



ROBOTIC PROCESS AUTOMATION IN FEDERAL AGENCIES

Introduction

A primary goal of the President's Management Agenda (PMA) is to shift time, effort, and resources from low-value repetitive administrative tasks to high-value work focused on mission outcomes.¹ To that end, the Office of Management and Budget (OMB) directed agencies to, among other things, introduce new technologies, such as Robotic Process Automation (RPA), to reduce administrative tasks and burden.² RPA tools are software programs designed to interact with existing applications and automate routine rules-based tasks by mimicking user interactions.³ RPA tools reduce the burden of repetitive, simple tasks on employees, and have the potential to save time and taxpayer dollars, improve accuracy and productivity, ensure standardization and consistency of service, and free Federal employees to focus on more meaningful and analytical work.⁴ Additionally, RPA tools operate on existing information systems so agencies do not have to invest time and resources redesigning systems or refactoring applications. Therefore, RPA solutions tend to have lower implementation costs and lower risk than large IT transformations.⁵

This paper discusses how RPA aligns to administration priorities, presents areas of opportunity where RPA tools are most likely to deliver value, identifies several use case categories for further agency exploration, and provides several considerations for agency CIOs when assessing the business case of RPA. Finally, the RPA Community of Practice (CoP) is an active, government-wide body of RPA experts and practitioners that engage and collaborate on RPA solutions. The RPA CoP is developing an RPA Playbook as a tactical resource for agencies interested in buying, managing, and implementing RPA tools.⁶ This white paper is meant to provide a strategic overview for CIOs and technology leaders throughout government while the RPA Playbook will provide more discrete implementation guidance for agencies preparing to undergo procurement and deployment.⁷

¹ President's Management Agenda, CAP Goal 6: Shifting From Low-Value to High-Value Work.

<https://www.whitehouse.gov/wp-content/uploads/2018/03/The-President%E2%80%99s-Management-Agenda.pdf>

² M-18-23. Shifting From Low-Value to High-Value Work.

<https://www.whitehouse.gov/wp-content/uploads/2018/08/M-18-23.pdf>

³ Deloitte LLP. The New Machinery of Government: Robotic Process Automation in the Public Sector.

<https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-innovation-the-new-machinery-of-govt.pdf>

⁴ Moore, Sara. The bots are coming: Robotic process automation saves DLA time, money. 4 December 2018.

<https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/1704350/the-bots-are-coming-robotic-process-automation-saves-dla-time-money/>

⁵ Deloitte LLP. The New Machinery of Government: Robotic Process Automation in the Public Sector.

<https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-innovation-the-new-machinery-of-govt.pdf>

⁶ Robotic Process Automation (RPA) Community of Practice. <https://digital.gov/communities/rpa/>

⁷ Ibid.

Strategic Priorities

IT Leaders in the Federal Government are prioritizing tools such as RPA to increase the productivity of the Federal workforce; improve user, customer, and citizen experience; and save taxpayer dollars. The PMA's Cross-Agency Priority (CAP) Goal 6: Shifting from Low-Value to High-Value Work directs agencies to shift time, effort, and resources away from repetitive administration and compliance tasks toward those activities that more directly accomplish mission outcomes. RPA tools can greatly reduce the time and resources needed to complete repetitive requirements.

OMB policy guidance related to CAP Goal 6 specifically calls out RPA as a solution to reduce repetitive administrative tasks. Per M-18-23: Shifting from Low-Value to High-Value Work, those tasks “where transactions are numerous and frequent, and processes have significant peaks in workload” lend themselves to automation.⁸ OMB intends that agencies implement RPA, artificial intelligence, and other tools to “execute repetitive administrative tasks and significantly reduce the burden on Federal employees.”⁹

The Federal CIO, Suzette Kent, has encouraged agencies to start on their respective automation journeys and learn by doing and implementing.¹⁰ Typically, RPA is considered a first-step to higher level cognitive technologies, such as artificial intelligence (AI), because RPA is relatively easy to configure and implement. RPA is particularly well suited to work across multiple back-end systems and doesn't require re-architecting of those system.¹¹ Because of these quick-wins, RPA is effective at setting an agencies' automation journey in motion. Currently, OMB is developing policy around automation tools and technologies that will set the guardrails for agencies adopting automation tools such as RPA and AI. The Administration is committed to supporting agencies “in their exploration and application of automated technologies so that their journey is matched with the appropriate level of control and discipline, based on expected outcomes and consequences.”¹²

RPA Business Case

RPA is the ultimate low-touch approach for process improvement. RPA assumes that the process will stay as-is and builds “bots” that replace low-value human effort spent on tasks such

