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RESEARCH

State of the Market Report | Service Optimization Technologies

An Evolving Digital Workforce to Assist Humans – Robotic Process Automation (RPA) State of the Market Report 2021

December 2020

EGR-2020-38-R-4169

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01

Introduction and overview

- Research methodology
- Background and scope of the research
- Key information sources

Our research methodology is based on four pillars of strength to produce actionable and insightful research for the industry

01

Robust definitions and frameworks

(Function-specific pyramids, Total Value Equation, PEAK Matrix, and market maturity)

02

Primary sources of information

Annual RFIs, vendor briefings & buyer interviews, and web-based surveys

03

Diverse set of market touchpoints

Ongoing interactions across key stakeholders, input from a mix of perspectives and interests, supports both data analysis and thought leadership

04

Fact-based research

Data-driven analysis with expert perspectives, trend analysis across market adoption, contracting, and vendors

Proprietary database on Robotic Process Automation (RPA) capabilities of 21 technology vendors

Repository of existing research in RPA

Dedicated team for RPA research, spread over two continents

Executive-level relationships with buyers, service providers, technology providers, and industry associations

Background of the research

Background of the research

Robotic Process Automation (RPA) has been among the fastest growing markets in the enterprise automation segment in the past decade, with wide adoption across industries and geographies, as more enterprises become aware of its benefits. It has been a key enabler for organizations in reducing costs, improving operational efficiency and quality, increasing workforce productivity, enhancing customer and employee experience, and realizing quicker time-to-value. Encouraged by a growing number of success stories and positive word of mouth, many enterprises, Global Business Services (GBS) firms, and service providers are investing in RPA. RPA itself is a burgeoning market, rapidly evolving in terms of product features, deployment options, product architecture, training and support, partner ecosystem, and commercial models. Thus, investing in RPA is not enough – selecting the right enterprise-grade RPA technology partner is critical to success.

In this study, we investigate the state of the RPA software vendor market and focus on:

- **Impact of COVID-19 on the market**
- **Market size and adoption trends across buyer geography, size, industry, and business function**
- **Buyer expectations, barriers to adoption, and best practices**
- **RPA solution characteristics and key product capabilities and trends**
- **RPA vendor landscape**
- **Outlook for 2021-22**

Scope of this report RPA products that are sold on license, irrespective of any ongoing business or IT process outsourcing or managed services, were considered for this report. RPA products from 21 leading technology vendors globally have been assessed for this study.

Everest Group's SOT research is based on multiple sources of proprietary information

- Proprietary database of 21 RPA technology vendors
- The database tracks the vendors' offering/capabilities for:
  - Automation design, development, and integration
  - Automation control, monitoring, and analytics
  - Deployment and hosting options
  - Partnerships with service providers and other technology vendors
  - Product-related training and support services
  - Availability and adoption of commercial model(s)
  - IT governance and security

- Proprietary operational information database of technology vendors (updated annually)
- The database tracks the following operational information for each vendor:
  - Revenue and number of FTEs
  - Number of clients
  - FTE split by different lines of business
  - Portfolio coverage in terms of industry, geography, process areas, and buyer size

- **Demonstrations and interactions with technology vendors and other industry stakeholders**
- Detailed demos for a comprehensive product view and executive-level discussions with RPA vendors that cover:
  - Current state of the market
  - Vision and strategy
  - Annual performance and outlook
  - Opportunities and challenges
  - Emerging areas of investment

- **Buyer reference interviews, ongoing buyer surveys, and interactions**
- Interviews with technology vendors' reference clients and enterprise RPA buyers to get the buyer perspective around
  - Drivers and objectives for adopting RPA
  - Apprehensions and challenges
  - Assessment of vendors' performance
  - Emerging priorities / buying criteria
  - Outcomes achieved
  - Lessons learnt and best practices

Vendors assessed[1]

Appian, Automation Anywhere, AutomationEdge, Blue Prism, Datamatics, ElectroNeek, HelpSystems, Intellibot, Jacada, Kofax, Kryon, NICE, Nintex, Nividous, Pega, Perpetuuiti, Qruize, ServiceTrace, Softomotive, UiPath, WorkFusion

1 In this study, we have assessed vendors' offerings / product capabilities as of April 2020. Analysis for Softomotive is based on capabilities before its acquisition by Microsoft

The source of all content is Everest Group unless otherwise specified

Confidentiality: Everest Group takes its confidentiality pledge very seriously. Any contract-specific information collected will only be presented back to the industry in an aggregated fashion

How to read this document

Information desired	Where/how to locate the information
Summary of key messages	• The section on key messages summarizes our insights on the RPA software market • The key messages are categorized under the following sections: – Impact of COVID-19 on the market – RPA market size and adoption trends – Buyer expectations – Key barriers to adoption and best practices – RPA solution characteristics – RPA product capabilities and trends – RPA vendor landscape – Outlook for 2021-22
Key facts or analysis related to a specific topic	• Each section contains detailed charts on relevant topics • Refer to the table of contents (pages 3-4) to identify relevant topics within each section
Definitions of unfamiliar terms and related research	• Acronyms or technical outsourcing terms are defined in the glossary of terms (appendix) • Refer to the related Everest Group SOT research publications listed in references (appendix)

02

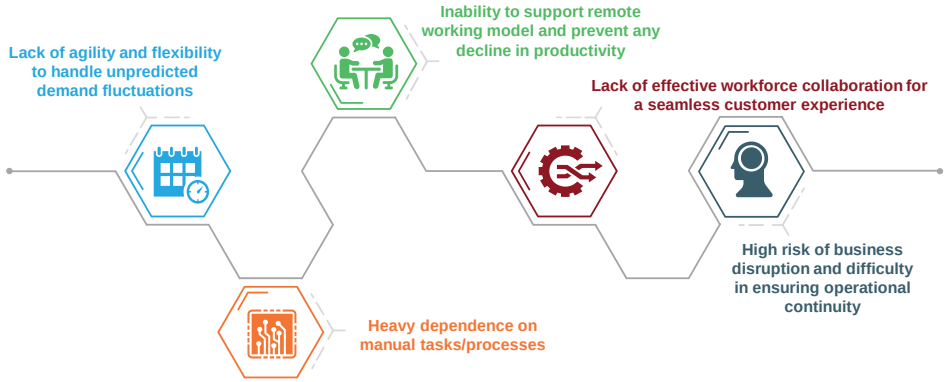
Summary of key messages

Summary of key messages (page 1 of 4)

Impact of COVID-19 on the market

- The COVID-19 pandemic brought the world to a standstill in Q1 2020 and resulted in severe business disruptions globally
- The pandemic exposed severe business continuity and survival-related challenges that plague legacy business models, which rely heavily on manual operations
- As organizations were forced to rethink their strategic priorities in the next normal, automation emerged as a top theme for ensuring business resilience, agility, and growth
- Several new use cases of RPA have been uncovered across industries to help mitigate the pandemic-created business disruptions
- RPA vendors came to the forefront with several initiatives to help organizations better leverage automation to support business continuity

Key challenges that enterprises face

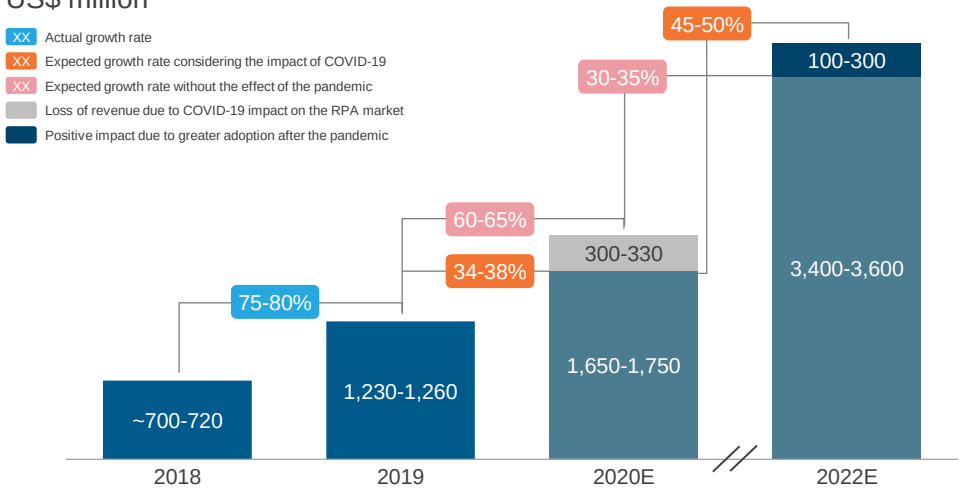


RPA market size and adoption trends

- **RPA software market size:** The global RPA software market surpassed US$1,200 million at the end of 2019. While the pandemic slowed growth in 2020, RPA adoption is expected to experience significant uptick coming out of the crisis and market is expected to grow at a CAGR of 45-50% over the next two years, driven by the pent-up demand for automation
- **Adoption by buyer size:** Small buyers and SMBs constitute over 50% of the market, with mid-sized buyers driving growth in 2020 due to increased executive interest after the pandemic
- **Adoption by buyer geography:** APAC surpassed Continental Europe as the second largest RPA market; North America, holding the largest market share, continues to account for about 45% of the market
- **Adoption by buyer industry:** BFSI, healthcare & pharma, and telecom together account for over 50% of the market. COVID-19 has further accelerated RPA adoption across these verticals
- **Adoption by process/function:** F&A and HR functions experienced significant RPA adoption; industry-specific use cases continue to experience high adoption, especially in regulated industries such as BFSI and healthcare

RPA software market size

US$ million



Summary of key messages (page 2 of 4)

Buyer expectations

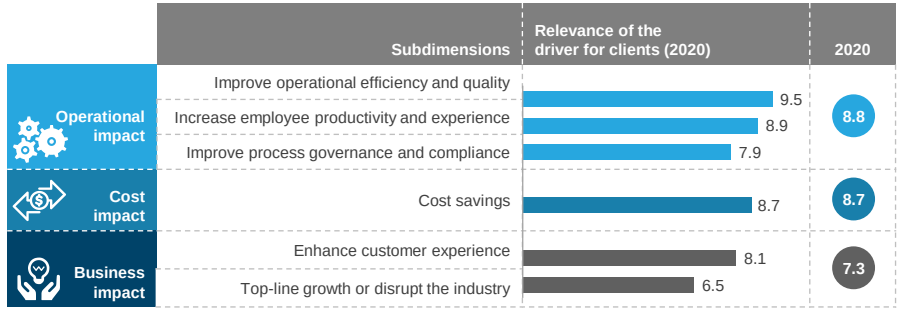
- **Drivers of RPA adoption:** Although cost savings continue to be an important factor, there is increased enterprise focus on leveraging RPA to improve operational efficiency and enhance customer experience
- **Overall buyer satisfaction:** While buyers are satisfied with RPA vendors on their overall performance, they expect them to enhance robot control and analytics capabilities
- **Product capability priority matrix:** Buyers have indicated ease of use and automation development as the important capability; they have highlighted that the highest scope of improvement lies in analytics & dashboards
- **Key strengths and areas of improvement:** A majority of buyers cited customer success and support services, ease of product use, and core product capabilities as key strengths; they pointed out partner ecosystem and product training and documentation as improvement areas

Key barriers to adoption and best practices

- **Adoption trends:** A majority of RPA buyers are still in the early stages of adoption, as they continue to face challenges when scaling up RPA deployments
- **Barriers to adoption:** The major inhibitors to improving value realization from RPA include lack of a robust RPA strategy and roadmap, difficulty in obtaining executive sponsorship, ineffective organizational change management, skills gap, and difficulty in maintaining a healthy automation pipeline
- **Best practices:** Key to successful RPA implementation include developing a detailed automation strategy, gaining executive management support, developing an effective change management program, obtaining stakeholder buy-in, embracing best practices for selection/prioritization of potential use cases, and leveraging support from vendors to ensure availability of relevant talent
- **Key investment themes for RPA vendors:** RPA vendors have made investments across various themes, such as enhancing human-robot collaboration capability, ensuring robust support for cloud and mobility, developing strong integrations with complementary technologies, and constituting product training and partner enablement programs to ensure customer success

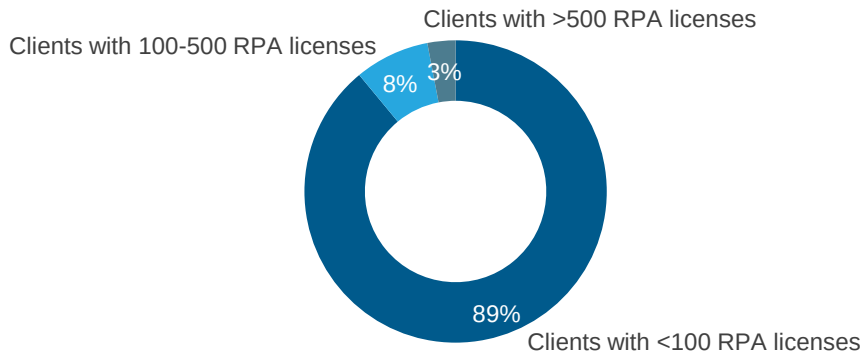
Key factors driving RPA adoption

Importance on a scale of 1 to 10, with 10 being the highest



RPA client mix by number of RPA licenses

Percentage of clients, 2019

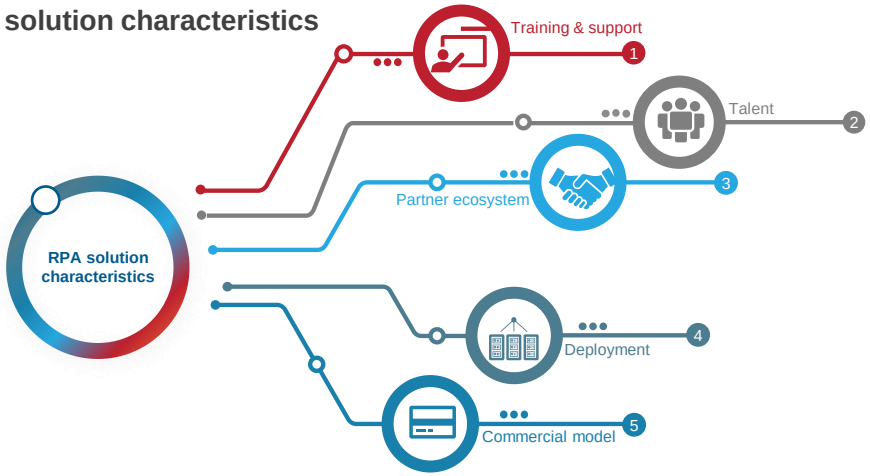


Summary of key messages (page 3 of 4)

RPA solution characteristics

- **Training and support:** Vendors have increased their focus on developing and enhancing the online training portal and support forum to overcome traveling restrictions due to the pandemic
- **Talent:** RPA vendors continue to expand their product development teams to include developers with diversified skill sets to align with the demand for a holistic automation solution
- **Partner ecosystem:** RPA vendors continue to build a robust partner ecosystem for global distribution, offer implementation and support services, as well as improve access to collaborative technologies to successfully deliver an integrated automation solution
- **Deployment:** Vendors are enhancing support for public cloud deployments and increasingly launching their own cloud or SaaS offerings, to meet the rising demand for cloud deployments owing to the benefits offered by the cloud for business continuity and cost optimization
- **Commercial model:** The periodic subscription-based pricing model has fast emerged as the most prevalent model due to low upfront investments and greater flexibility

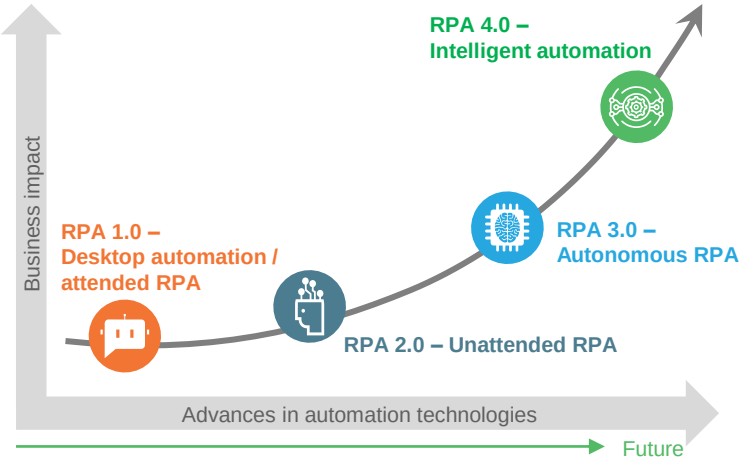
RPA solution characteristics



RPA product capabilities and trends

- Advances in RPA technologies can be best described in terms of product generations
- To help enterprises achieve superior outcomes, RPA technology evolves with a host of capabilities across several dimensions:
  - **Development and integration:** Universal process recorder and automated workflow creation are emerging as key enablers for faster and easier automation development
  - **Human-robot collaboration:** Interfaces to enable better human-robot collaboration and leveraging AI/ML to provide next-best-action recommendations have been key investment areas
  - **Control and monitoring of robots:** Vendors are developing capabilities for intelligent workload balancing, on-demand scalability, predictive and prescriptive analytics, and license optimization for enhanced control and monitoring
  - **Cloud-native RPA:** To help enterprises reap the full benefits of the cloud, RPA vendors are rearchitecting their products into a cloud-native architecture based on loosely coupled containerized microservices that can scale independently

RPA product generations



Summary of key messages (page 4 of 4)

RPA vendor landscape

- Automation Anywhere, Blue Prism, and UiPath continue to dominate the market in terms of RPA software revenue. In addition to Automation Anywhere and UiPath, some of the smaller vendors have also experienced over 100% YoY growth, indicating strong market demand for RPA technology
- NICE, Pega, and UiPath are the top vendors in terms of RDA / attended RPA license revenue
- Blue Prism, Automation Anywhere, and NICE lead in banking, CPG & retail, and telecom industries, respectively
- Blue Prism holds the highest market share by revenue in banking and insurance industry-specific process areas, while UiPath leads across horizontal functions such as F&A, procurement, and HR
- UiPath has emerged as the Leader across North America, Continental Europe, APAC, and MEA; Automation Anywhere and Blue Prism continue to hold top positions in LATAM and the UK, respectively

Vendors' RPA software market share by revenue

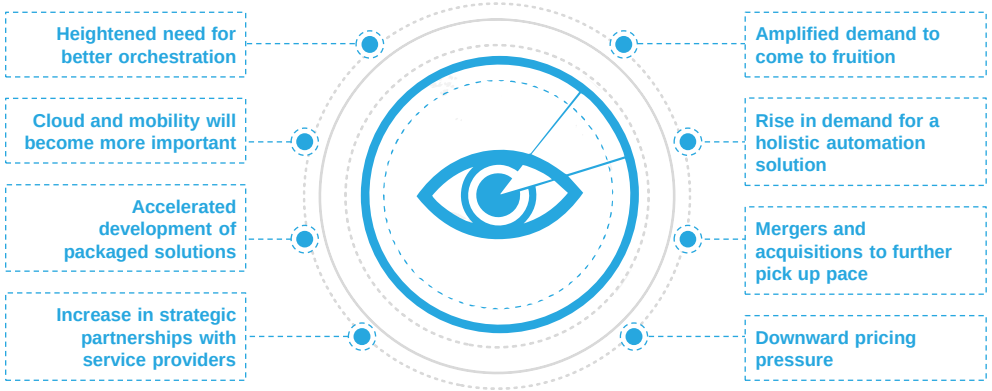
(Vendors are listed in alphabetical order within each category)

>10%	Automation Anywhere, blueprism, UiPath
5-10%	NICE, PEGA, WorkFusion
1-4%	helpsystems, servicetrace, KOFAX, softomotive
<1%	Appian, AutomationEdge, DATAMATICS, electroNeek, INTELLIBOT, Jacada, KRYON, nintex, nividous, PERPETUUITI, qruize

Outlook for 2021-22

- The COVID-19 crisis brought home the importance of automation and as the signs of recovery get stronger, the pent-up demand is expected to be realized at a faster pace resulting in accelerated deployments
- As enterprises look to scale RPA initiatives, demand for a holistic automation solution comprising RPA, IDP, IVA, BPM, and process mining will rise significantly, and growth may elude niche RPA vendors
- M&A activities are expected to further intensify, with several large tech players entering the vendor landscape and leading technology players seeking to expand the scope of their offerings
- The entry of big-tech players is driving unlimited usage-based pricing models to exert downward pricing pressure with enterprises demanding more flexible and progressive pricing options
- With several enterprises looking to continue with the remote working model even post-recovery, the demand for cloud and mobility is expected to rise further
- As the demand for holistic automation solutions increases, strategic partnerships with service providers and complementary technology vendors are expected to increase

Outlook themes for 2020-21



03

Impact of COVID-19 on the market

- COVID-19 impact on the global economy
- Key challenges that enterprises face in the next normal
- Changing organizational priorities due to the pandemic
- Emergence of new RPA use cases to help mitigate pandemic-driven business disruptions
- Initiatives launched by RPA vendors during the pandemic to help organizations better leverage automation

The COVID-19 outbreak disrupted businesses worldwide, bringing with it the worst recession in decades

The COVID-19 pandemic brought the world to a standstill in Q1 2020. The global economic outlook worsened in the second quarter of the year and the pandemic made businesses across industries mindful of costs and grappling with uncertainties. As the year progressed, anxiety grew around a second wave of the outbreak, with some nations reinstating lockdowns in the third quarter.

