td>
<td>Contract management</td>
<td>Server monitoring</td>
<td>Personnel administration</td>
</tr>
</tbody>
</table>

Source: EY analysis based on secondary research.
Organizational preparedness for RPA deployment

Organizations might face challenges while implementing RPA. Stakeholders may raise questions on financial benefits and whether RPA can live up to its promises. For the successful and smooth deployment of RPA, and to avoid unexpected challenges around introducing, implementing and managing robotic automation, an organization has to be well prepared in the critical areas shown below.\(^5\)

<table>
<thead>
<tr>
<th>Critical areas of RPA deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Develop robotic skills</strong></td>
</tr>
<tr>
<td>Learning or hiring additional skills in testing and quality assurance to handle bottlenecks that may not surface until robots are executing processes at a scale and are subjected to variables of live virtual machine environments.</td>
</tr>
<tr>
<td><strong>2. Explain business costs to C-suite executives</strong></td>
</tr>
<tr>
<td>Getting the buy-in of C-suite is the first step, which involves explaining the business case for the cost of robotic vs. in-house or offshore FTEs.</td>
</tr>
<tr>
<td><strong>3. Be ready with business case</strong></td>
</tr>
<tr>
<td>Having a detailed understanding of the current cost of the business process to be automated. It is difficult to prove savings that could be achieved with a robot unless it can be quantified against the cost of human employees.</td>
</tr>
<tr>
<td><strong>4. Collaborate with IT team in novel ways</strong></td>
</tr>
<tr>
<td>Getting the buy-in of the IT team is essential to the project’s success. IT support is critical to tackle new issues: capacity planning and failover for servers and storage, licensing of virtual machines, and network latency and response times.</td>
</tr>
</tbody>
</table>

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5. Robotic automation emerges as a threat to traditional low-cost outsourcing, HfS Research.
5. Demand for RPA to shoot up in the coming years

5.1 Market overview

Organizations that are mature in outsourcing have an increased focus on automation as the next level of cost reduction. This has set the market for RPA to grow very strongly.

The key factors driving the market include cost benefits and the improved efficiency of RPA. RPA’s ability to interact with application software without integration and its ease of use as an alternative to offshore outsourcing may increase its adoption in major horizontal functions and sectors.

The highly transactional and regulated nature of banking makes it ideal for process automation.

The global RPA market is expected to achieve a compound annual growth rate (CAGR) of 60.5% between 2013 and 2020, reaching a value of almost US$5b in 2020, up from US$183.1m in 2013.6

Around 68% of RPA customers are based in North America and the UK.

Global RPA market size (US$m), 2013–20206

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</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>183.1</td>
<td>291.0</td>
<td>465.6</td>
<td>745.0</td>
<td>1,191.9</td>
<td>1,907.1</td>
<td>3,051.4</td>
<td>4,980.0</td>
</tr>
</tbody>
</table>

Note: This graphic depicts the RPA adoption trend, based on Everest Group’s research on profiles of customers that were listed on automation vendors’ websites (sample size:71).


5.2 Impact on marketplace

RPA-enabled outsourcing solutions automate repeatable, rule-based tasks and execute processes with less human intervention in less time. The convenience and cost advantages are favorable to some industries, while it negatively affects IT service providers.

RPA is good for industries struggling to cut down their outsourcing expenses as RPA can offer 25%-40% labor cost savings.

For regulated businesses that require a high level of compliance, RPA also offers an effective solution, as automated processes are less prone to errors.

RPA adoption will not be positive for most IT, ITO and Business Process Outsourcing (BPO) service providers, as this can negatively impact existing contracts that are based on resource utilization.

Economies such as India, that are hugely dependent on the IT services sector, will be severely affected.
6. RPA delivery models

RPA delivery models

BPO service providers
- Procured RPA technology
- In-house developed RPA

Robotics as a Service
- Provides automation consultancy, deployment and run services

RPA technology pure players

End customer

Technology and service providers
- They are typically technology and software developers.
- They also help companies implement ideas to automate their business processes, maximize ROI and provide onsite or offsite training and assistance.

BPO service providers
- They are the existing IT and BPO service providers who develop RPA technologies or buy technology from third-party vendors.
- They use it for their existing operations and deploy RPA solutions for external customers.

Robotics as a Service
- Robotics-as-a-Service (RaaS) is a service that manages clients’ robots on a day-to-day basis.
- (i.e., an arrangement in which it manages clients’ robots on a day-to-day basis on their behalf)

Note: this is not an exhaustive list.
7. EY credentials

At EY, we have The Innovation Hub (TIH) asking not “what can we do with RPA?” but instead “what can we not do with RPA?” Such questions help us drive more innovation into the market, pushing the boundaries of RPA’s application.

EY’s automation engineers and automation process analysts help our clients in a number of ways. Some of our biggest clients have chosen to team with our Innovation Hub to develop innovative applications of technology to meet their specific needs. Since innovation is sometimes at odds with operations, this separation from the business allows ideas to be developed into truly innovative solutions. And we become an extension of our client’s innovation team.

The core of our service offering to clients is focused around RPA strategy development, proof of concepts, implementations, managed services, COE design-build-manage and innovation labs. We have linked over 70 offerings that support clients throughout the RPA journey, which leverage our risk, tax, controls, PMO, talent, change management and other offerings to maximize value and increase adoption rates.

**Why choose EY?**

- We have the right “innovative” people
- We help businesses to be “smart” enabled
- Our multidisciplinary approach creates value
- We have deep industry and process knowledge
<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ A global bank, sought to use robotics to facilitate suitability reviews of product sales for improving customer service</td>
<td>▶ The CIO of a global insurer sought to establish a robotics-based digital engagement channel with consumers</td>
<td>▶ A global insurer sought cost savings and efficiencies in an overly manual operations and wanted to automate their labor-intensive back office processes</td>
</tr>
<tr>
<td>▶ An automation software was selected to automate the file (case) collation component of the review.</td>
<td>▶ EY developed a production grade software robotic solution, including overall process design, interfaces and interactions with existing systems or web portals, calculation stages and exception handling procedures</td>
<td>▶ EY delivered accelerated POC in six weeks (four weeks build), which included all key solution components, addressed technical risks, and provided a robust business case, which demonstrated the benefits of using software robotics</td>
</tr>
<tr>
<td>▶ After automation, the client could reduce costs by 50% for assembling files and cases for review</td>
<td>▶ Developed showcase materials and demonstrated POC to the client's executive board, and business and IT leadership</td>
<td>▶ Developed and deployed software robotics solution, including overall process design, interfaces and interactions with legacy systems and exception handling procedures</td>
</tr>
<tr>
<td>▶ File collation accelerated by 2 months, providing improved customer service</td>
<td>▶ After automation, the client could achieve 98% automation of the insurance claims submission process</td>
<td>▶ After automation, the client could release 27 FTEs (25% of team) for a 51% cost reduction for delivery of high-frequency tasks</td>
</tr>
<tr>
<td>▶ Following a successful POC and production deployment, EY was asked to evaluate wider usage of robotics across the client's operating model</td>
<td>▶ Productivity was increased by a multiple of 7.4</td>
<td></td>
</tr>
</tbody>
</table>
About EY
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