⁸ M-18-23. Shifting From Low-Value to High-Value Work.
<https://www.whitehouse.gov/wp-content/uploads/2018/08/M-18-23.pdf>

⁹ M-18-23. Shifting From Low-Value to High-Value Work.
<https://www.whitehouse.gov/wp-content/uploads/2018/08/M-18-23.pdf>

¹⁰ MeriTalk. Kent: Agencies Need to Get Started on Automation & AI. 25 June 2019.
<https://www.meritalk.com/articles/kent-agencies-need-to-get-started-on-automati>

¹¹ Davenport, Tom. Robotic Process Automation: A Gateway Drug to AI and Digital Transformation. 29 Oct 2018.
<https://www.forbes.com/sites/tomdavenport/2018/10/29/robotic-process-automation-a-gateway-drug-to-ai-and-digital-transformation/#4f27d3763a70>

¹² MeriTalk. Kent: Agencies Need to Get Started on Automation & AI. 25 June 2019.
<https://www.meritalk.com/articles/kent-agencies-need-to-get-started-on-automation-ai/>

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as populating tables, data entry, and generating reports. RPA is less appropriate for more complex business problems or process overhauls.¹³ Forrester distinguishes RPA from business process management (BPM), which is an approach to discover, analyze, improve, and automate full-scale business processes. In contrast, RPA tools tackle low-value and discrete actions to boost productivity with minimal change to underlying business processes.¹⁴

There is a continuum of automation tools that range from RPA, in which software is programmed to do simple and repetitive tasks, to true artificial intelligence, in which software algorithms incorporate machine learning, computer vision, natural language processing, robotics, and other cognitive technologies to solve complex problems using agency data.¹⁵ In the near term, agencies are likely to experiment and deploy attended RPA bots, which typically automate front-office activities, such as administrative tasks, HR, and financial applications. Attended bots are the class of RPA tools that work alongside human operators throughout end-to-end processes and enhance the speed and effectiveness of those human operators. Thereafter, unattended RPA bots, which execute tasks and interact with applications independent of human operators will bring about the next round of automation efficiencies and cost savings.¹⁶

Good candidates for RPA possess some or all of the following characteristics, they tend to be:

- static rules-based processes, requiring minimal human input or decision making;
- repetitive in nature;
- can be performed during off-peak hours;
- are data driven and involve data manipulation; and
- have high error rates.¹⁷

While current RPA tools are built to replace low-value human effort, they are not designed to automate all business processes.

¹³ Le Clair, Craig et al. RPA, DPA, BPM, And DCM Platforms: The Differences You Need to Know. 1 March 2019. <https://www.forrester.com/report/RPA+DPA+BPM+And+DCM+Platforms+The+Differences+You+Need+To+Know/-/E-RES145378>

¹⁴ Joseph, Leslie, Craig Le Clair, et al. The Forrester Wave™: Robotic Process Automation Services, Q4 2019. 15 Oct 2019. <https://www.forrester.com/report/The+Forrester+Wave+Robotic+Process+Automation+Services+Q4+2019/-/E-RES146255>

¹⁵ ACT-IAC. Artificial Intelligence / Machine Learning Primer: Enable AI/ML Innovation in the US Federal Government. ACT IAC AI/ML Primer. 12 March 2019.

¹⁶ Leibowitz, Stuart and Abhijit Kakhandiki. What's the difference between "attended" and "unattended" RPA bots?. 19 November 2018. <https://www.ibm.com/blogs/cloud-computing/2018/11/19/attended-unattended-rpa-bots/>

¹⁷ Deloitte LLP. The New Machinery of Government: Robotic Process Automation in the Public Sector. <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-innovation-the-new-machinery-of-govt.pdf>

RPA Benefits

Cost Savings

Robots typically cost significantly less than a permanent or temporary staff member. Additionally, robots can have greater productivity and decrease the need for physical office spaces, office furniture, physical computing hardware, phones, air conditioning, etc.

Decrease Need for Large-Scale IT Transformations

The ability of RPA tools to wring substantial process improvements from legacy systems, often at relatively low cost, can undermine the business case for large-scale replacement of systems or enterprise application integration initiatives.¹⁸ While RPA decreases the need for large-scale transformations, it does not remove the need to modernize legacy systems.