The latest World Economic Outlook press release has called the pandemic the worst crisis since the Great Depression. The IMF has continued to project a deep recession in 2020, with global GDP movement projected at -4.4%, a small improvement from June forecasts of -4.9%. While signs of recovery have started to show up with promising news around vaccines, concerns around ensuring a sustained recovery remain a matter of concern for nations across the globe.

Global GDP growth is expected to contract to 4.4% in 2020

Nearly half of the world's 3.3 billion workforce is at risk of becoming jobless due to COVID-19

Slower than expected pace of recovery; GDP growth is expected at 5.2% in 2021

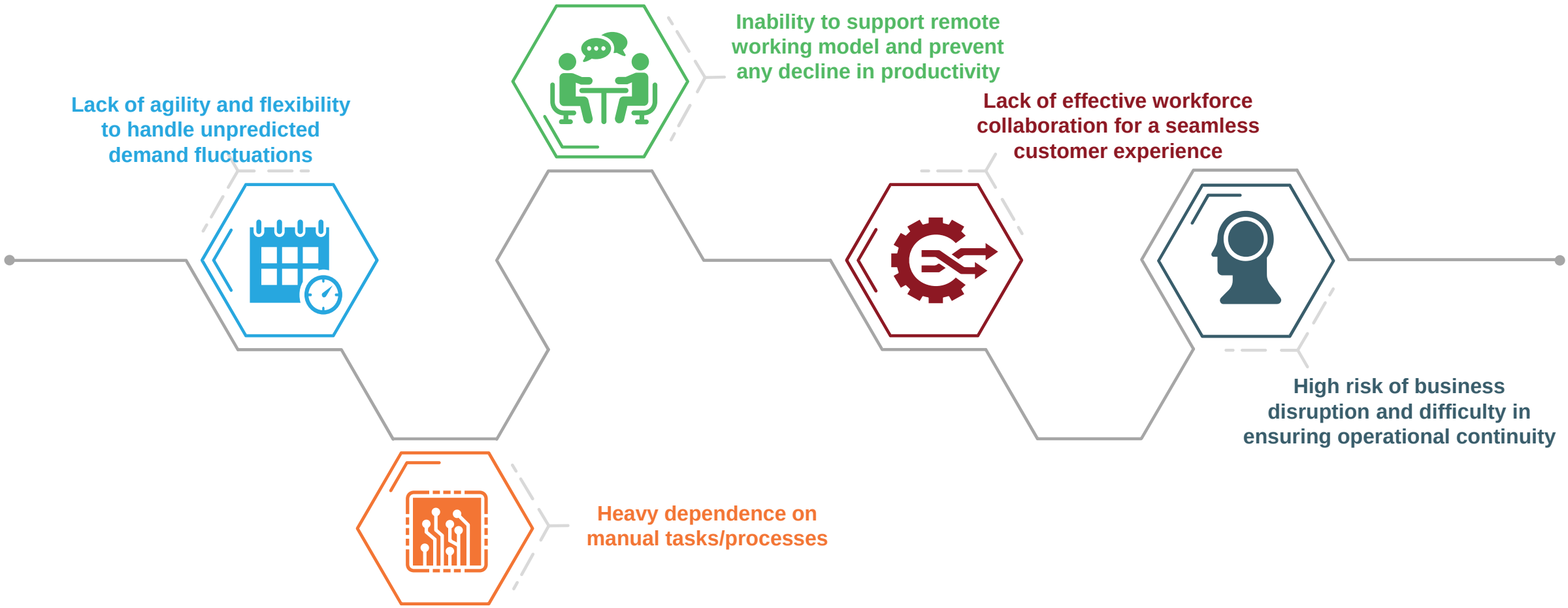
World trade is expected to fall by 13-32% in 2020

Global debt is expected to exceed the post World War II peak

Sources:
1 International Monetary Fund (IMF) press release dated October 13, 2020
2 World Trade Organization (WTO) press release dated April 9, 2020
3 International Labor Organization (ILO)

The pandemic exposed severe business continuity and survival-related challenges that plague legacy business models, which rely heavily on manual operations

Key challenges that enterprises face



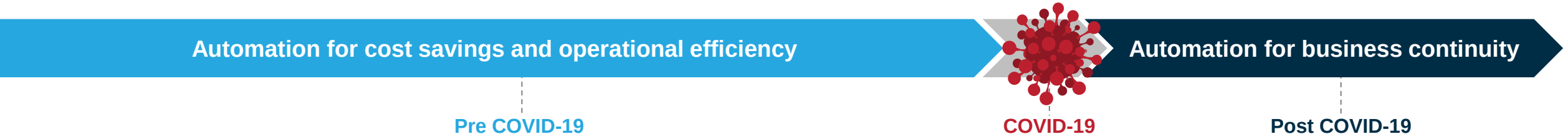
COVID-19 helped organizations realize the importance of automation for ensuring business resilience, agility, and growth

Everest Group conducted a global survey in April 2020 to understand changing organizational priorities in the next normal. About 70% organizations responded that they would strongly look to increase the adoption of automation. In fact, automation emerged as one of the key themes in addition to enabling the remote working model and business continuity planning.

Everest Group global survey – What will you do differently after the crisis has abated?

	Completely Disagree	Neutral	Completely Agree
More work-from-home options	13.9%	13.9%	72.2%
More business continuity planning	13.0%	17.6%	69.4%
More automation	15.8%	14.8%	69.4%
More talent training	31.5%	19.4%	49.1%
More geographic dispersion	45.9%	17.4%	36.7%

COVID-19 has acted as a catalyst in making **automation a strategic priority**, with automation initiatives increasingly becoming a part of large transformation deals.



Source: Everest Group market study conducted in April 2020

Several new use cases of RPA have been uncovered across industries to help mitigate the pandemic-created business disruptions

Banking

- Handling a surge in mortgage hold requests
- Money transfer and automatic bill payments
- Communicating account balance, investment status or scope, and processing loans to small businesses

Government & public sector

- Healthcare-checkup data monitoring and consolidation
- Automated reporting to the concerned ministries
- Supporting public sector-funded healthcare and loan initiatives (e.g., CARES Act loans)

Healthcare

- Facilities tracking – inquiry handling of space and resource availability in hospitals and medical facilities
- Employee health tracking
- Automating clinical testing data entry for a viable COVID-19 vaccine

Insurance

- Handling inquiries about whether existing customer policies cover COVID-19
- Claims processing and management for active customers
- Assisting potential customers, amid renewed demand, to find the right insurance policy

Retail

- Processing applications for new delivery positions caused by a surge in online demand due to lockdown and movement restrictions
- Information propagation and query handling related to the availability of items, restrictions in movement, and offers

Travel & hospitality

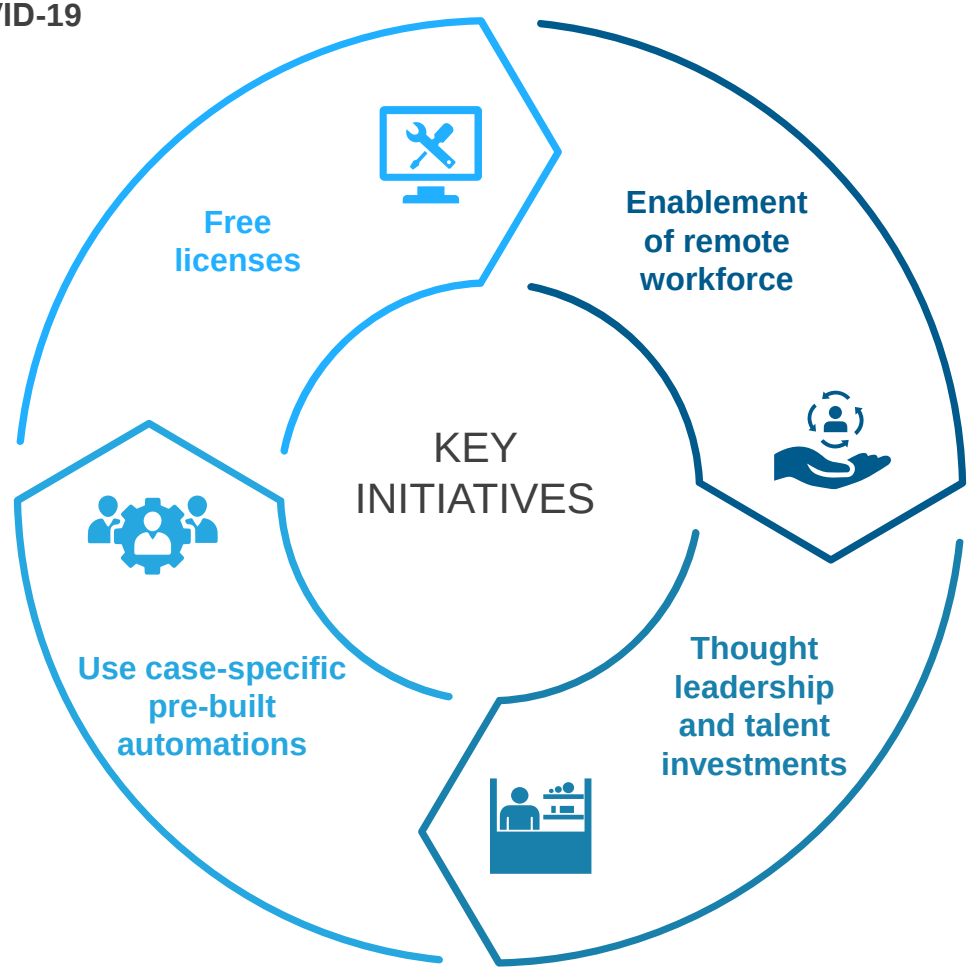
- Cancellation requests for both the journey (flight, train, or bus) and accommodation bookings
- Refund claims, postponement requests, and general query handling for the cancelled bookings

RPA vendors have launched initiatives to help organizations better leverage automation to support business continuity and resilience

RPA technology vendors' initiatives during COVID-19

- Offered free digital worker licenses as part of the COVID-19 response / support programs to help ensure continuity of business-critical processes
- Extended the duration of trial versions for prospects and offered complementary 24/7 support for specific verticals to help overcome any implementation challenges

- Developed COVID-19-specific pre-built automations, especially for healthcare and the public sector, for use cases such as health screening and contact tracing
- Offered complementary sessions with technical teams to help identify use cases that can be quickly automated to ensure business continuity



- Offered mobile applications to access the central control and monitoring functionality
- Provided specialized agent-assisting robots through the marketplace to improve remote workforce productivity
- Developed prebuilt solutions to expedite remote setup-related IT processes, such as setting up users for VPN

- Conducted RPA events (e.g., Botathons) to crowdsource solutions for targeted COVID-19-related use cases
- Launched specialized RPA training/certification programs and scholarship funds to reskill workforce impacted by COVID-19

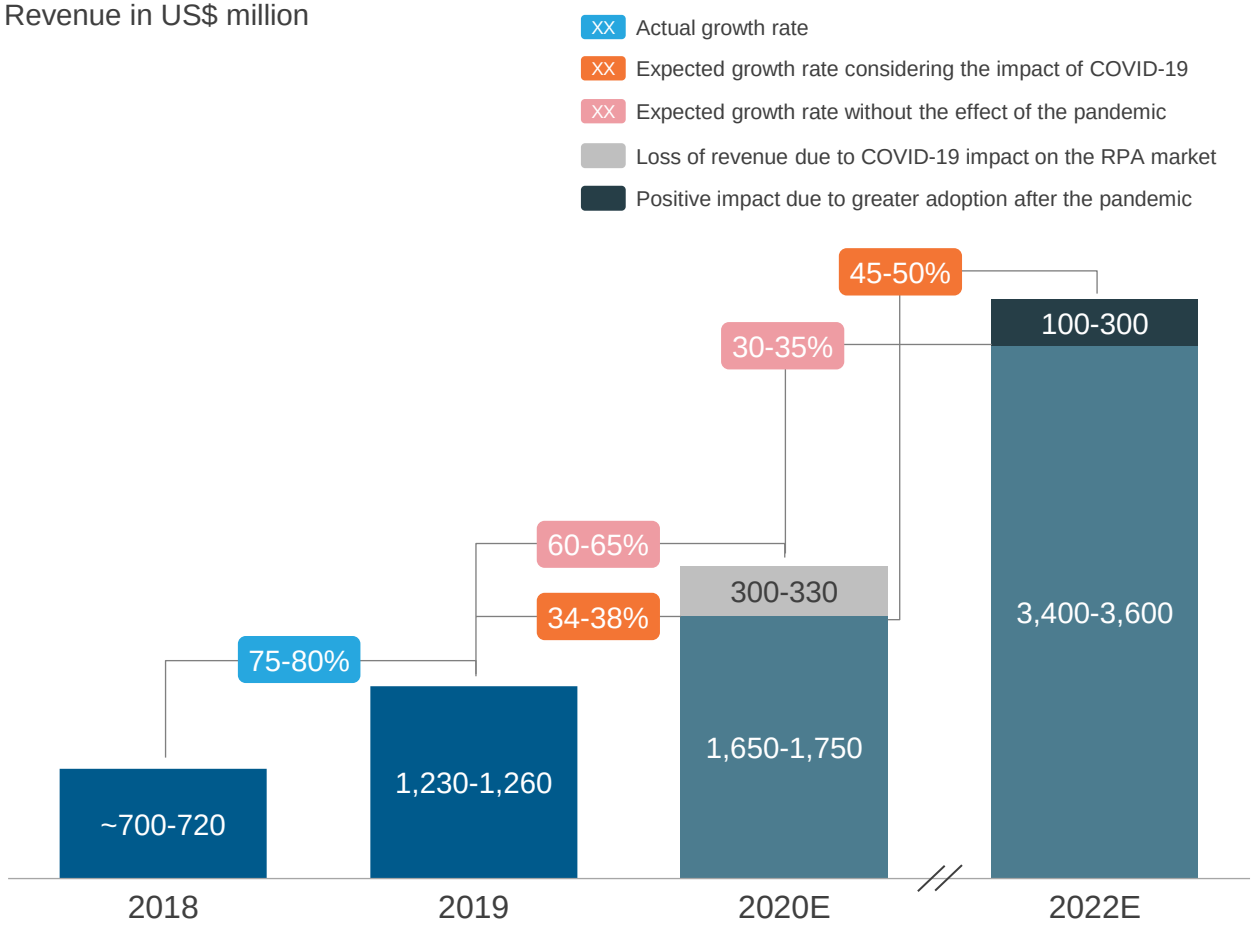
04

Market size and adoption trends

- RPA software market size and growth by revenue
- RPA software market size and growth by number of clients
- Adoption by buyer size
- Adoption by buyer geography
- Adoption by buyer industry
- Adoption by buyer process/function

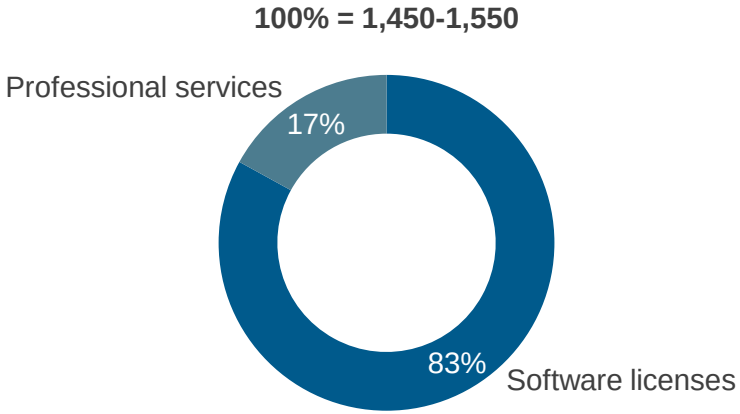
The economic crisis due to COVID-19 has slowed growth in the short term, but there is pent-up demand for automation

RPA software market size
Revenue in US$ million



Source: Everest Group (2020)

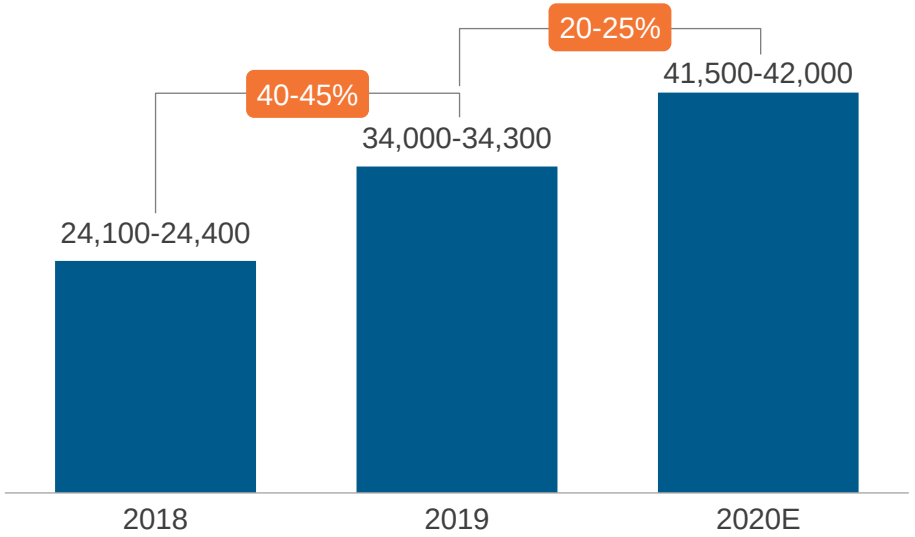
Split of RPA software vendor market by type of offerings
Revenue in US$ million, 2019



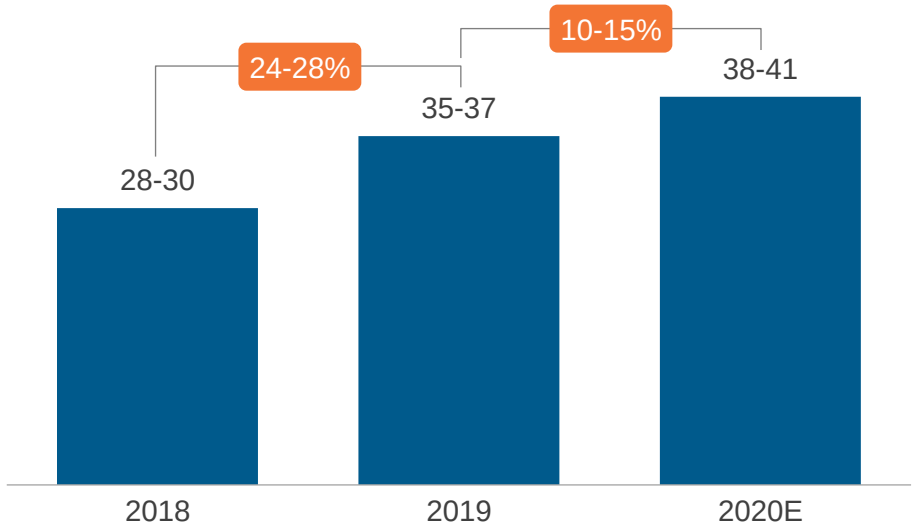
- The RPA software market posted a healthy YoY growth of over 75% and surpassed US$1,200 million at the end of 2019, driven by increasing demand for automation
- The prevailing global economic crisis and business uncertainty slowed RPA market growth to about 35% in 2020 versus the pre-Covid-19 expectation of 60-65%
- However, the pandemic has amplified the importance of automation and organizations are looking to accelerate their automation journeys to make their business models more scalable and resilient
- Consequently, RPA adoption is expected to experience a significant uptick coming out of the crisis

Market growth is driven primarily by new clients adopting RPA; an increase in average deal size is also driving growth

RPA independent software vendor client base
Total number of clients[1]



Software/license revenue per client
Revenue in US$ '000



- The addition of new buyers continues to drive growth in the RPA market. RPA gained further traction as the benefits experienced by enterprises ahead in their automation journey became more apparent during the pandemic. Several new enterprises, especially in the BFSI and healthcare verticals, adopted RPA following positive feedback from existing buyers in managing demand volatility
- There has been expansion of scope within existing engagements, though at a slower rate, as scaling up continues to remain a challenge due to multiple factors, such as lack of a robust RPA strategy, ineffective organizational change management, lack of a healthy automation pipeline, and inability to orchestrate work efficiently between human and digital workers
- Growth in clients' deal size is expected to accelerate as automation becomes part of larger transformation deals and obtaining executive sponsorship for RPA becomes easier. Process mining technology can help identify new use cases, and integration with complementary technologies such as IDP, BPM, and IVA can help expand the scope of RPA to automate more complex end-to-end processes

1 Total number of clients (not unique clients) includes Softomotive's clients which consists of large number of small buyers

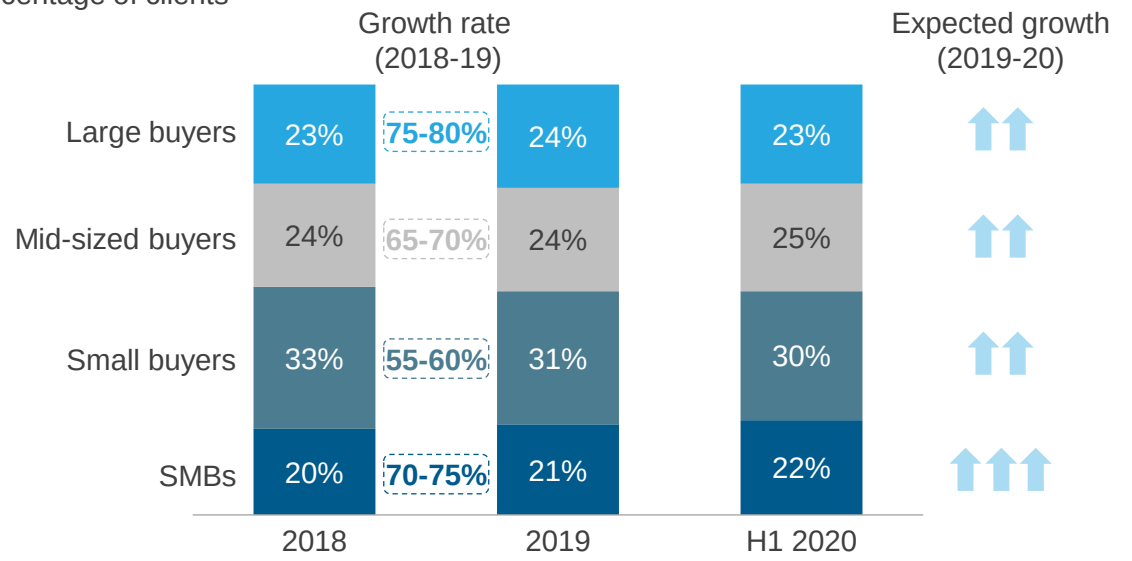
Source: Everest Group (2020)

Small enterprises hold a considerable share of the market; with increased executive interest post COVID-19 and significant room to scale, mid-sized buyers are driving growth in 2020

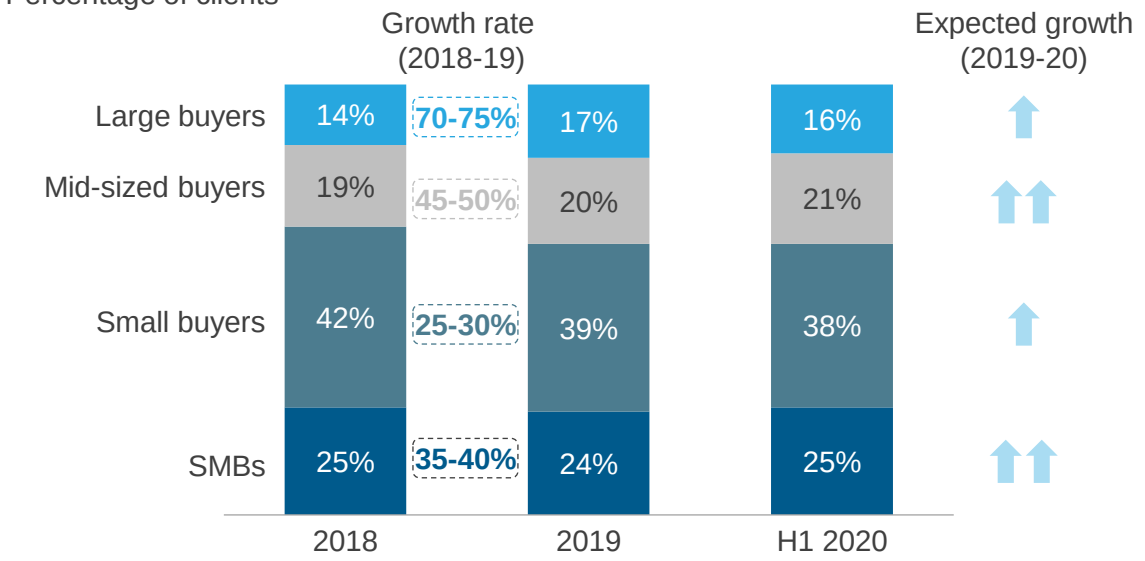
Expected growth in 2020 ↑ 10-20% ↑↑ 21-40% ↑↑↑ >40%

XX Growth rate in 2018-19

RPA software market by buyer size[1,3] (excluding Softomotive)
Percentage of clients



RPA software market by buyer size[1,3] (including Softomotive[2])
Percentage of clients



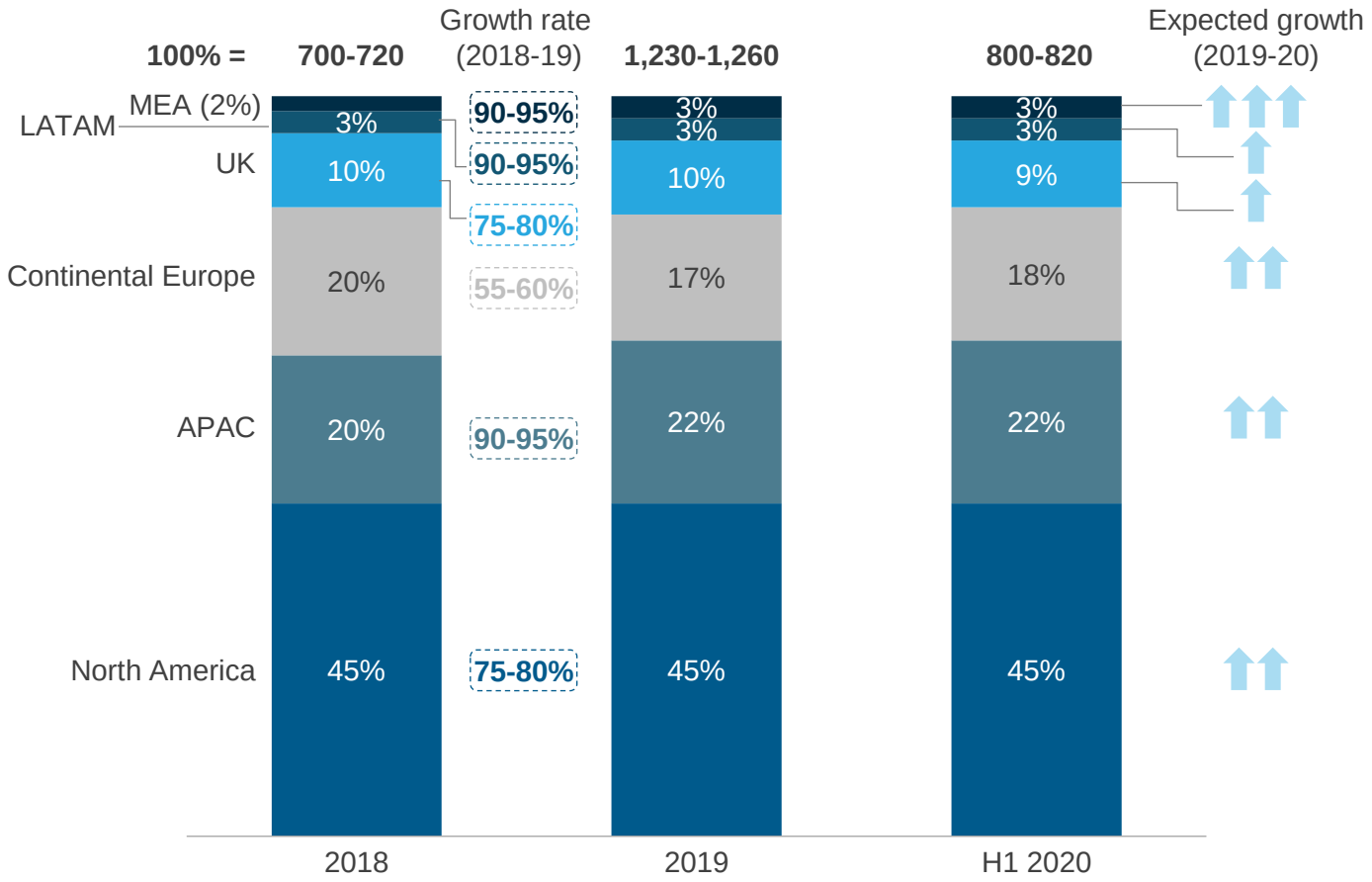
- Due to higher process familiarity, smaller enterprises find it easier to implement RPA solutions and continue to hold a considerable share of the overall market. Vendors are looking at new pricing models, such as usage-based pricing, which are not very front-loaded in terms of cost and are differentially tiered, to offer flexibility and drive adoption
- The entry of big-tech providers such as Microsoft, with the acquisition of Softomotive, is expected to make RPA more affordable for small enterprises and SMBs, driving further growth in the segment
- RPA adoption within mid-sized buyer segment is also increasing as proof points increase. With significant room to scale up RPA deployments within the organization, fueled by pent-up demand for digital transformation, mid-sized buyers are driving growth in 2020
- While large buyers experienced healthy growth in 2019, uncertainties and the economic slowdown caused by COVID-19 reduced their 2020 market share

1 Total number of clients (non-unique) across vendors in the RPA market has grown by 40-45% from ~24,000 in 2018 to ~34,000 in 2019 (including Softomotive) and by 60-65% from ~15,000 in 2018 to ~24,500 in 2019 (excluding Softomotive)
2 Softomotive with its large base of RPA clients skews the overall market mix toward small buyers
3 Buyer size is defined as large (>US$5 billion in revenue), mid-sized (US$1-5 billion in revenue), small (US$50 million - US$1 billion in revenue), and SMBs (<US$ 50 million in revenue)

Source: Everest Group (2020)

North America continues to command the lion's share of the market; accelerated adoption in APAC has helped the region surpass Continental Europe as the second-largest RPA market

RPA software market size by buyer geography
Percentage split of license revenue; US$ million



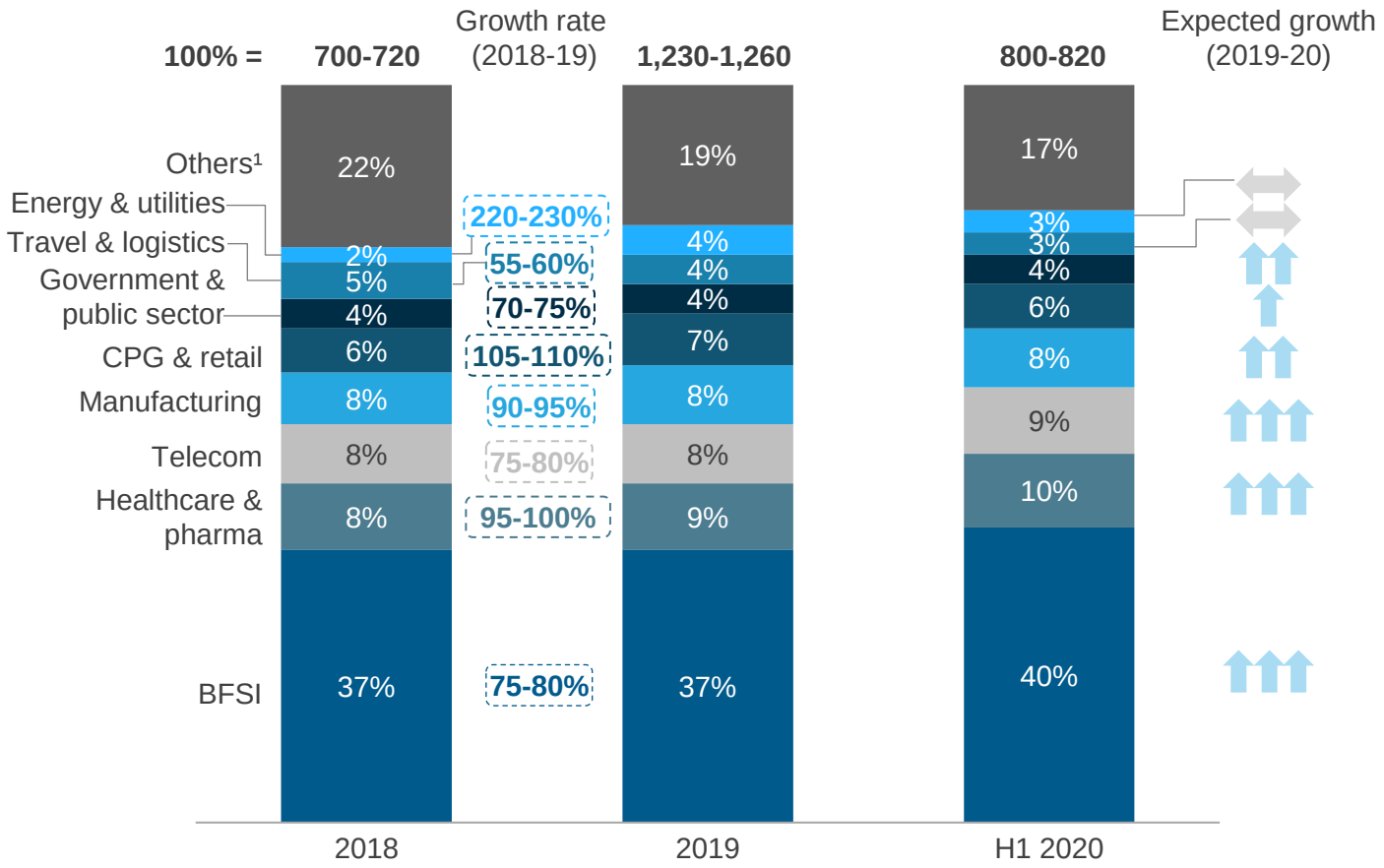
Source: Everest Group (2020)

Expected growth in 2020 10-20% 21-40% >40%
XX Growth rate in 2018-19

- North America grew at the average market growth rate and continues to be the largest RPA adopter. Adoption in this region is driven by the maturity of the market and presence of a large BFSI sector, which is moving toward automation due to significant cost, efficiency, and compliance pressures
- APAC has experienced high YoY growth in recent years due to the presence of a large number of GBS firms in India and increasing demand from countries such as Japan, Singapore, and China
- Growth in APAC is expected to retain strong momentum, supported by the emergence of homegrown RPA players and presence of service provider partners helping to drive RPA awareness and adoption
- Europe grew at a relatively lower rate than the rest of the market, primarily due to slower economic growth, uncertainties due to Brexit, and increased enterprise consciousness about sharing data with third-party technology vendors
- Emerging geographies such as LATAM and MEA are experiencing a healthy growth rate, driven by continued success stories in mature geographies. However, these regions are still largely untapped and offer considerable growth potential

While COVID-19 amplified the demand for RPA across verticals such as BFSI and healthcare, it drove down spending by negatively impacted industries, such as manufacturing

RPA software market size by buyer industry
Percentage split of license revenue; US$ million



1 Others include hi-tech and media and entertainment
Source: Everest Group (2020)

Expected growth in 2020 0-10% 11-20% 21-40% >40%
XX Growth rate in 2018-19

- BFSI, healthcare, and telecom continue to account for over 50% of the RPA market. Covid-19 further accelerated adoption across these industries by unearthing several use cases with high-volume transactional tasks and the need for higher efficiency, accuracy, and quick turnaround time
- RPA was particularly helpful in managing significantly increased transaction volumes in BFSI and healthcare & pharma for use cases such as patient onboarding, e-KYC, payments/claims processing, and workforce planning
- The government & public sector grew at a steady rate due to the shift toward paperless transactions and the need to improve operational efficiency. Increased pressure to manage state-funded initiatives is further driving demand in 2020
- While manufacturing, retail, and energy & utilities experienced an uptick in RPA adoption in 2019, the pandemic and following lockdowns reduced spending and delayed POCs, driving down growth for these verticals in 2020
- As stores continue to shut down, the situation remains uncertain for retail; e-commerce is expected to experience momentous growth as physical purchases shift online. Travel & hospitality also faces an uncertain future due to lack of revenues