Increased Accuracy

Robots are more predictable, more consistent, and less prone to human errors. This can result in better compliance, standardization, and consistency. RPA improves processes auditability as all activities a bot completes are logged.¹⁹

Increased Productivity

Robots can operate 24/7 without breaks, vacation, or sick days and can yield dramatic improvements in accuracy, cycle time, and productivity in transactional processes. Additionally, attended bots can drastically improve the productivity of human operators, for instance, bots can access information from multiple systems faster and complete tasks quicker with fewer errors than humans.²⁰

Increased Scalability

Unlike human operators, Robots are able to scale repetitive administrative tasks nearly instantaneously, which contributes to increased productivity, time and cost savings, and overall improved service delivery.²¹ Although bots can be easily spun up, agencies must still manage bots and there is a risk that bots proliferate to such an extent agencies experience governance problems, security risks, and redundancy.

¹⁸ Schatsky, David, Craig Murasking, and Kaushik Iyengar. Robotic process automation: A path to the cognitive enterprise. 14 September 2016.
<https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/cognitive-enterprise-robotic-process-automation.html>.

¹⁹ Moore, Sara. The bots are coming: Robotic process automation saves DLA time, money. 4 December 2018.
<https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/1704350/the-bots-are-coming-robotic-process-automation-saves-dla-time-money/>

²⁰ Viswanathan, Shobhana. Happy Together: Attended Bots Are Speeding Up Human Interaction. 7 February 2019.
<https://www.automationanywhere.com/blog/software-robots-in-the-workplace/happy-together-attended-bots-are-speeding-up-human-interaction#targetText=Automated%20bots%20are%20taking%20the,processes%20that%20require%20human%20involvement.>

²¹ Schatsky, David, Craig Murasking, and Kaushik Iyengar. Robotic process automation: A path to the cognitive enterprise. 14 September 2016.
<https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/cognitive-enterprise-robotic-process-automation.html>.

Low Cost Implementations

Once robots are in place, new processes can often be assigned to them in days, if not hours. Thus RPA solutions generally have lower implementation costs, require shorter implementation time, and carry far less risk than large IT transformations.²²

Shift to High-Level Work

One of the primary benefits of RPA tools is that they free Federal workers to do more high-level, complex, and analytical work. RPA tools are best applied to case and process types that are high frequency and low complexity. This will allow Federal employees to prioritize case types that are low frequency and high complexity, thus reducing backlogs and allowing Federal agencies to be more responsive to customer needs and legislative requirements.

RPA Use Case Categories

This section presents several common process categories that current market RPA tools can solve for. Although the list is not exhaustive, it does provide a starting point for agencies undergoing a review of their current process landscape and assessing which systems can be automated or enhanced with RPA tools.²³ The RPA Playbook, developed by the RPA CoP, will have a more comprehensive list of RPA use cases with greater technical details.

Acquisition and Procurement

RPA bots can automate much of the repetitive acquisition and procurement processes and activities such as managing procurement requests;²⁴ quote, invoice, and contract management;²⁵ work order management; returns processing; and vendor analysis.²⁶ For example, NASA has implemented a bot that creates procurement requests for the agency without the need for a human operator. This replaces a repetitive and low-value task, and allows NASA procurement professionals to focus on more impactful work.²⁷ Another example is GSA's Truman bot, which pulls data from multiple sources from GSA's Federal Acquisition Services' Multiple Award Schedules into a single report. This saves time for GSA contract specialists and has led to a measurable increase in customer satisfaction.²⁸

²² Deloitte LLP. The New Machinery of Government: Robotic Process Automation in the Public Sector. <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-innovation-the-new-machinery-of-govt.pdf>

²³ Automation Anywhere Infographic. 50 Processes Companies Should Automate.

<https://www.automationanywhere.com/images/wcadfy/50processestoautomate.jpg>

²⁴ Miller, Jason. 4 bots relieve NASA employees from doing 'low-value' work. 24 May 2018.

<https://federalnewsnetwork.com/ask-the-cio/2018/05/4-bots-relieve-nasa-employees-from-doing-low-value-work/>

²⁵ Rockwell, Mark. RPA: 'It's entry-level AI'. 28 February 2019.

<https://fcw.com/articles/2019/02/28/rpa-entry-level-ai-agencies.aspx>

²⁶ MeriTalk. Federal Government Getting Ready to Hire Its First Digital Employees. 27 July 2018.

<https://www.meritalk.com/articles/federal-government-getting-ready-to-hire-its-first-digital-employees/>

²⁷ Miller, Jason. 4 bots relieve NASA employees from doing 'low-value' work. 24 May 2018.