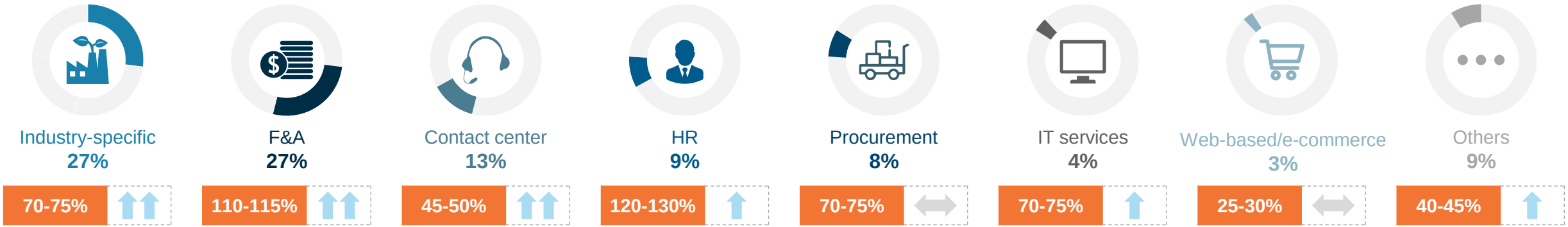
F&A and HR functions experienced significant RPA adoption; industry-specific processes in regulated verticals such as BFSI and healthcare also continue to see high adoption

RPA software market size by business process / function
License revenue in percentage; US$ million

Expected growth in 2020 0-10% 11-30% >30%

XX Growth rate in 2018-19

100% = 1,230-1,260



- F&A processes with a high volume of transactional tasks continue to experience increasing RPA adoption. HR processes such as employee onboarding, attendance information update, payroll automation, and employee record management are driving adoption
- In industry-specific processes, BFSI has experienced the highest RPA adoption, with use cases in transactional and standardized processes such as customer onboarding, mortgage processing, trade financing, policy servicing, and claims processing
- The pandemic has accelerated RPA adoption for healthcare-specific use cases, such as patient onboarding & scheduling, clinical testing data entry, and automated updating of space/resources in hospitals; remote working is expected to further accelerate the adoption of RPA in HR and IT services
- Due to enhanced enterprise focus on reducing operational costs and increasing workforce productivity, contact center use cases, such as customer data management, real-time agent guidance, and post-call wrap-up work, promise significant potential for RDA / attended RPA
- Web-based processes such as social monitoring-based data collection for market intelligence and gauging of brand sentiment are emerging as new use cases for RPA adoption

Source: Everest Group (2020)

05

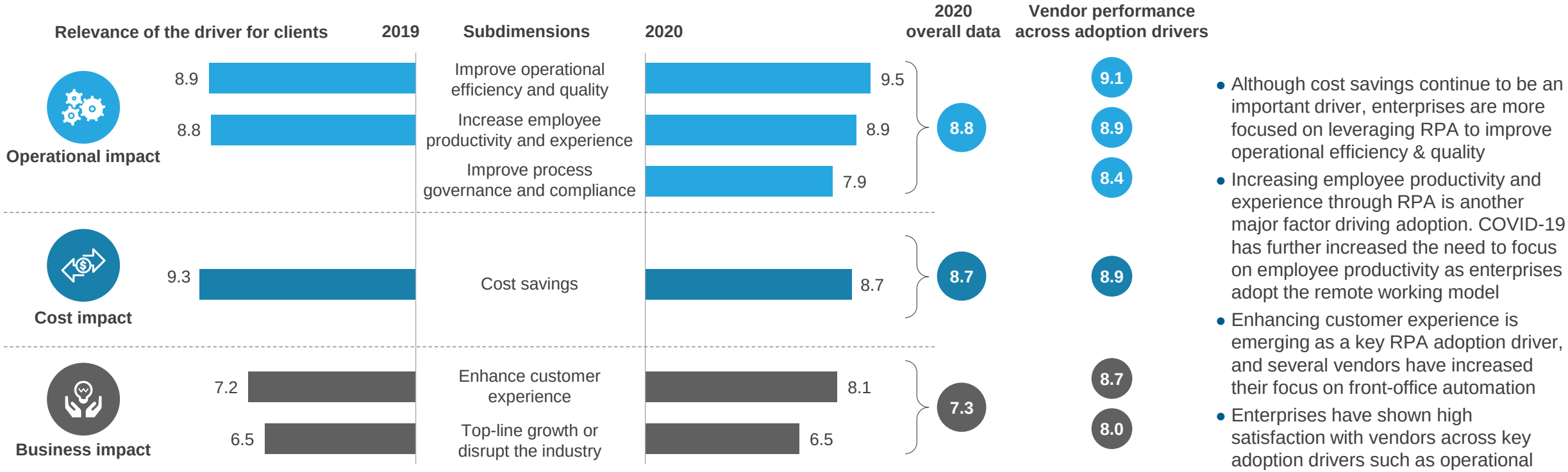
Buyer expectations

- Drivers for RPA adoption
- Overall buyer satisfaction
- Product capability priority matrix
- Key strengths and areas of improvement

Drivers for RPA adoption

RPA adoption is being increasingly driven by factors beyond cost savings, with higher focus on improving operational efficiency and enhancing customer experience

Key factors driving RPA adoption
Importance on a scale of 1 to 10, with 10 being the highest



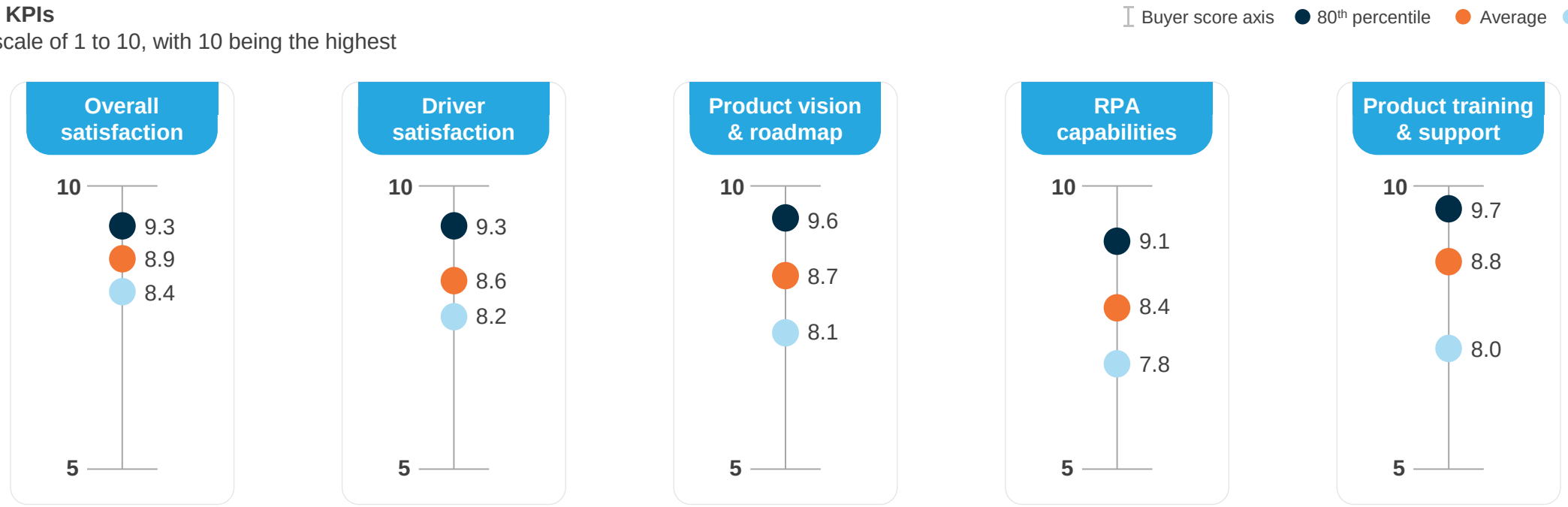
- Although cost savings continue to be an important driver, enterprises are more focused on leveraging RPA to improve operational efficiency & quality
- Increasing employee productivity and experience through RPA is another major factor driving adoption. COVID-19 has further increased the need to focus on employee productivity as enterprises adopt the remote working model
- Enhancing customer experience is emerging as a key RPA adoption driver, and several vendors have increased their focus on front-office automation
- Enterprises have shown high satisfaction with vendors across key adoption drivers such as operational efficiency and employee productivity

Sample size: Based on feedback collected from 65+ enterprise buyers in 2020
Source: Everest Group (2020)

Buyer satisfaction | RPA vendor KPIs

Buyers are quite satisfied with vendors in helping them meet their objectives for RPA adoption and have indicated high overall satisfaction

RPA vendor KPIs
Rating on a scale of 1 to 10, with 10 being the highest



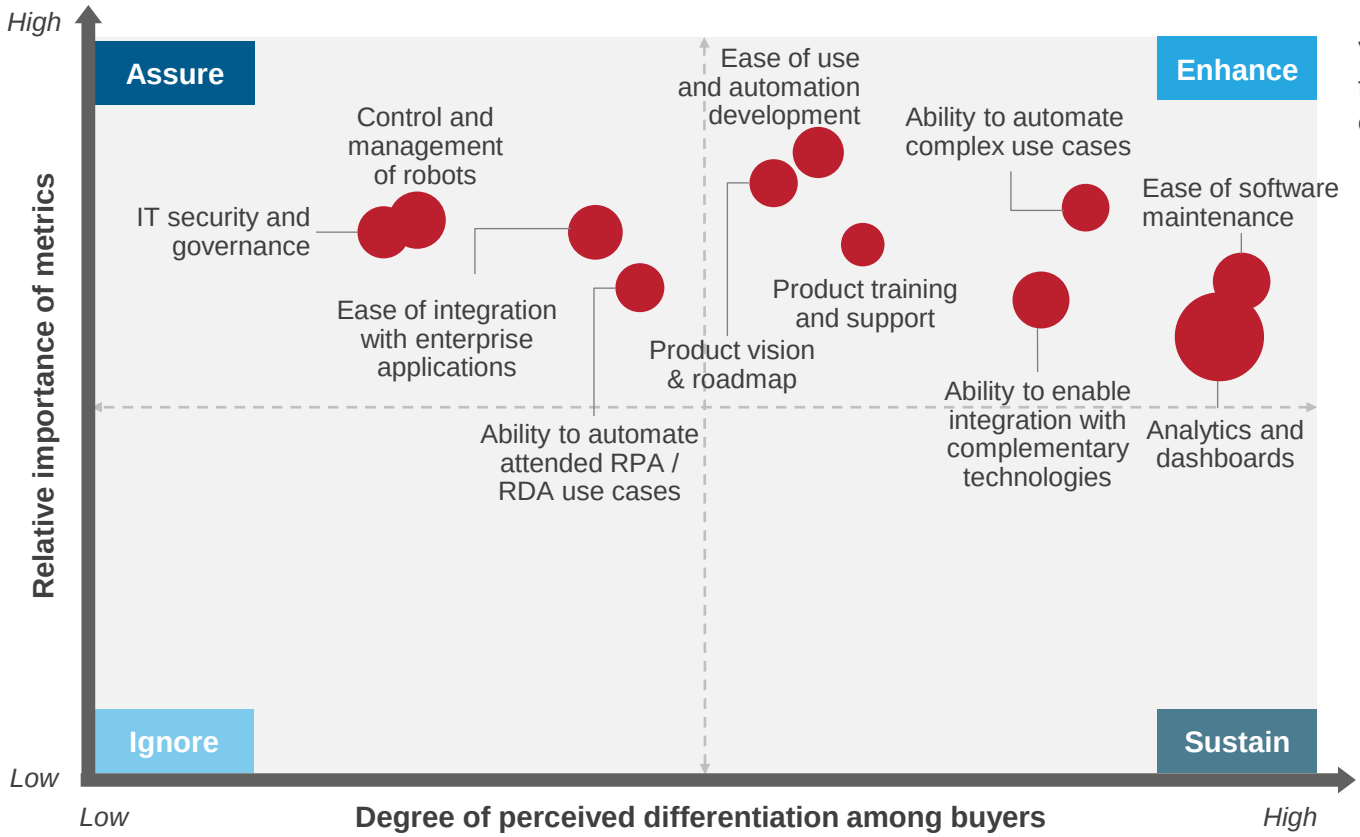
- Buyers have indicated a high level of overall vendor satisfaction. They have also indicated high satisfaction with vendors in helping them achieve their objectives for RPA adoption. Vendors' focus on customer success and alignment with buyers' expectations from RPA have increased in recent times, helping enterprises meet their RPA adoption objectives
- On an average, buyers have indicated high satisfaction with product training and support. However, many buyers have expressed the need for enhanced product documentation and training material
- There is scope to improve buyers' satisfaction with product capabilities. Buyers expect vendors to increase their focus on enhancing analytics, dashboards, scheduling, and load balancing capabilities

Sample size: Based on feedback collected from 65+ enterprise buyers in 2020
Source: Everest Group (2020)

Buyer satisfaction | Product capability priority matrix

Buyers have cited ease of use and automation development as the important capability; they have also indicated that the highest scope of improvement lies in analytics & dashboards

Relative importance of metrics and extent of differentiation



Sample size: Based on feedback collected from 65+ enterprise buyers in 2020
Source: Everest Group (2020)

Key strengths and areas of improvement cited by buyers

Most buyers acknowledge customer success and support services as a key strength for their vendors; it also emerged as a key improvement area, indicating its strong co-relation with buyer satisfaction

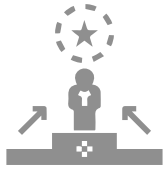
Top three strengths[1]

67%
Customer success and support services

57%
Ease of product use

30%
Product features and functionalities

Top three areas of improvement[1]



28%
Customer success and support services

22%
Partner ecosystem and vision and roadmap

21%
Training and documentation

- While almost 67% of buyers recognize the support team's flexibility, collaboration, and domain knowledge as key strengths, several enterprises have also indicated the need for vendors to meet project delivery timelines and reduce ticket resolution time
- Buyers indicate ease of use and product features & functionalities as other major strength areas
- Enterprises expect vendors to provide more visibility and proactively communicate their product vision and roadmap. They have also highlighted the need for vendors to strengthen their partner ecosystem by forging partnerships with more service providers / system integrators and complementary technology providers
- Many buyers want their vendors to improve product training and enhance their documentation and other training material
- Analytics and dashboards is often listed as an area of improvement across vendors

1 The percentage figures indicate the percentage of buyers that reported the parameter as a strength or an area of improvement
Sample size: Based on feedback collected from 65+ enterprise buyers in 2020
Source: Everest Group (2020)

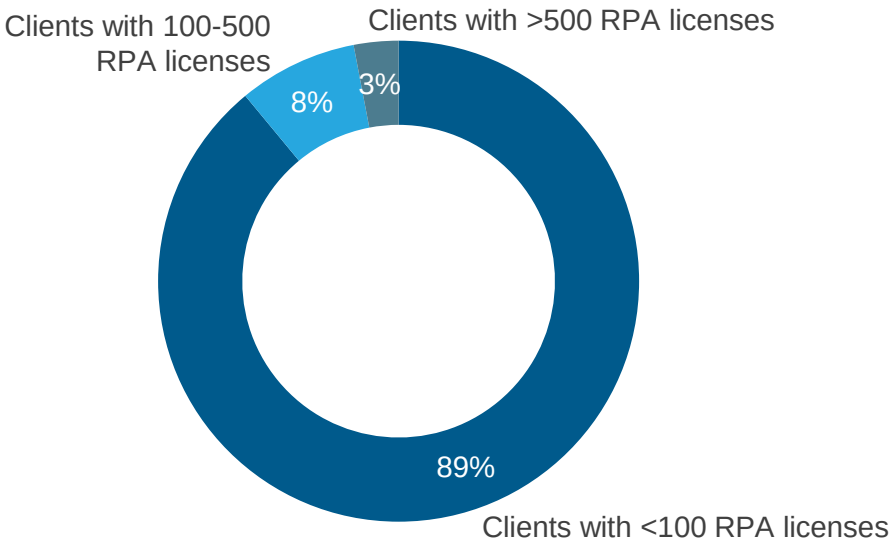
06

Key barriers to adoption and best practices

- Scale of deployments across RPA client base
- Key barriers to adoption and best practices to accelerate value realization from automation
- Key investment themes for RPA vendors to help enterprises overcome challenges

The RPA customer base continues to grow rapidly with rising interest in automation, but the road to scaling up is beset with several challenges

RPA client mix by number of RPA licenses
Percentage of clients, 2019



- Scaling up RPA continues to remain a key challenge that enterprises face in their automation journeys
- Most enterprises remain in the early stages of adoption, with less than 100 licenses, and only a few are successfully able to scale up to more than 500 licenses
- Some of the key barriers to scaling up RPA deployments include:
  - Lack of a robust RPA strategy and roadmap
  - Difficulty in maintaining a healthy automation pipeline
  - Inability to efficiently orchestrate work between human and digital workers
  - Difficulty in obtaining executive sponsorship and stakeholder buy-in
  - Ineffective organizational change management and governance
  - Lack of experienced RPA resources

Source: Everest Group (2020)

Key barriers to adoption and best practices to accelerate value realization from automation (page 1 of 2)

	Challenges	Best practices
Gaps in vision and strategic planning	• Lack of executive sponsorship and stakeholder buy-in due to limited understanding of RPA technologies and its benefits • Gaps in vision / strategic planning to move away from a siloed and stand-alone automation approach make it difficult to scale automations	• Enterprises should develop a detailed automation strategy and roadmap and adopt a holistic automation solution comprising other digital levers (e.g., IDP, IVA) in conjunction with RPA to advance from task automation to process automation • Strategic focus and executive backing lend direction to the automation journey. Gaining executive management support in time is critical to ensuring a detailed roadmap and successful implementation
Change management and governance	• Job security apprehensions could create a negative sentiment and slow down or derail RPA projects • Lack of a change management and governance program in place • Lack of involvement of enterprise IT teams	• RPA implementations should be treated as change programs, managed by best-in-class change management methodologies and in partnership with enterprise IT • Ensuring inclusivity with effective communication, proper training programs, and the division of roles and ownership are some of the key ways to ensure an effective change management program
Skills gap	• Shortage of skills and practical knowledge to develop, manage, and implement automation solutions impede progress • High training costs and the accessibility of training programs limit enterprises from developing in-house skills	• Firms should consider leveraging experienced RPA resources from service providers / system integrators to help with initial deployment • Vendors can also play a significant role in helping enterprises train in-house resources

Key barriers to adoption and best practices to accelerate value realization from automation (page 2 of 2)

	Challenges	Best practices
Lack of a healthy automation pipeline	• Difficulty in identifying use cases to maintain a strong automation pipeline results in lack of scale • The inability to assess automation potential to prioritize use cases reduces value realization	• As enterprises look to scale up adoption, it is important to leverage a reusable framework to identify and prioritize processes for automation • Enterprises could consider leveraging process mining technologies to identify and prioritize potential use cases for automation
Identifying the right level of optimization opportunities	• The inability to identify the right level of standardization and optimization opportunities could significantly reduce long term value and derail automation initiatives • Automating non-standardized or broken processes with redundant steps further amplifies inefficiencies, resulting in much lower RoI	• Organizations should follow an approach where the processes are assessed for potential optimization opportunities before automation • Process mining solutions can help discover processes and identify inefficiencies and process improvement opportunities
Orchestration of human + machine workforce	As enterprises scale up automation deployments, the inability to manage human + machine dynamics in a streamlined manner poses a significant challenge in carrying out end-to-end and long running processes	Enterprises could consider leveraging process orchestration tools to help efficiently orchestrate the workflow across the human workforce, digital workers, and system steps
Implementation challenges	• Lack of a better understanding of TCO, skills-set needed, and change management efforts can lead to projects taking longer than expected • Business users lack the required automation skills and IT developers lack business context, which results in inefficient collaboration and much back-and-forth in implementing solutions	• Expectations around time and effort should be managed effectively to create the desired impact • Enterprises should create the right environment (through CoEs, for example) so that business SMEs can work efficiently with the development team. A hub-and-spoke CoE model has proven to be most effective for successful automation implementation

RPA vendors are also making investments across various themes to help enterprises overcome these challenges (page 1 of 2)

Key investment themes for RPA vendors

Cloud and mobility

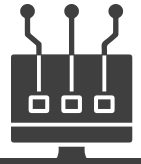
- Cloud-based modernization is experiencing increased traction globally, and as the remote working model becomes the norm, the demand for cloud and mobility is expected to rise further
- RPA deployments on the cloud are also growing, and vendors are forging partnerships with cloud providers to make their RPA products cloud-ready
- COVID-19 has further accelerated the need to ensure quick time-to-value, enable support for remote workforce, and enhance flexibility and agility in business operations. This is driving vendors to offer RPA on cloud or via a SaaS-based delivery model and provide dedicated mobile apps for remote monitoring and governance of RPA robots
- Leading RPA vendors are rearchitecting their RPA products into a cloud-native architecture based on loosely coupled containerized microservices that can scale independently. This rearchitecturing is expected to help enterprises reap the full benefits of the cloud, including lower TCO, business continuity, dynamic scalability, optimal resource utilization, easy extensibility, faster updates, and quicker issue resolution

Human-robot collaboration

- With the concept of a robot for every employee driving the democratization of RPA across the organization, the demand for smoother human-robot collaboration is on the rise
- COVID-19 has further accentuated the need to improve employee productivity and experience, making it a key driver for RPA adoption
- While leading attended RPA vendors have traditionally supported front-office use cases, other vendors are enhancing their offerings and better enabling employees to leverage robots on demand and collaborate with them through features such as unified screen, agent guidance, and next-best-action recommendation
- This is expected to accelerate RPA adoption among employees to obtain proactive updates on urgent customer requests, ensure faster issue resolution, and collaborate with colleagues

RPA vendors are also making investments across various themes to help enterprises overcome these challenges (page 2 of 2)

Key investment themes for RPA vendors

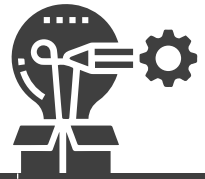


Integration with complementary technologies

- To help enterprises adopt multiple levers for digital transformation, RPA vendors are expanding their spectrum of technology capabilities
- Offering a holistic/integrated automation solution through in-house investments or partnerships in complementary technology areas is helping expand the scope of RPA
- RPA vendors are investing extensively to develop built-in AI/cognitive capabilities such as ML and NLP, which can be leveraged to offer in-house solutions for IDP and chatbots
- Desktop process mining and process orchestration is another area experiencing both organic and inorganic investments

Marketplace of pre-built automations

- To reduce automation development speed, several RPA vendors have started to offer an online digital worker marketplace that provides vendor-validated pre-built automations or robots with skills
- Vendors are also improving the sophistication of marketplaces by:
  - increasing the number of assets available
  - constituting a formal quality check process for the assets uploaded
  - providing a built-in interface to connect to the online marketplace from within the design studio
  - offering recommendations to the developer to use pre-built robots to create the automation workflow



Product training and partner enablement programs

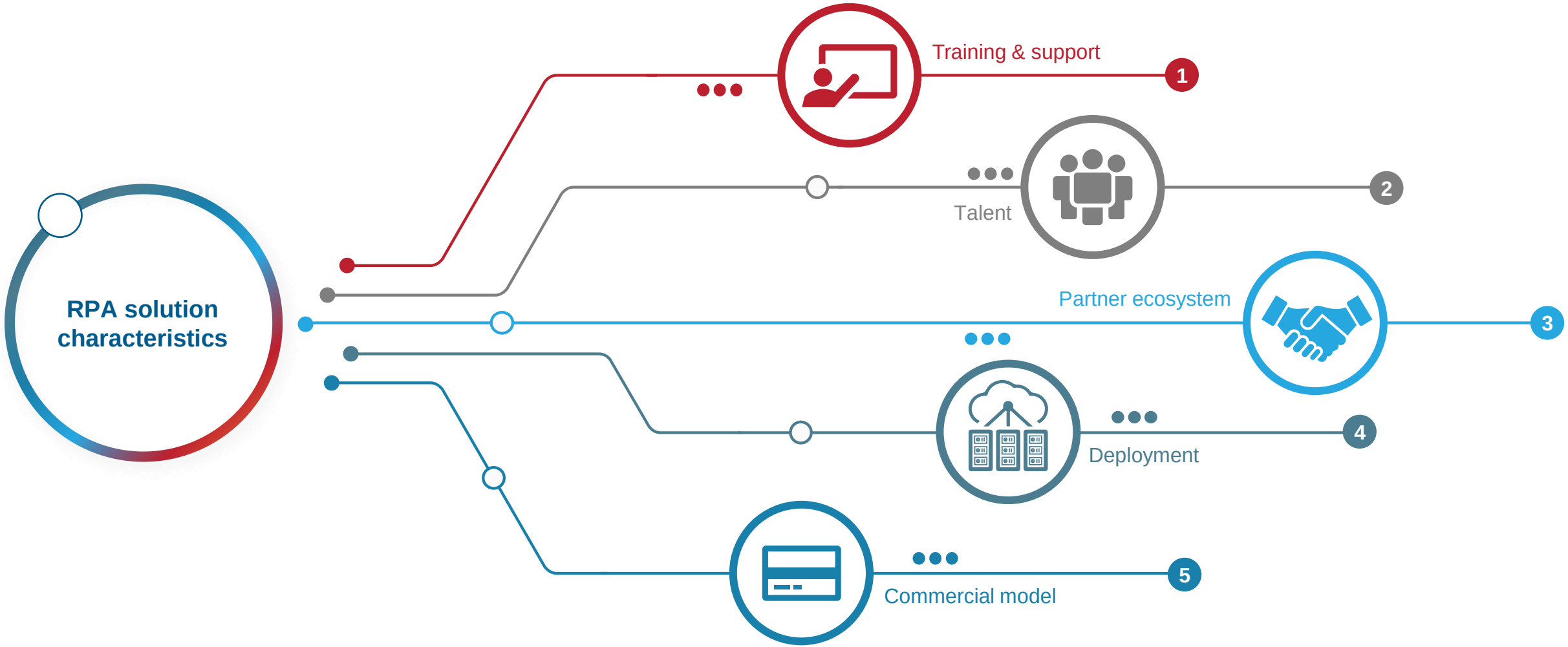
- Vendors are boosting their training and education programs by constituting online training academies to address RPA skills gap in the market
- Investments in free training courses/materials, support for regional languages, and an active online community of users are expected to help accelerate enterprises' automation journeys
- There is increasing vendor focus on strengthening the SI partner ecosystem and better enabling partners to help enterprises jump-start the program while they continue to train in-house resources
- Another key area of investment is specially designed success assurance programs to provide the necessary shadowing and support to newly onboarded partners

07

RPA solution characteristics

- Elements of solution characteristics
  - Training and support
  - Talent
  - Partner ecosystem
  - Deployment
  - Commercial model

RPA solution characteristics can be classified into five categories – training & support, talent, partner ecosystem, deployment, and commercial model



Solution characteristics | training and support

RPA vendors provide client training through online training portals and on-premise sessions spanning different locations; vendors are developing online community ecosystems for crowdsourcing support to users

Availability of training support
Percentage of vendors

Training by RPA vendors
>95%

Training by partners
70-75%

Different training modes and support tools
Percentage of vendors

Training modes, languages supported, and location of training

- Travel restrictions imposed due to COVID-19 are driving vendors to invest heavily in online training portals and forge local partnerships to expand the reach of their training programs to remote locations
- More than 85% of vendors have constituted an online portal with self-paced training modules and interactive training sessions providing greater flexibility to their clients
- Vendors are offering free training modules to improve awareness and provide customized courses to best meet the requirements of different end-user groups, such as business analysts and RPA developers
- Both classroom and online training are offered, primarily in English. Vendors also leverage their training partners to provide on-site training in regional languages, such as Spanish, French, German, Japanese, and Hindi
- In addition to providing subtitles in local languages to reach a broader audience, some vendors have started to support their complete online portals in regional languages

Online community forums and RPA community edition

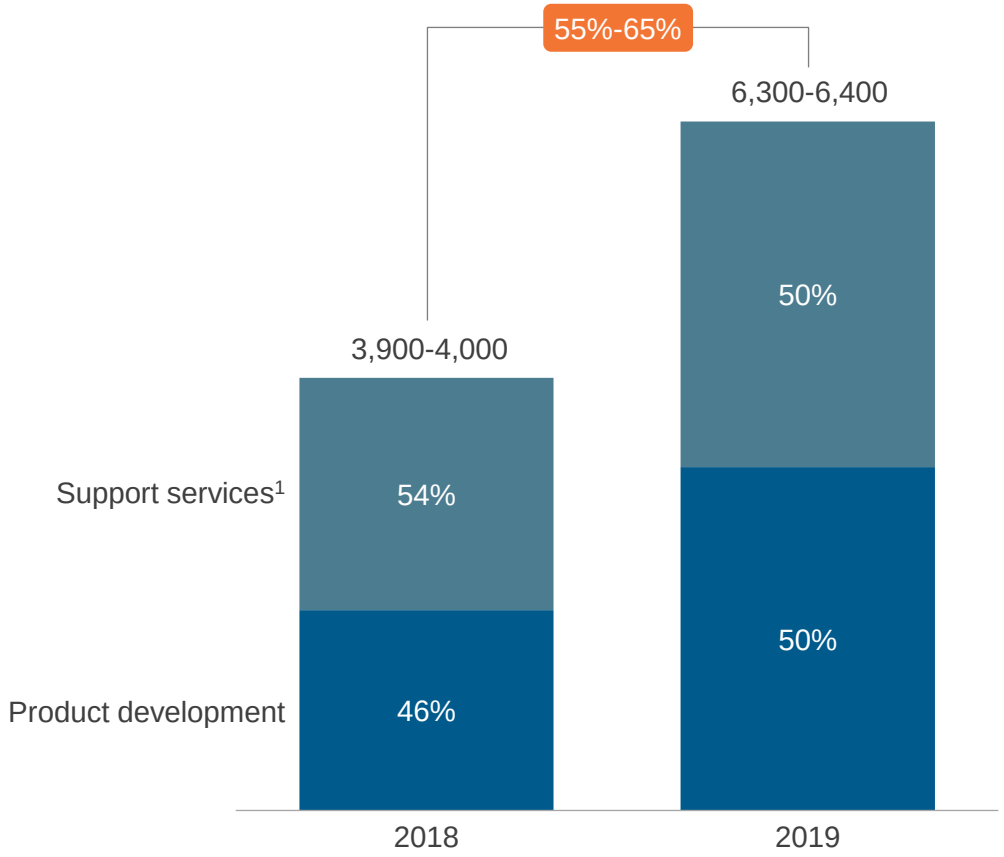
- Almost 75% of vendors have constituted an online community forum, where users can interact with each other to share best practices and resolve queries. The forum also enables vendors to gather inputs on user challenges and ensure proactive communication around product upgrades
- More than half of the vendors have launched a free community version of their platform to improve accessibility and familiarity of the product
- While some vendors provide restricted access in terms of features in the community edition, others offer the full version for free trial for a limited time

Sample size: Based on the responses of 21 RPA technology vendors
Source: Everest Group (2020)

Solution characteristics | talent (page 1 of 2)

Vendors are expanding their RPA solution teams to enhance their offerings and better support enterprises in accelerating their automation journeys

Distribution of RPA software vendor FTEs by type of work
Percentage of FTEs



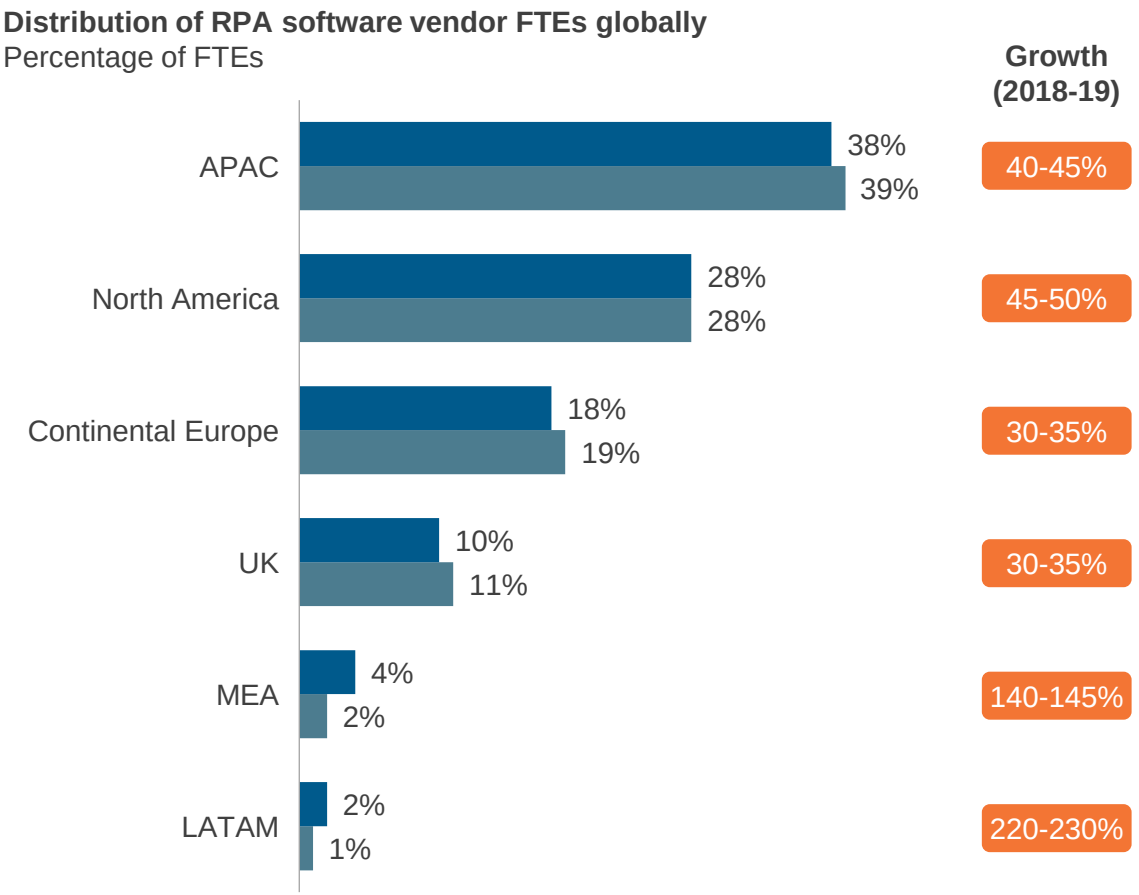
1 Support services include FTEs in training and implementation
Source: Everest Group (2020)

- RPA vendors are investing significantly to expand their product development teams to include developers with diversified skill sets spanning technologies such as IDP, BPM, and process mining to meet the rising demand for a holistic automation solution
- As RPA vendors tackle more complex use cases, they are investing in talent to strengthen their AI/ML, NLP, and analytics capabilities
- A rapidly growing client base, increasing buyer expectations around implementation support, and the prevailing skills gap have compelled vendors to strengthen their training and support services team
- Customer success and support services have emerged as a key focus area for buyers, pointing to the high expectations from RPA vendors to provide the necessary support to adopt at scale
- While market uncertainty might have led some leading RPA vendors to lay off workers, they have continued to invest in talent. Vendors are expected to continue recruitment in the support services and development teams to keep pace with product innovations, enhance the sophistication of RPA offerings, and better serve customers

Solution characteristics | talent (page 2 of 2)

Accounting for the largest share of RPA software vendor FTEs, North America and Asia Pacific continue to be the hotspots for RPA vendors for sourcing skilled individuals to develop a strong talent pool

Distribution of RPA software vendor FTEs globally
Percentage of FTEs



- North America accounts for nearly 28% of the total global FTEs, as a majority of large RPA vendors have their headquarters in the region. The Silicon Valley culture also ensures the availability of a strong RPA talent pool
- Despite some of the recent layoffs impacting India's share of RPA FTEs, APAC continues to hold the largest share of RPA software vendor FTEs. Australia, Japan, and Singapore have emerged as other key locations in the region where RPA vendors have done active hiring in the recent past, owing to the availability of talent at a significantly lower cost
- Continental Europe continues to experience growth in FTEs to provide localized product support to clients in the region. Services and support to the United Kingdom and Western Europe are increasingly being delivered through nearshore locations in Eastern Europe
- RPA vendors are gradually opening offices in LATAM and MEA to capitalize on the untapped market potential, increasing the share of FTEs from these regions

Sample size: Based on the responses of 21 RPA software vendors; the total number of FTEs has grown by almost 45-50% from ~7,000 in 2018 to ~10,000 in 2019
Source: Everest Group (2020)

Solution characteristics | partner ecosystem (page 1 of 3)

RPA vendors are partnering with technology vendors to improve access to collaborative technologies and with service providers for marketing, selling, and product support

RPA software vendors' partner ecosystem

NOT EXHAUSTIVE

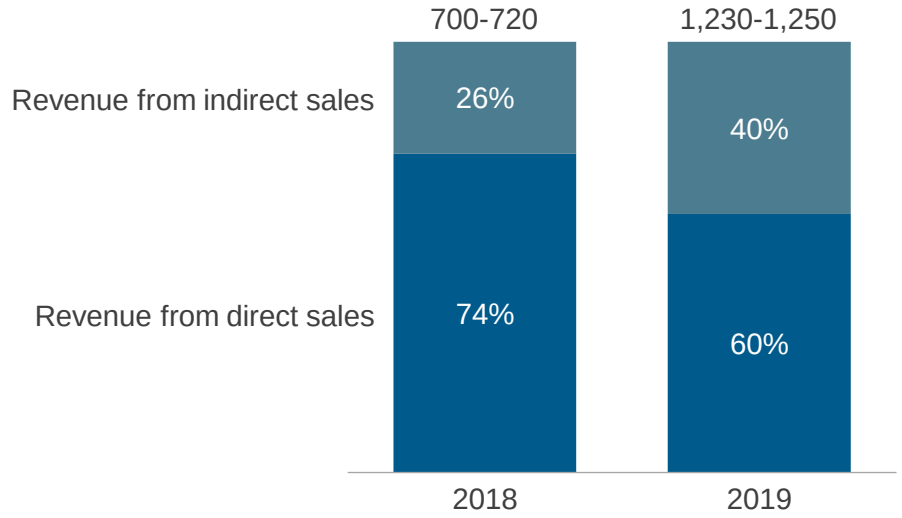
	Service partners	Technology partners
Primary role	Leveraged for their services expertise spanning areas such as: • Reselling • Training • Consulting • Implementation	Primarily leveraged for easier integration with complementary capabilities such as IDP, process mining, IVA, BPM, cloud, cognitive/AI services, analytics, and virtualization
Types of partners	IT/BPS service providers and system integrators	A mix of large software companies and start-ups
Examples of partners	accenture, Capgemini, Cognizant, Deloitte., EY Building a better working world, IBM, KPMG, pwc	ABBYY, amazon, Google Cloud, CYBERARK, celonis, Microsoft

Solution characteristics | partner ecosystem (page 2 of 3)

The partner ecosystem plays a key role in expanding the product outreach across different geographies and industries and in meeting buyer expectations around training and implementation support

Distribution of services partners by scope of partnership
Percentage of partners[1]