<https://federalnewsnetwork.com/ask-the-cio/2018/05/4-bots-relieve-nasa-employees-from-doing-low-value-work/>

²⁸ GCN Staff. GSA puts bots to work in bulk. 31 Oct 2019.

https://gcn.com/articles/2019/10/31/psi_gsa-rpa-program.aspx

Customer Service

RPA bots can automate much of traditional customer services processes and activities such as contact and call center processes;²⁹ automated updates to customer profiles; billing and order processing; automated notifications; and integrated data processing across multiple intake channels.³⁰

Finance and Accounting

RPA bots can automate finance and accounting processes such as reconciliations and appeals processes; claims and chargeback processing;³¹ expense payments; returns management; grants management and funds distributions;³² reporting and financial auditing;³³³⁴ and inventory processing. IRS is one agency that has deployed bots to handle routine reporting processes, especially important because IRS has experienced declining staff numbers in recent years.³⁵

Human Resources

HR functions that can be automated with RPA bots include payroll processing, benefits management, education and training, recruitment, and onboarding tools.³⁶³⁷ These bots allow employees to access enterprise-wide self-service HR features and save time, provide greater consistency of experience, and improve transparency and workflow.³⁸

IT Management

RPA bots can automate IT processes such as application, infrastructure, and network monitoring; folder, file, and records management;³⁹ user and directory management; automated

²⁹ Stone, Adam. Voice Assistants Can Streamline Customer Service for Agencies. 2 January 2019.

<https://fedtechmagazine.com/article/2019/01/voice-assistants-can-streamline-customer-service-agencies>

³⁰ Accelrate Insights & Use Cases. The Impact of RPA in Customer Service Call Centers.

<https://www.accelerate.com/impact-rpa-customer-service-call-centers/>

³¹ Rockwell, Mark. RPA: 'It's entry-level AI' 28 February 2019.

<https://fcw.com/articles/2019/02/28/rpa-entry-level-ai-agencies.aspx>

³² NASA. RPA at the NSSC. 3 April 2018.

https://answers.nssc.nasa.gov/app/answers/detail/a_id/7067/~rpa-at-the-nssc

³³ MeriTalk. IRS Looks to Adopt Robotic Process Automation Tech. 15 April 2019.

<https://www.meritalk.com/articles/irs-looks-to-adopt-robotic-process-automation-tech/>

³⁴ Leonard, Matt. What the rest of government can learn from DISA's RPA pilot. 18 July 2018.

<https://defensesystems.com/articles/2018/07/20/disa-rpa.aspx>

³⁵ MeriTalk. IRS Looks to Adopt Robotic Process Automation Tech. 15 April 2019.

<https://www.meritalk.com/articles/irs-looks-to-adopt-robotic-process-automation-tech/>

³⁶ Rockwell, Mark. RPA: 'It's entry-level AI' 28 February 2019.

<https://fcw.com/articles/2019/02/28/rpa-entry-level-ai-agencies.aspx>

³⁷ Moore, Sara. The bots are coming: Robotic process automation saves DLA time, money. 4 December 2018.

<https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/1704350/the-bots-are-coming-robotic-process-automation-saves-dla-time-money/>

³⁸ MeriTalk. Information at their Fingertips: USAID Delivers Consumer-Grade HR Employee Service. 4 June 2019.

<https://www.meritalk.com/articles/information-at-their-fingertips-usaid-delivers-consumer-grade-hr-employee-service/>

³⁹ Rockwell, Mark. How CBP saved thousands of staff hours with RPA. 12 June 2019.

<https://fcw.com/articles/2019/06/12/cbp-rpa-email-migration.aspx>

forms development;⁴⁰ email processing and distribution; and security and compliance processing.

Considerations for Agency CIOs

Develop a Bot Governance Plan

Bot governance is critical to track business requirements, avoid the risk of out-of-control bot proliferation, and ensure pilots and small-scale bot deployments can be effectively scaled across the agency. Additionally, as bots increasingly perform routine tasks and replace human operators throughout various process life cycles, the risk of knowledge gaps creates further governance issues. Without proper knowledge management, documentation, and auditing, bots will execute their programming without significant human oversight. Governance that includes process documentation and audit trails for decisions made are essential to ensure bots are not performing unnecessary or redundant functions.