RPA software license revenue split by sales channel
Percentage of revenue



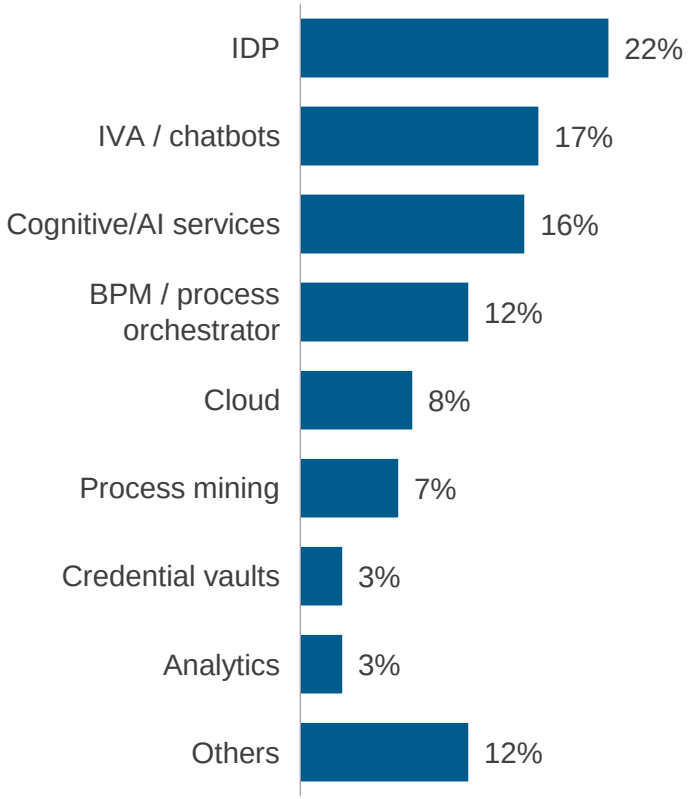
- The share of revenue from indirect sales grew more than direct sales and currently constitutes nearly 40% of the total revenue. RPA vendors continue to strengthen their partner ecosystem to expand the reach of their offerings and leverage their experience for delivering professional services consulting and implementation
- Although vendors have a large number of resellers and implementation partners, there is scope to onboard more training partners
- Vendors are increasingly investing in partner enablement initiatives, with specially designed success assurance programs to provide the necessary support to newly onboarded SI partners and better equip them to deliver superior customer support services
- Some vendors also categorize partners based on past experience and performance to help clients identify the most appropriate partner for them. Partners are also offered specialized training and certifications to empower them with the right skills and tools to deliver better services to end clients

1 The same partner could cut across two or more areas, so the total can be more than 100%
Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

Solution characteristics | partner ecosystem (page 3 of 3)

RPA vendors are actively partnering with vendors of complementary technologies such as IDP, IVA, BPM, and process mining to cater to the rising demand for a holistic automation solution

Partnership areas with technology partners
Percentage of reported technology partnerships



- IDP and IVA are the top two collaborative technology areas with the highest number of technology partnerships. Such partnerships are expected to help vendors expand the scope of RPA and align their offerings to cater to the rising demand for a holistic automation solution through best-of-breed technology integrations
- AI continues to remain among the top areas where a high number of alliances are being formed for capabilities such as ML, NLP, and computer vision. Vendors are leveraging these partnerships to develop pre-built AI skills, which can be leveraged out-of-the-box to automate more cognitive and complex processes
- The need for effective orchestration capabilities to manage a hybrid workforce is driving vendors to partner with BPM / process orchestration solution providers
- Partnerships with process mining vendors are being leveraged to identify new use cases for maintaining a healthy automation pipeline. It also aids in faster development of initial automation workflows through the discovered process maps. Several RPA vendors have partnerships with classic process mining vendors such as Celonis, as well as DPM vendors such as FortressIQ
- The cloud is also a key collaborative technology area for RPA vendors due to increased market demand for deployments on cloud and SaaS offering
- Microsoft, CyberArk, Google, ABBYY, AWS, and IBM Watson are some of the most common technology partners for RPA vendors

Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

Solution characteristics | deployment (page 1 of 2)

Almost all vendors support both on-premise and cloud deployments; the SaaS delivery model has gained significant market traction in the past one year

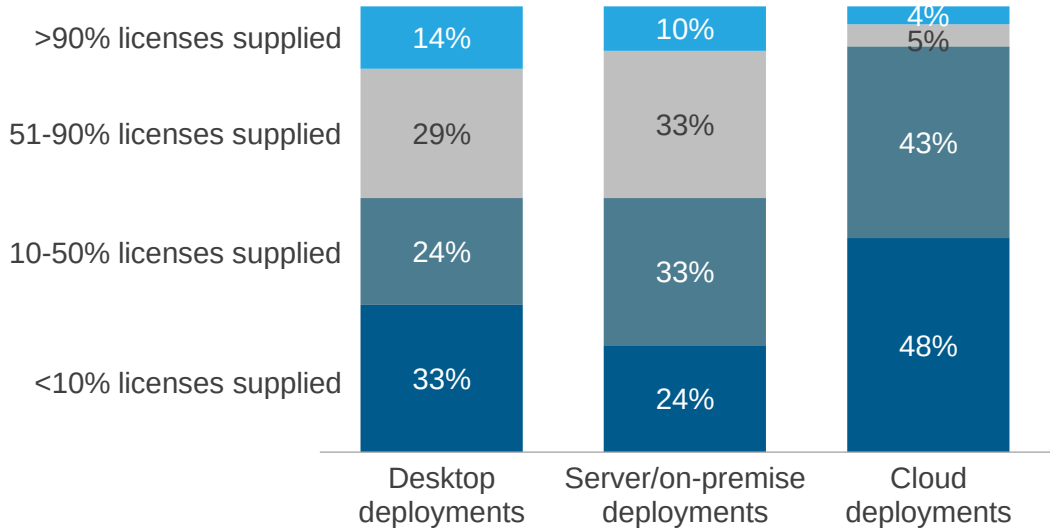
Supply prevalence of deployment models offered
Percentage of vendors

SaaS (hosted by vendor)
>75%

On-premise[1]
>95%

Public / private cloud
>95%

Split of vendors by percentage of licenses supplied
Percentage of vendors



- To meet the rising demand for cloud deployments, a majority of vendors have started focusing on enhancing support for public cloud deployments. Vendors are increasingly launching their own cloud or SaaS offerings, as organizations have become less skeptical about data protection and security concerns with cloud deployments
- While RPA deployment on the cloud can be achieved with the lift and shift of traditional RPA solutions, some vendors are rearchitecting their products to make them cloud-native to enable enterprises to reap the full benefits offered by the cloud
- Almost all vendors support on-premise deployments, which continue to be the most prevalent among enterprises, especially in verticals with higher apprehensions around data security

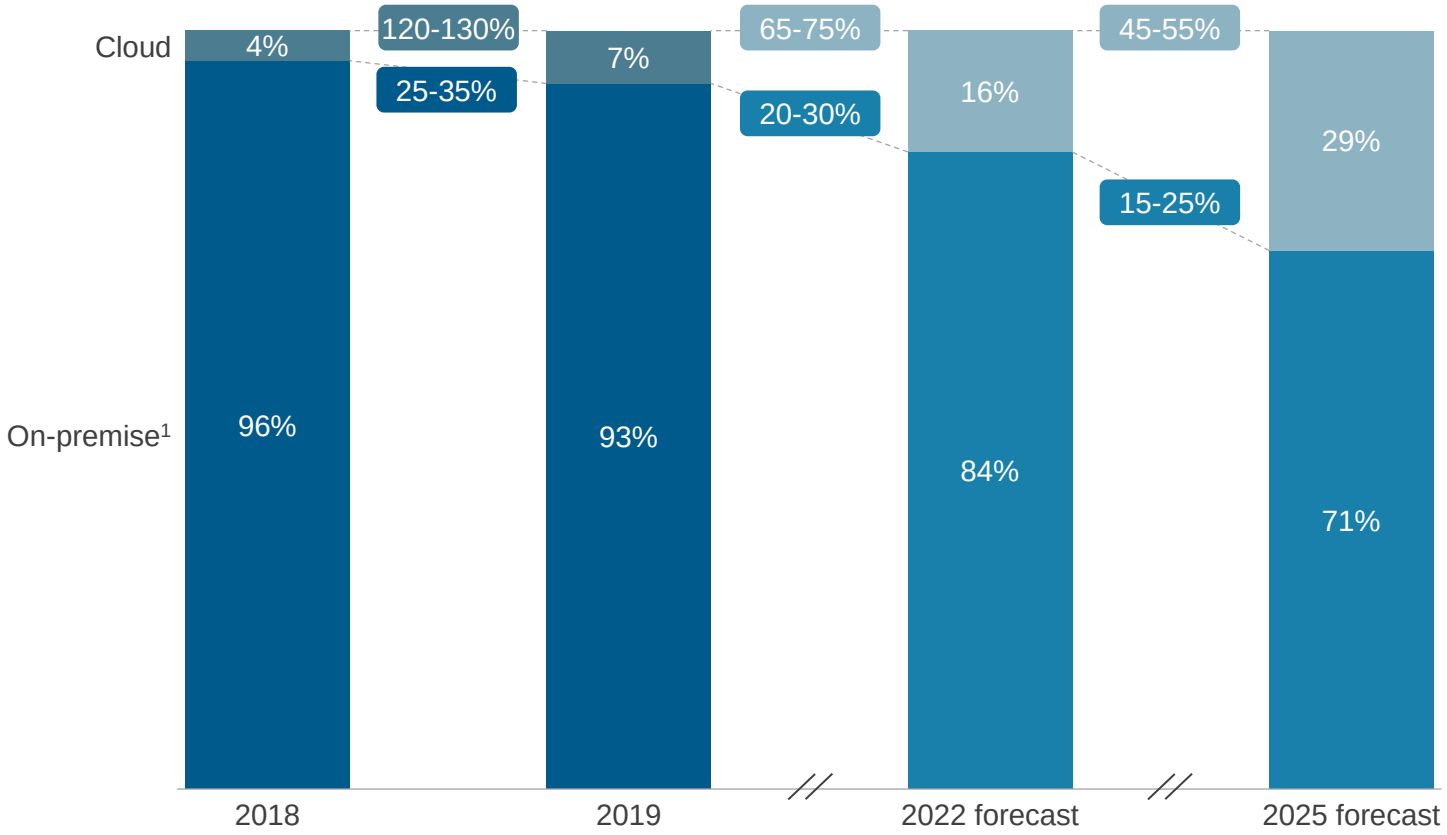
1 On-premise includes deployments on both servers and desktops/laptops
Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

Solution characteristics | deployment (page 2 of 2)

RPA deployments on the cloud are expected to gain further momentum due to the benefits offered by the cloud to facilitate business continuity and cost optimization

Split of RPA licenses supplied by nature of deployment[1]
Percentage of licenses

X% CAGR



1 On-premise includes deployments on both servers and desktops/laptops
Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

- While cloud deployments currently hold a smaller share of the total deployed licenses, increasing awareness about the cloud's benefits – such as reduced TCO, higher flexibility to scale, and easier integration with sophisticated AI/ML capabilities offered by cloud providers is driving pent-up demand for cloud deployments
- COVID-19 has further accelerated the demand for cloud deployment to improve accessibility and enable remote workforce. The SaaS offering for RPA is also emerging as a key trend to reduce infrastructure requirements and maintenance costs
- While a majority of RPA vendors currently offer a cloud-based orchestrator to control and monitor automated workflows, some are investing to offer a cloud-based design studio and enable robot execution on the cloud

Solution characteristics | commercial model (page 1 of 2)

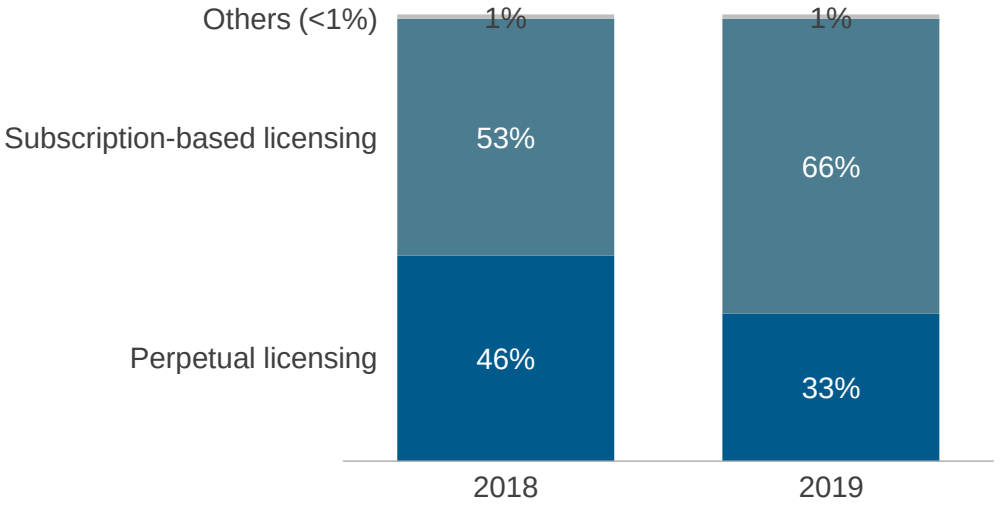
Low upfront investments and greater flexibility to scale up or down are driving the shift from perpetual licensing to subscription-based licensing models

Availability of commercial models
Percentage of vendors

Perpetual licensing
55-65%

Subscription-based licensing
>95%

Adoption of commercial models
Percentage of clients



- RPA vendors, in general, have moved away from perpetual licensing to offer an annual/monthly subscription-based licensing model, which is also preferred by clients due to a relatively quicker RoI and low upfront investment
- The perpetual model requires enterprises to pay a one-time upfront fee to purchase robots and an annual maintenance fee, and it might result in higher savings as compared to the subscription model in the longer run. However, increased buyer preference to see the impact of RPA from the first year and higher need for flexibility to scale have driven down the adoption of the perpetual pricing model
- Subscription-based pricing is done on a monthly or annual basis, and clients are usually charged per robot or per user. This pricing model experienced increased adoption in 2019, with over 65% of clients preferring this model, as it provides greater flexibility to scale RPA deployments based on requirements and renew subscriptions accordingly
- Subscription-based pricing is expected to become more prevalent as the market gains greater maturity and more vendors start offering a SaaS version of their RPA products

Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

Solution characteristics | commercial model (page 2 of 2)

Fixed capacity-/per robot-based continues to be the most prevalent pricing mechanism for RPA; the entry of big-tech and larger automation vendors is driving the availability of unlimited usage-based pricing models

Availability of commercial models – licensing basis
Percentage of vendors

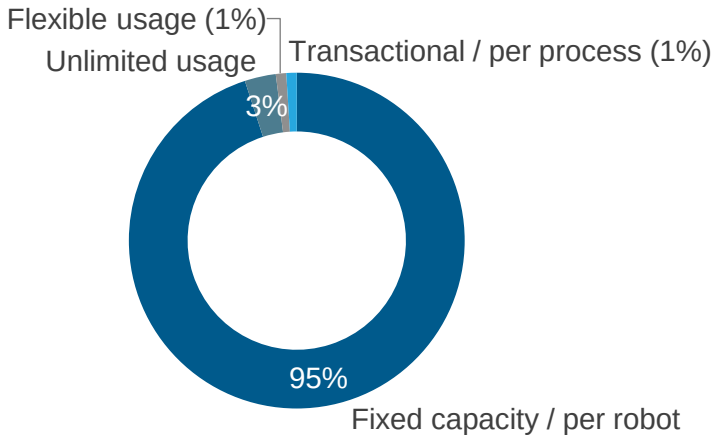
Fixed capacity / per robot
>90%

Transactional / per process
35-40%

Unlimited usage
15-20%

Flexible usage (e.g., per hour of license usage)
10-15%

Adoption of commercial models – licensing basis
Percentage of clients



- Under fixed capacity-based pricing, enterprises are charged on the number of robots licensed or a fixed capacity. It is the oldest pricing mechanism and, therefore, continues to account for the highest adoption among clients
- A changing supplier landscape, with the entry of big-tech and larger automation vendors in the RPA market, is driving the availability of unlimited usage-based pricing models and exerting a downward pricing pressure. As the market matures and more organizations look to scale up, we expect market adoption of this licensing model to increase
- The demand for cloud will drive the availability and adoption of output-oriented pricing, such as flexible usage-based or transaction-based models

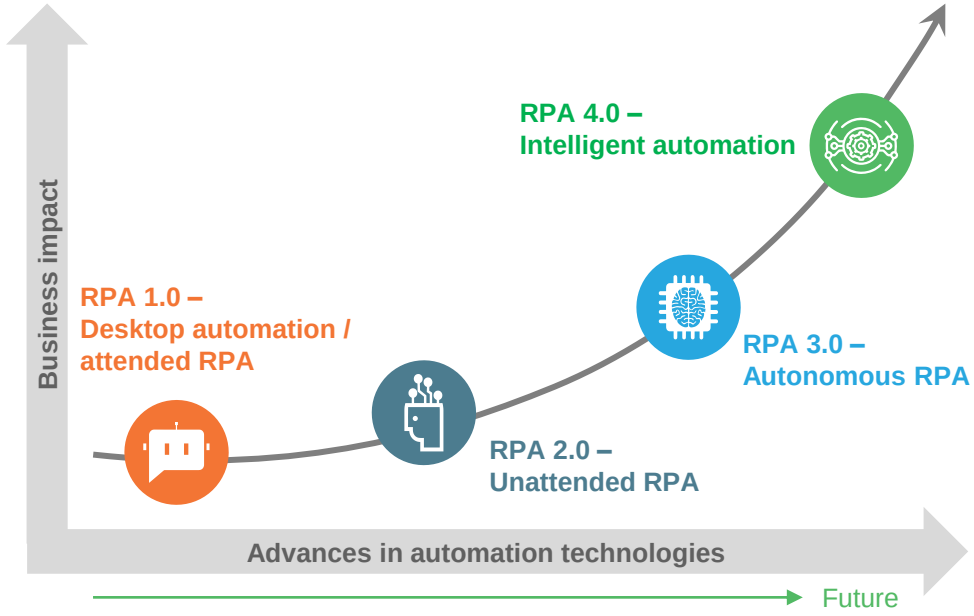
Sample size: Based on the responses of 21 RPA software vendors
Source: Everest Group (2020)

08

RPA product capabilities and trends

Advances in RPA technologies can be best described in terms of product generations

RPA product generations



- Multi-tenancy and SaaS delivery model
- Diagnostic, self-managing, and self-healing robots
- Expanding libraries of pre-built automations
- Verticalization of RPA solutions
- Enhanced features for robot development and management
- Integration with complementary technologies

Objective	Deployment	Technology capability
RPA 1.0 – Desktop automation / attended RPA		
Improve workforce productivity and drive cost savings	Workers' desktops/ laptops	• Task automation at individual worker level • Partial automations • Difficult to scale
RPA 2.0 – Unattended RPA		
Automate front- and back-office tasks through scalable virtual workforce	On-premise (physical desktops and VMs)	• Centralized robot management (scheduling/queuing) • Robot performance analytics • Manual intervention required to control and manage robots • Batch processing and inability to handle screen/system changes
RPA 3.0 – Autonomous RPA		
Enable real-time exception handling and improve flexibility to manage the virtual workforce	Cloud, on-premise, and hybrid	• Workflow and business intelligence • Human-in-the-loop; combination of attended and unattended RPA • Dynamic load balancing and auto-scalability • Not capable of processing unstructured data
RPA 4.0 – Intelligent automation		
• Expand the scope of RPA to automate end-to-end processes and drive business outcomes • Accelerate the scaling up of automation initiatives	Cloud/SaaS, on-premise, and hybrid	• RPA integrated with AI-powered solutions (e.g., IDP, IVA) and other complementary technologies (e.g., BPM, process mining) • Pre-built robot libraries to reduce development time • Human-robot collaboration to automate end-to-end processes • Voice-based robot development and control • AI-based skills to automate judgment-intensive processes • Predictive and prescriptive analytics; license optimization • On-demand scaling and intelligent load balancing

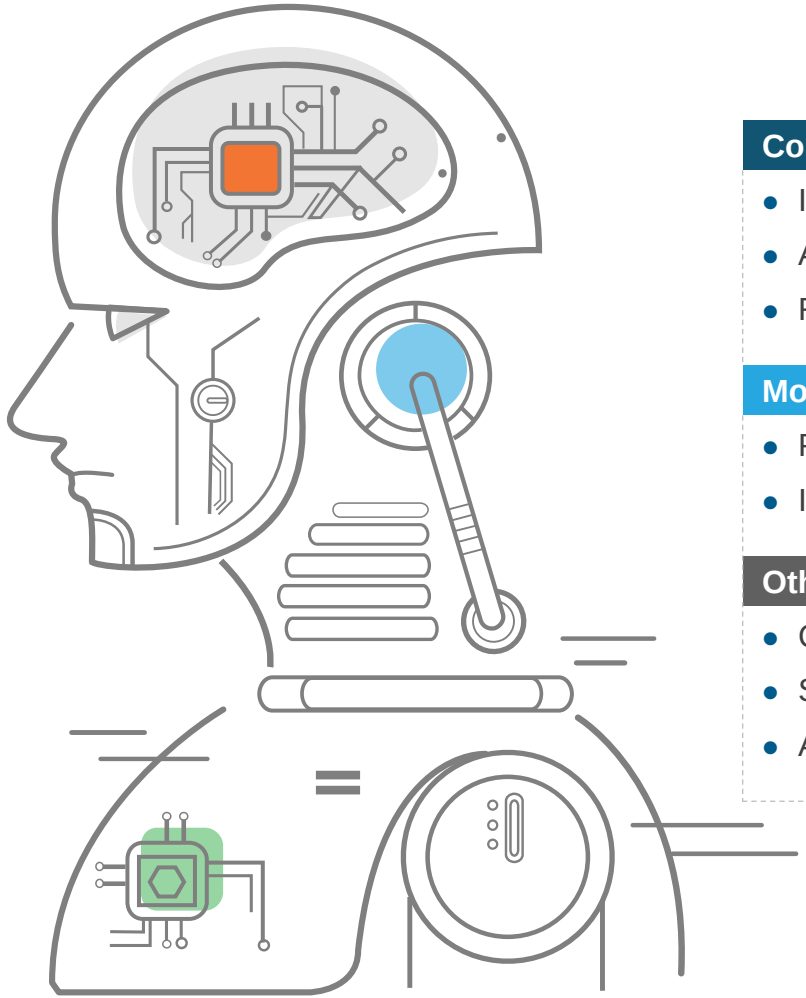
RPA technology continues to evolve with a host of native capabilities to help enterprises achieve superior outcomes

Development and integration

- Universal process recorder
- ICA protocol / native support for Citrix
- Online digital worker marketplace
- Desktop Process Mining (DPM)
- Automating the automation
- Built-in wireframe for developing automations

Human-robot collaboration

- AI-based next-best-action
- On-screen agent guidance
- Human-in-the-loop



Control and management

- Intelligent workload balancing
- Auto-scalability
- Robot life cycle management

Monitoring and analytics

- Predictive SLA monitoring
- IT infrastructure monitoring

Others

- Cloud-native RPA
- Security and compliance
- AI skills

RPA product capabilities (page 1 of 4)

Development and integration

Universal process recorder	Several vendors offer different process recorders for web and desktop applications to record user actions and develop automation workflows. A universal process recorder refers to a single recorder that can identify the underlying application type and automatically apply the corresponding object recognition technique (DOM-/COM-/image-based). Universal recorder enhances ease of use as business users do not need to manually select the recorder based on applications being automated. It also helps to record processes involving multiple applications in one go.
ICA protocol / native support for Citrix	This refers to built-in capability of the platform to interact with Citrix ICA protocol to get access to underlying UI elements using native control IDs in Citrix environments. Leveraging ICA protocol for Citrix automations could enable users to build more resilient and stable automations with less effort.
Online marketplace for pre-built automations	Vendors have started building/offering an online marketplace that allows partners and customers to exchange vendor-validated pre-built reusable automations including robots for horizontal and industry-specific processes (e.g., accounts payable and claims/mortgage processing), or integrations with cognitive skills such as Natural Language Processing (NLP) and computer vision. This helps develop an ecosystem to enable easy access to a large and growing repository of reusable automation components to reduce development time for enterprises.
Desktop Process Mining (DPM)	DPM refers to the ability to: • Capture user actions simultaneously across various user desktops by recording keystrokes, mouse-clicks, activity screenshots, etc. • Generate process maps capturing the different process variants with the sequence of tasks/steps involved • Extract relevant business insights such as process optimization/automation opportunities
Automating the automation	Vendors are increasingly leveraging technologies such as process mining to discover processes, find the optimal process variant, and identify use cases for automation. Automating the automation refers to an innovative capability, wherein based on the optimal process variant for the identified use cases, the RPA platform automatically creates & adds respective automation workflows directly in the automation design studio, which can be further refined or fine-tuned by users. This is a step forward in enabling higher ease of automation development to help enterprises scale up fast.

RPA product capabilities (page 2 of 4)

Development and integration

Built-in wireframe for developing automation	Wireframe refers to a built-in framework in the development studio that acts as a toolset to ensure consistency and quality in automation creation. It helps enforce a standard / best practices-driven way of developing automation workflows. It reduces the variations in the ways in which different users could develop automations for the same use case, ensuring quality control and governance. These automation workflows could then be customized/fine-tuned based on specific requirements.

Human-robot collaboration

AI-based next-best-action	This is an advanced capability that refers to the use of AI/ML to identify patterns based on past customer behavior/interactions and make recommendations for the next-best-action to help employees provide better customer service. This could include suggesting upsell/cross-sell opportunities to the agent based on past interactions or suggesting relevant questions to ask for faster resolution of customer grievances.
On-screen agent guidance	Attended robots can also be employed to provide real-time, on-screen, step-by-step process guidance to the human agent through an interactive UI. It could be made flexible, easy to develop, and intuitive, using features such as help bubbles and pop-ups, ensuring interaction with the agent through input fields. It helps agents to follow a pre-defined process, for e.g., to execute certain customer requests, and reduces training time for new employees.
Human-in-the-loop	Human-in-the-loop refers to availability of a user interface to enable a human agents to interact or exchange process-related information with robots in near real-time, while the robot waits for the action to be performed by the human agent. It helps enable better human-robot collaboration, manage exceptions in real-near time, and handle long running workflows that require manual inputs to complete a process.

RPA product capabilities (page 3 of 4)

Control and management

Intelligent workload balancing	In addition to dynamic workload balancing that refers to a platform's ability to distribute workload/tasks to the available robots based on process priorities/SLAs, vendors have started offering intelligent workload balancing capability. This refers to the ability of the platform to use embedded AI/ML to identify work distribution patterns and learn to distribute the workload autonomously over time. A series of load balancing algorithms could be employed by the platform to identify and assign critical tasks to the available robots in case of an expected resource crunch.
Auto-scaling of robots	Auto-scaling of robots refers to the RPA platform's ability to scale the number of robots up or down to meet the variable processing demand and fluctuations in transaction volumes almost instantly. It can be done for both server- or cloud-based deployments. In server deployments, the scalability is limited by the server capacity; whereas, in cloud deployments, greater scalability is possible.
Robot life cycle management	Robot life cycle management refers to the platform's built-in capability for version control, out-of-the-box integrations with third-party provider of version control system (e.g., GIT), ability to compare process versions across environments, version roll-back, and features for collaboration and implementing change control across process life cycle (i.e., development, test, and production).

Monitoring and analytics

Predictive SLA monitoring	Predictive SLA monitoring refers to the ability to monitor the processes based on pre-defined business SLAs, predict/forecast any gaps in meeting critical SLAs, and notify the users in advance in case any critical SLAs are not going to be met. It would also involve indicating the number of additional robots/licenses needed to meet critical business SLAs.
IT infrastructure monitoring and optimization	In addition to robot utilization, it is increasingly becoming important to monitor IT infrastructure being consumed by robots including out-of-the-box monitoring of metrics such as CPU utilization and memory. Providing recommendations to optimize infrastructure utilization and manage system performance using historic performance data can significantly reduce downtime and enhance productivity.

RPA product capabilities (page 4 of 4)

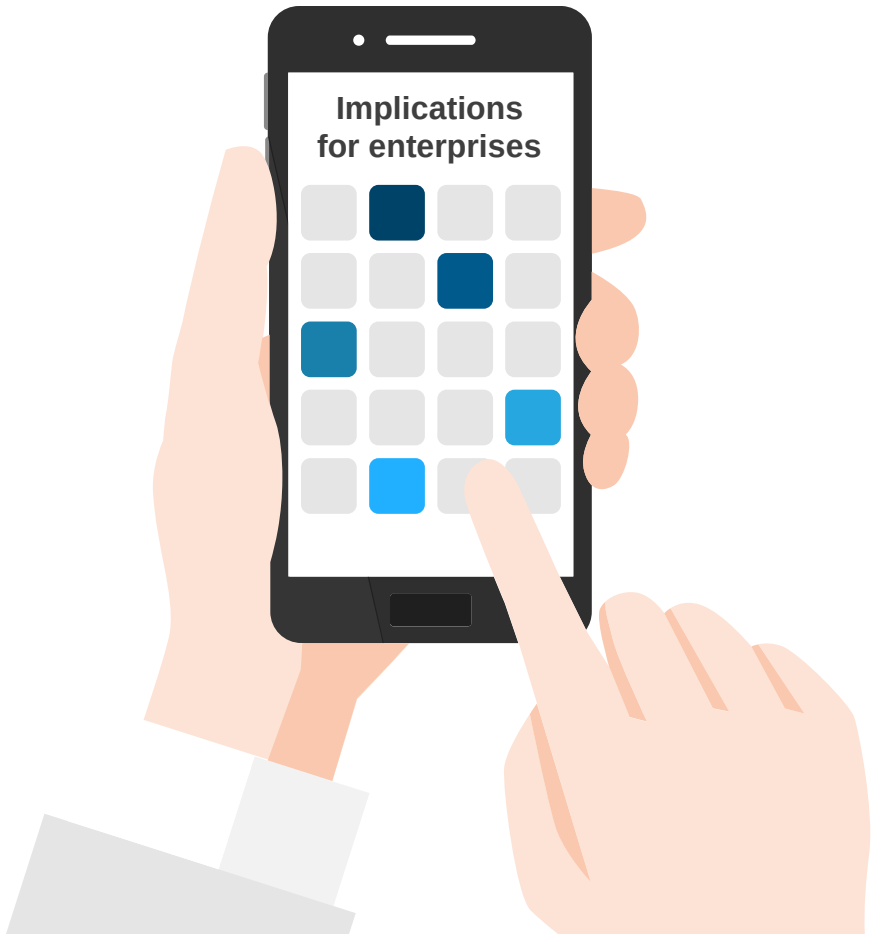
Others

Cloud-native RPA	Cloud-native applications are developed using a set of methodologies to run scalable applications in modern environments such as public, private, and hybrid clouds. Some of the key features of a cloud-native architecture include loosely coupled microservices, containers, and immutable infrastructure. Cloud-native RPA is different from traditional RPA that is lifted and migrated to a cloud-based server. It is better suited to harvest the full benefits of cloud and deliver superior benefits across various parameters such as dynamic scalability, resource utilization, extensibility, upgrade management, high availability, faster deployment, disaster recovery, and lower TCO.
Security and compliance	Built-in credential store enhances RPA deployments' security by enabling enterprises to store passwords in an encrypted format and made available to robots in a secure manner, as per process requirements. An increasing number of vendors are partnering and providing out-of-the-box integration with specialist providers of credential vaults, such as CyberArk, for enhanced security. Other security features in enterprise-grade solutions are role-based access, segregation of roles across environments, logging configuration, ability to automate behind locked screen for GDPR compliance, and Veracode security certification.
AI skills	Vendors are increasingly investing to develop native AI/ML and NLP capability and provide these as skills in the design studio, which can be leveraged out-of-the-box to automate more cognitive and complex processes. This helps expand the scope to use cases that involve extracting and classifying text from semi-structured or unstructured data sources such as emails and letters and integrating RPA robots with chatbot services to enable features such as the ability to control robots using chat/text interface or voice commands.

RPA product capability future trends

	Most prominent technologies	Emerging technologies
Development and integration	• Thick client desktop applications to access robot design environment • Multiple built-in recorders for different kinds of applications, e.g., web recorders and desktop recorders • Visual drag-and-drop capabilities to design automation using pre-built functions in the action library	• Web-based automation design studios • Universal process recorder • Developing robots using voice commands • Increasing sophistication of the online digital worker marketplace and recommendations to use pre-built automations • Automated process discovery and creation of automation workflows
Control and monitoring	• Web-based control rooms to manage scheduled or event-driven robots • Robot performance analytics and license utilization dashboards • Manual workload balancing • Notification post SLA breaches	• Mobile applications for controlling and monitoring robots/processes • Controlling robots using voice commands • On-demand scaling and intelligent workload balancing • Predictive and prescriptive analytics and optimization of license utilization
Human-robot collaboration	• Use of RDA / attended RPA robots to enhance worker productivity • Rules-based step-by-step agent guidance	• Interfaces to enable better human-robot collaboration and handle long running workflows requiring handoffs across human and digital workers • Desktop analytics and sentiment analytics to provide next-best-action recommendation and agent guidance to improve customer interactions
Complementary capabilities	Automation of rules-based tasks involving structured and semi-structured data	• Native AI/ML and NLP capability provided out-of-the-box as AI skills to expand the scope of automation • Built-in IDP capability to process unstructured data sources and integration with chatbot services to enable voice-/chat-based robot control • Integration with process mining to discover as-is processes, identify optimization and automation opportunities, and develop automation workflows
Product architecture and hosting options	• Traditional RPA software built with a monolithic architecture, packaged and deployed as a single unit, developed for a specific computing environment / operating system • On-premise/server-based delivery models	• Cloud-native product architecture that leverages microservices and containerization to reap the full benefits of the cloud • SaaS delivery model

What do the latest developments in RPA solutions mean for enterprises?



Reduced TCO

- The SaaS delivery model and cloud-based deployments reduce the cost and effort of infrastructure management
- Cloud-native architecture further reduces enterprises' TCO due to the efficiencies offered by the lightweight microservices architecture, which consumes fewer resources on the cloud and requires lower IT maintenance overheads

Improved scalability and agility

- In addition to reducing TCO, the cloud / SaaS also enables dynamic scalability, optimal resource utilization, built-in disaster recovery, and lower risk of data loss, ensuring agility and improved business continuity
- It provides superior product support, with easy extensibility, faster upgrades, and quicker issue resolution

Improved ease and speed of automation development and deployment

- Process mining helps identify new use cases and enables automatic workflow creation to reduce the cycle time
- The increasing sophistication of online marketplaces, vertical-specific automation solutions, and pre-built connectors with enterprise applications help in faster and easier development and implementation

Employee enablement

- The human-in-the-loop capability better equips employees to leverage robots on-demand
- Agent-assist robots help automate day-to-day mundane tasks and provide next-best-action recommendations
- Desktop analytics helps identify productivity improvement opportunities and develop customized training programs for employees

Expanded scope of automation

- Integration with complementary technologies such as AI/ML, IDP, and IVA helps expand the scope of RPA to automate content-focused use cases and processes involving customer interactions
- Integration with BPM plays a key role in improving the orchestration of work between human and digital workers to automate end-to-end processes

09

RPA vendor landscape

- Vendors' RPA software market share by revenue
- Vendors' RDA / attended RPA market share by license revenue
- Vendors' market share by number of clients
- Vendors with the largest share of RPA software revenue in the top six industry verticals
- Vendors with the largest share of RPA software revenue in the top six business functions
- Vendors' share of RPA software revenue in major geographies

Automation Anywhere, Blue Prism, and UiPath are the top vendors in terms of RPA software revenue; some of the smaller vendors have also experienced over 100% YoY growth

Vendors' RPA software market share by revenue
(Vendors are listed in alphabetical order within each category)

>10%	Automation Anywhere, blueprism, UiPath
5-10%	NICE, PEGA, WorkFusion
1-4%	helpsystems, servicetrace, KOFAX, softomotive
<1%	Appian, AutomationEdge, DATAMATICS, lectroNeek, INTELLIBOT, Jacada, KRYON, nintex, nividous, PERPETUUITI, qruize

Vendors' year-over-year growth in RPA software revenue
(Vendors are listed in alphabetical order within each category)

>100%	Automation Anywhere, AutomationEdge, INTELLIBOT, nividous, qruize, UiPath
51-100%	blueprism, DATAMATICS, Jacada, servicetrace
11-50%	Appian, KOFAX, KRYON, NICE, nintex, PEGA, PERPETUUITI, softomotive, WorkFusion
<10%	helpsystems

Note: ElectroNeek started acquiring clients in 2019, so its 2018-19 year-over-year growth is not applicable
Source: Everest Group (2020)

NICE, Pega, and UiPath are the top vendors in terms of RDA / attended RPA license revenue

Vendors' RDA / attended RPA market share by license revenue
(Vendors are listed in alphabetical order within each category)

>20%	NICE, PEGA, UiPath
2-20%	Automation Anywhere, Jacada, softomotive
<2%	DATAMATICS, ElectroNeek, INTELLIBOT, KRYON, nividous, PERPETUUITI, servicetrace

Vendors' year-over-year growth in RDA / attended RPA license revenue
(Vendors are listed in alphabetical order within each category)

>100%	Automation Anywhere, INTELLIBOT, KRYON, nividous, UiPath
50-100%	DATAMATICS, Jacada, PERPETUUITI
<50%	NICE, PEGA, servicetrace, softomotive

Note: ElectroNeek started acquiring clients in 2019, so its 2018-19 year-over-year growth is not applicable
Source: Everest Group (2020)

Automation Anywhere, Blue Prism, HelpSystems, Kofax, Softomotive, and UiPath are the top vendors by number of clients

Vendors by number of RPA clients
(Vendors are listed in alphabetical order within each category)

>1,000	Automation Anywhere, blueprism, helpsystems, KOFAX, softomotive, UiPath
200-1,000	INTELLIBOT, NICE, nintex, PEGA, servicetrace
<200	Appian, AutomationEdge, DATAMATICS, lectroNeek, Jacada, KRYON, nividous, PERPETUUITI, qruize, WorkFusion

Vendors' year-over-year growth in number of RPA clients
(Vendors are listed in alphabetical order within each category)

>100%	Automation Anywhere, INTELLIBOT, nividous, qruize, UiPath
50-100%	AutomationEdge, blueprism, KOFAX, KRYON, PERPETUUITI
<50%	Appian, DATAMATICS, helpsystems, Jacada, NICE, nintex, PEGA, servicetrace, softomotive, WorkFusion

Note: ElectroNeek started acquiring clients in 2019, so its 2018-19 year-over-year growth is not applicable
Source: Everest Group (2020)