Collaborate Government-wide on Bot Sharing Platforms and Tools

Many RPA applications, such as HR, financial, and compliance reporting, lend themselves to shared services and open-source tools. Federal agencies should prioritize knowledge sharing and collaboration. The RPA CoP, hosted at GSA brings together automation experts and practitioners and is a good place for agencies to learn how other agencies have approached their automation journeys. A major section of the RPA Playbook will address shared RPA resources and provides solutions on how to inventory and share automation tools and applications across government.⁴¹

Consider RPA Market Factors

Both Forrester and Gartner have extensive resources on the current market for RPA tools and services.^{42,43} In 2018, the market for RPA hit approximately \$1.7 billion⁴⁴ and Forrester estimates that the RPA services market will grow to reach \$12 billion by 2023.⁴⁵ RPA vendors have been able to recognize greater revenues and deploy bots faster than some analysts previously envisioned.⁴⁶ Currently, a significant portion of RPA adoption has been attended RPA bots that

⁴⁰ Moore, Sara. The bots are coming: Robotic process automation saves DLA time, money. 4 December 2018. <https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/1704350/the-bots-are-coming-robotic-process-automation-saves-dla-time-money/>

⁴¹ Robotic Process Automation (RPA) Community of Practice. <https://digital.gov/communities/rpa/>

⁴² Ray, Saikat, Cathy Tornbohm, Derek Miers, and Marc Kerremans. Magic Quadrant for Robotic Process Automation Software. 8 July 2019. <https://www.gartner.com/en/documents/3947184>

⁴³ Le Clair, Craig et al. The Forrester Wave™: Robotic Process Automation, Q2 2018. 26 June 2018. <https://www.forrester.com/report/The+Forrester+Wave+Robotic+Process+Automation+Q2+2018/-/E-RES142662>

⁴⁴ Fersht, Phil and Jamie Snowdon. RPA will reach \$2.3bn next year and \$4.3bn by 2022...as we revise our forecast upwards. 30 November 2018. https://www.horsesforsources.com/RPA-forecast-2016-2022_120118

⁴⁵ Joseph, Leslie, Craig Le Clair, et al. The RPA Services Market Will Grow To Reach \$12 Billion by 2023. 10 July 2019. <https://www.forrester.com/report/The+RPA+Services+Market+Will+Grow+To+Reach+12+Billion+By+2023/-/E-RES156255#figure1>

⁴⁶ Fersht, Phil and Jamie Snowdon. RPA will reach \$2.3bn next year and \$4.3bn by 2022...as we revise our forecast upwards. 30 November 2018. https://www.horsesforsources.com/RPA-forecast-2016-2022_120118

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work alongside human operators and automate segments of an end-to-end business process. Unattended RPA is the next stage of adoption and is likely to feed broader AI adoption.⁴⁷

Prioritize Bot Credentialing

Credentialing is essential to RPA to ensure agencies can deploy bots to existing IT systems while addressing critical challenges to risk management, privacy, and security.⁴⁸ In May 2019, OMB released M-19-17: Enabling Mission Delivery through Improved Identity, Credential, and Access Management. The memo stated: “agencies shall manage the digital identity lifecycle of devices, non-person entities (NPEs), and automated technologies such as Robotic Process Automation (RPA) tools and Artificial Intelligence (AI), ensuring the digital identity is distinguishable, auditable, and consistently managed across the agency. This includes establishing mechanisms to bind, update, revoke, and destroy credentials for the device or automated technology.”⁴⁹ Bot credentialing will be an increasingly important role for CIOs as Federal agencies entrust bot and algorithms with increasing decision-making responsibility.

Join the RPA Community of Practice to Learn More

The [RPA Community of Practice \(CoP\)](#) was established in the beginning of 2019 with the stated objective of sharing RPA information and resources in order for Federal agencies to effectively implement RPA tools.⁵⁰ The CoP is in the process of drafting a playbook that will highlight agency expertise and best practices on a range of RPA-related topics, including: governance; human resources, culture, and communications; process selection, use case, and bot sharing; bot security, authority to operate (ATO), and credentialing; acquisition, procurement, and effective contract writing; and other topics. Agencies interested in actionable implementation guidance on RPA tools should use this Playbook as a starting point.

Workforce Considerations

RPA bots significantly reduce repetitive and administrative workloads to augment the Federal workforce, save agency time, and save agency resources. This means that with the integration of RPA and AI/ML tools, the nature of work for many Federal employees at most agencies will change. Agencies should be prepared for significant workforce planning initiatives, hiring and reskilling programs, and knowledge management activities.

⁴⁷ Fersht, Phil. RPA is the gateway drug. AI is the drug. 10 October 2018.

https://www.horsesforsources.com/RPA-gateway-drug_181010

⁴⁸ Nyczepir, Dave. Defense agency surmounts ‘big’ security challenge for robotic process automation. 15 May 2019.

<https://www.fedscoop.com/defense-logistics-agency-security-rpa/>

⁴⁹ M-19-17. Enabling Mission Delivery through Improved Identity, Credential, and Access Management. 21 May 2019.

<https://www.whitehouse.gov/wp-content/uploads/2019/05/M-19-17.pdf>

⁵⁰ Robotic Process Automation (RPA) Community of Practice. <https://digital.gov/communities/rpa/>

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