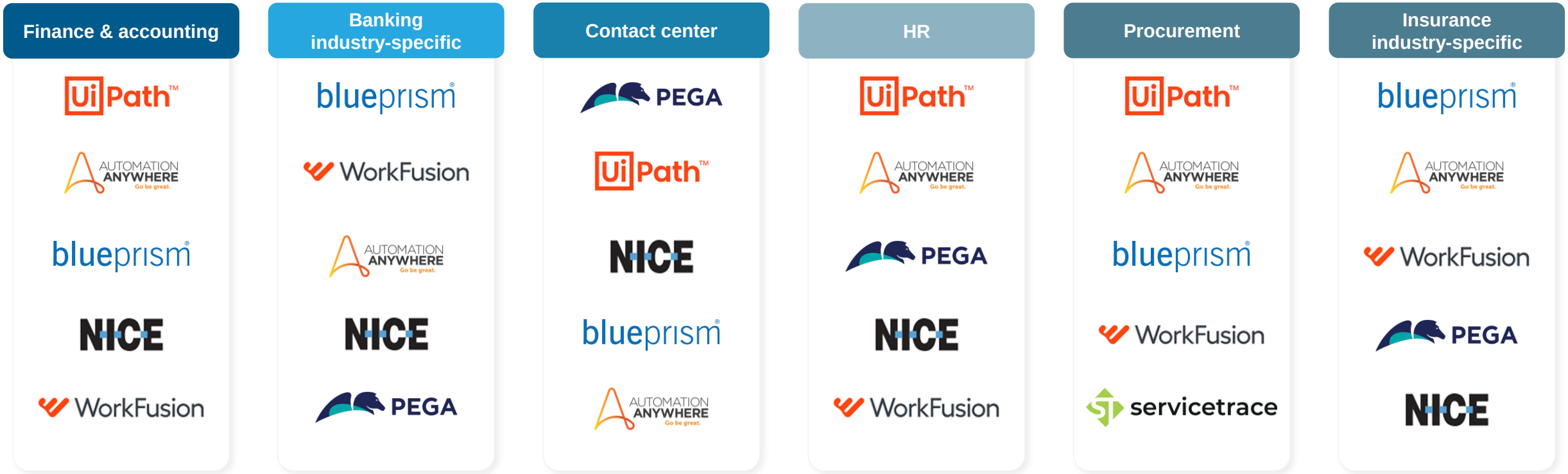
UiPath has the highest market share in most verticals; Blue Prism, Automation Anywhere, and NICE lead in banking, CPG & retail, and telecom industries, respectively

Vendors with the largest share of RPA software revenue in the top six industry verticals
Top five vendors with respect to RPA software revenue (in decreasing order within each category)

Source: Everest Group (2020)

UiPath, Automation Anywhere, and Blue Prism have dominant market share in the majority of business functions, followed by WorkFusion, NICE, and Pega

Vendors with the largest share of RPA software revenue in the top six business functions
Top five vendors with respect to RPA software revenue (in decreasing order within each category)



Source: Everest Group (2020)

UiPath has emerged as the Leader across most of the geographies; Automation Anywhere and Blue Prism continue to hold the highest market share in LATAM and UK, respectively

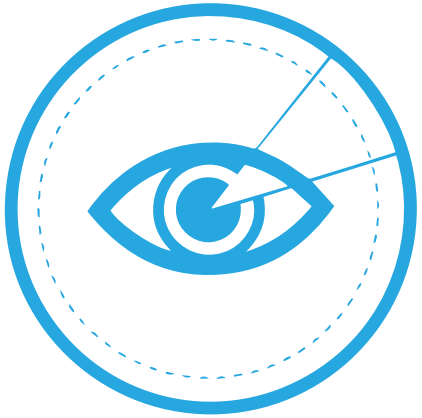
Vendors' share of RPA software revenue in major geographies
Top five vendors with respect to RPA software revenue (in decreasing order within each category)

Source: Everest Group (2020)

10

Outlook for 2021-22

Outlook for 2021-22 (page 1 of 3)



Amplified demand to come to fruition

- The COVID-19 crisis brought home the importance of digital transformation and the need to accelerate automation journeys for enterprises, driving pent-up demand for RPA
- The economic uncertainty, however, made it difficult for enterprises to sponsor automation initiatives. As the signs of recovery become stronger, the amplified demand is expected to be realized at a faster pace resulting in accelerated deployments
- Enterprises across verticals are looking to automate at a much faster pace, resulting in new use cases across verticals, especially in BFSI, healthcare, and public sector

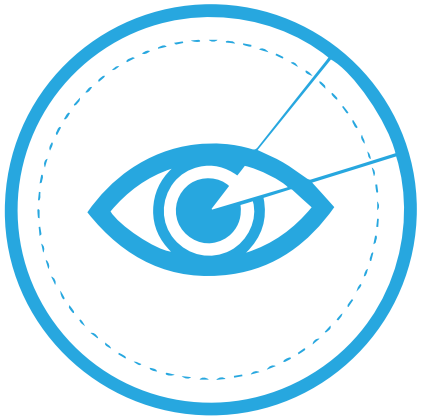
Rise in demand for a holistic automation solution

- As enterprises look to accelerate their automation journeys and scale RPA initiatives, they are required to take up more complex use cases and end-to-end processes for automation
- This need to step up from task automation to process automation is driving the demand for a holistic automation solution comprising RPA, IDP, IVA, BPM, and process mining
- Going forward, growth may elude niche RPA vendors; to thrive, RPA vendors will have to either develop in-house capabilities or forge partnerships/integrations with third-party providers of complementary technologies

Mergers and acquisitions to further pick up pace

- As the demand for a holistic automation platform has amplified and automation at scale has started gaining pace, M&A activities in RPA have intensified, with several large tech players entering the vendor landscape
- The market experienced a slew of acquisitions in the last few years, including Appian/Jidoka, Blue Prism/Thoughtonomy, Nintex/Foxtrot, and SAP/Contextor. In the past eight months itself, there have been three major acquisitions – Microsoft/Softomotive, IBM/WDG, and Hyland/Another Monday
- Going forward, more such RPA acquisitions are expected by other tech giants, BPM, and ERP companies to offer a more holistic solution. There might also be increasing instances of big RPA vendors acquiring complementary capabilities' providers (e.g., UiPath/ProcessGold) to expand the scope of offerings and enhance their value propositions

Outlook for 2021-22 (page 2 of 3)



Downward pricing pressure

- A changing supplier landscape, with the entry of big-tech and larger automation vendors such as SAP, Microsoft, and IBM in the RPA market, is accelerating the democratization of RPA and driving the availability of unlimited usage-based pricing models to exert downward pricing pressure
- Enterprises struggling due to the COVID-19 outbreak are likely to demand flexible and progressive pricing options with smaller upfront outlays
- The market is expected to further move away from perpetual licensing to annual/monthly subscription-based licensing models. As the market matures and more organizations look to scale up, we expect the adoption of enterprise-wide licensing models to increase

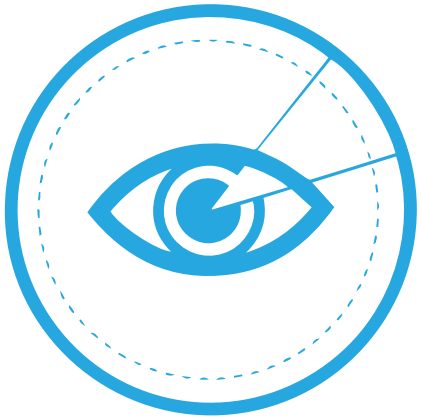
Increase in strategic partnerships with service providers

- As the demand for holistic/integrated automation solutions increases, RPA vendors' partnerships with the providers of complementary technologies – such as IDP, BPM, process mining and other enabling technologies, such as ERP, cloud, and BI tools – are expected to rise
- Strategic partnerships with service providers and system integrators are expected to increase because:
  - automation will increasingly become part of large digital transformation deals
  - it will help bridge the automation talent gap and provide better training, consulting, and implementation services
  - it will help leverage their domain expertise to deliver holistic and targeted solutions to end clients

Accelerated development of packaged solutions

- The ongoing crisis is expected to nudge RPA vendors to accelerate the development of pre-built function-, vertical-, and technology-specific packaged solutions for faster RoI and quicker deployment
- Online marketplaces with more off-the-shelf automation solutions for various use cases and pre-built integrations with other technologies are expected to be a key focus area to cater to buyer demand

Outlook for 2021-22 (page 3 of 3)



Cloud and mobility will become more important

- RPA deployments on the cloud are experiencing increased traction to enable easier accessibility, lower TCO, and reduced cost and effort of infrastructure management. With several enterprises looking to continue with the remote working model even post-recovery, the demand for cloud and mobility is expected to rise further
- While only 7% of RPA licenses were deployed on the cloud as of 2019, we expect cloud deployments to account for a 16% share by 2022. The demand for remote monitoring and governance capabilities is also expected to pick up
- To align with market demand, RPA vendors are expected to develop mobile apps for remote control & monitoring, enhance support for public cloud deployments, and/or launch their own cloud or SaaS offerings. While some have invested already, other vendors will follow suit to invest in rearchitecting their products to offer cloud-native RPA to help enterprises reap the full benefits of the cloud

Heightened need for better orchestration

- The inability to effectively manage a human + machine work environment has been a key barrier to scale and value realization. As the digital ecosystem becomes more complex with the amalgamation of different technologies, the need for better orchestration capabilities to manage a hybrid workforce is expected to rise
- Vendors will increasingly invest to enhance their functionalities for smoother collaboration between human and digital workers through human-in-the-loop capabilities
- Partnerships with third-party providers of process orchestration solutions such as BPM, case management, and workflow automation are expected to increase

Investments in enriching training and support

- Given the travel restrictions imposed due to COVID-19, more RPA vendors are expected to develop online portals with self-paced training modules and certifications
- New adopters are likely to prefer RPA vendors offering enhanced product support through embedded help tools, detailed manuals and documentation, 24x7 helplines, and online support forums / user communities

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Appendix

- Glossary
- Research calendar

Glossary of key terms used in this report (page 1 of 3)

Artificial Intelligence (AI)	Ability of machines to use cognitive computing to mimic human intelligence, such as visual perception, speech recognition, decision-making, and language translation
Business Intelligence (BI)	Technologies, applications, and practices for collection, integration, analysis, and presentation of business information
Business Process Management (BPM)	BPM solutions help to coordinate tasks and orchestrate the flow of information across disparately designed applications, databases, digital workers, and the human workforce. It includes capabilities of process design, execution (through workflows and orchestration of different BPS technology systems), and monitoring (through analytics)
Buyer	The company/entity that purchases outsourcing services from a provider of such services
Classic process mining	Classic process mining refers to the ability to leverage specialized algorithms to analyze process-related information that is captured in event logs generated by enterprise systems such as ERP, CRM, and SCM, to discover as-is processes, generate process maps, perform conformance check with pre-defined input reference process models, and generate insights for process improvement
Cognitive/smart automation	The ability of a system to learn how to interpret unstructured content, such as natural language, and use analytical capability to derive and present inferences in a pre-defined/structured fashion; for example, a system classifying the mood of a person into one of the pre-defined groups based on his/her tone and language
Computer vision	A technology that uses AI to enable automatic extraction, analysis, and understanding of useful information from digital images
Deep learning	A subfield of machine learning concerned with algorithms and inspired by the structure and function of the brain called artificial neural networks
Desktop Process Mining (DPM)	DPM refers to the ability to capture user's keyboard, mouse, and potentially other system-level activities performed simultaneously on various desktops to virtually reconstruct the processes and generate a process map capturing the different process variants
FTE	A way to measure a worker's productivity and/or involvement in a project. An FTE of 1.0 is equivalent to a full-time worker
General AI	A machine that can perform multiple intellectual tasks across a variety of domains; essentially, it mimics all activities performed by a human
Horizontal business processes	Those processes that are common across the various departments in an organization and are often not directly related to the key revenue-earning business, such as procurement, finance & accounting, and human resource management
Intelligent Document Processing (IDP)	Intelligent Document Processing is a software product or solution that captures data from documents (e.g., email, text, PDF, and scanned documents), categorizes, and extracts relevant data for further processing using AI technologies such as computer vision, OCR, Natural Language Processing (NLP), and machine/deep learning

Glossary of key terms used in this report (page 2 of 3)

KPI	Key performance indicators for processes, services, products, or solutions
Machine Learning (ML)	A type of artificial intelligence that provides computers with learning capabilities without explicit programming
Narrow AI	A machine that performs one narrow task; an expert system
Natural Language Processing (NLP)	A machine's ability to interpret human languages
Optical Character Recognition (OCR)	A technology within computer vision that involves the recognition of printed characters using computer software
POC	A realization of a certain method or idea in order to demonstrate its feasibility, or a demonstration in principle with the aim of verifying that some concept or theory has practical potential
ROI	Returns attained from an investment
RPA	RPA refers to a type of rules-based automation technology that helps automate repetitive tasks by mimicking a user's activities. It is non-invasive and typically interacts with a computer-centric task/process through the User Interface (UI) of the underlying software applications
RPA deployments	In-production or scaled-up deployments of RPA solutions
Semi-structured data	Semi-structured content is one that does not conform to the pre-defined structure of content, but nonetheless, contains tags / other markers to separate semantic elements and enforce hierarchies. In short, it has a self-describing structure. The placeholders of the content can be in varied sequences
Sequence mining	Identifying sequential pattern of activities that occurred during a process
Software-as-a-Service (SaaS)	SaaS is a software licensing and delivery model wherein the software is hosted centrally by a third-party provider and is made available to customers over the internet. It is also referred to as on-demand software
Structured data	Structured content is one that conforms to the pre-defined structure in terms of tags to separate semantic elements and enforce hierarchies of records and fields. Moreover, the placeholders for the content have a pre-defined sequence
Transaction-based pricing	Output-based pricing structure; priced per unit transaction with significant price differences between onshore and offshore

Glossary of key terms used in this report (page 3 of 3)

Universal process recorder	A universal process recorder refers to a single recorder that can identify the underlying application type and automatically apply the corresponding object recognition technique (DOM-/COM-/image-based)
Unstructured data	Unstructured content refers to information that either does not have a pre-defined data model or is not organized in a pre-defined manner. Unstructured information is typically text-heavy, but may contain data such as dates, numbers, and facts as well
Usage-based pricing	Value-based pricing structure; pricing based on per-hour or per-minute of robot usage
Virtual Desktop Infrastructure (VDI)	VDI is a virtualization technology that hosts a desktop operating system on a centralized server in a datacenter
Vertical-specific business processes	Vertical-specific business processes refer to processes that are specific to a department within an organization and are often directly related to the key revenue-earning business. Examples include lending process in case of the banking industry and claims processing in case of the insurance industry
Virtual agent	It is a computer-generated virtual character that can have a conversation with human customers and take decisions. Alternative term for chatbots or virtual assistants
Virtual Machine (VM)	A VM is an emulation of a computer system. They are software computers, based on computer architectures, that run an operating system, and provide functionality of a physical computer

Research calendar

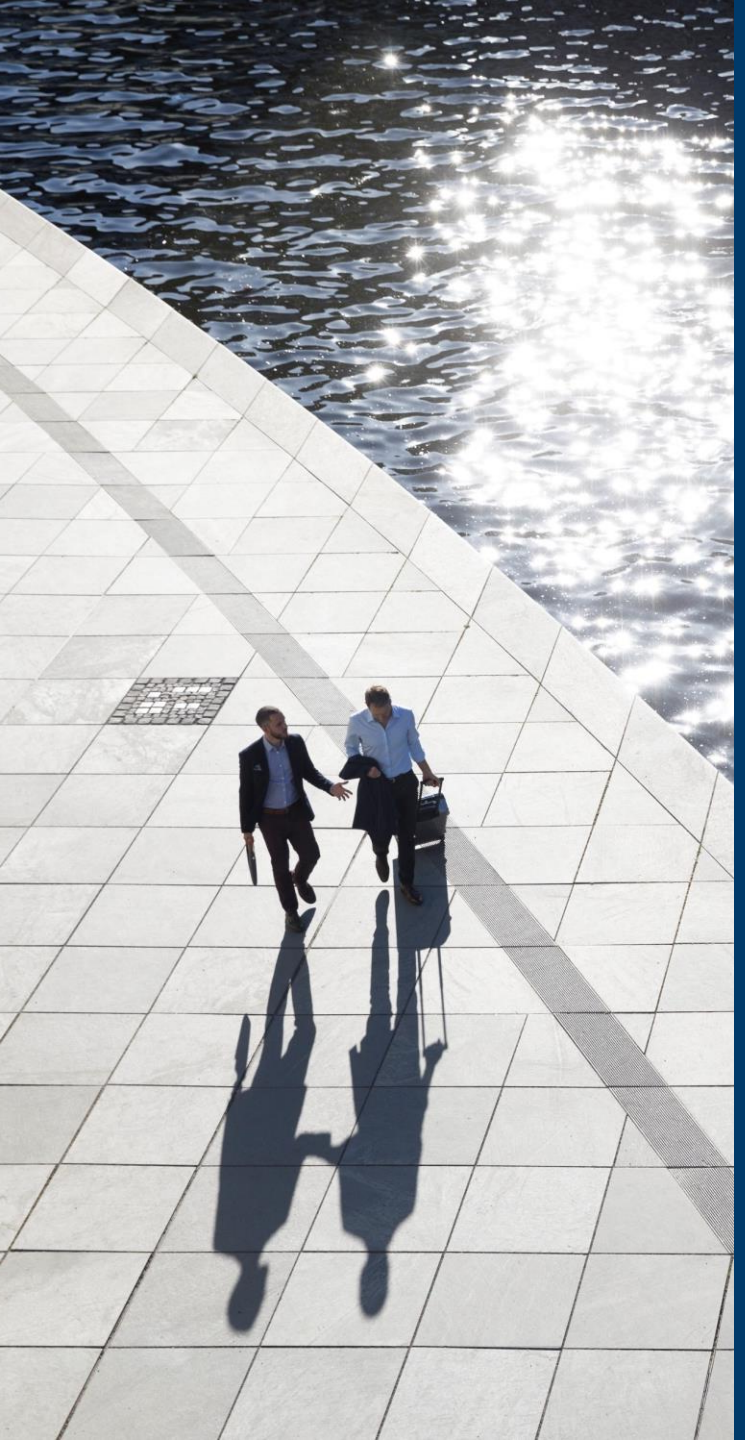
Service Optimization Technologies

Published | Planned | Current release

Flagship SOT reports	Release date
Process Mining – Technology Vendor Landscape with Products PEAK Matrix® Assessment 2020	February 2020
Intelligent Automation in Business Processes (IABP) Solution Provider Landscape with PEAK Matrix® Assessment 2020	March 2020
Intelligent Document Processing (IDP) – Technology Vendor Landscape with Products PEAK Matrix® Assessment 2020	March 2020
Intelligent Virtual Agents (IVA) – Technology Vendor Landscape with Products PEAK Matrix® Assessment 2020	March 2020
Intelligent Virtual Agents (IVA) State of the Market Report 2020 – Conversing with AI	June 2020
Robotic Process Automation (RPA) – Technology Vendor Landscape with Products PEAK Matrix® Assessment 2020	September 2020
Robotic Process Automation (RPA) – Technology Vendor Compendium 2021	October 2020
An Evolving Digital Workforce to Assist Humans – Robotic Process Automation (RPA) State of the Market Report 2021	**December 2020**

Thematic SOT reports	Release date
Who Takes on the RPA Mantle?	June 2019
Intelligent Document Processing (IDP) Playbook	September 2019
Accelerated Intelligent Automation (AIA) in Enterprises	May 2020
The 360-degree Enterprise Automation Playbook	May 2020
Practitioner Perspectives – Mastering Efficiency and Innovation with Intelligent Automation	May 2020
Buyer Satisfaction with Intelligent Document Processing (IDP) – Are Buyers Delighted or Disenchanted?	July 2020
AI Trailblazers 2020 - AI Startups Redefining the Business Process Services	December 2020

Note: For a list of all of our published Service Optimization Technologies reports, please refer to our website page



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