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RPA in Federal Agencies

How Federal Agencies Achieve More
Through Robotic Process Automation

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Foreword

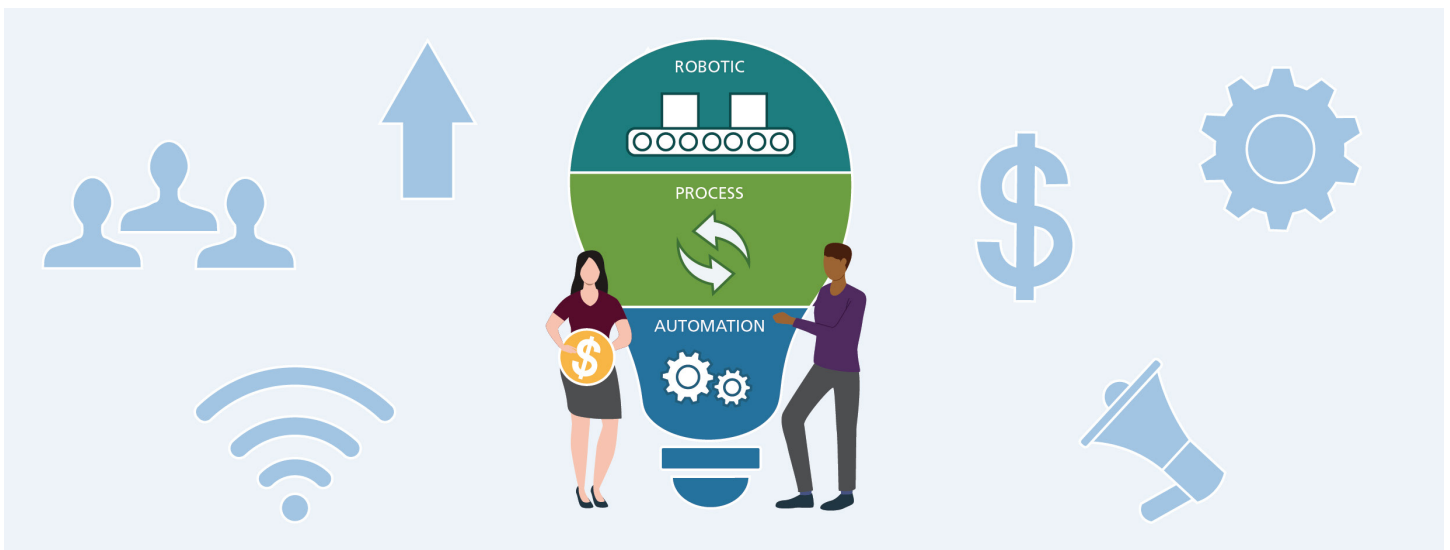
How would you respond to an invitation to give a presentation about robotic process automation (RPA)? If you dread the thought of it, you have plenty of company. It has only been a few years since the National Aeronautics and Space Administration (NASA) issued the first federal contract for RPA development.

We set out to create this report to explore the significant challenges that federal agencies face in their quest to deliver more effective, efficient, modern services across a wide range of programs. The previous administration's management agenda contained goals to improve productivity and shift resources to higher-value work to meet those challenges. Fortunately, a relatively recent emerging technology — Robotic Process Automation (RPA) — has the potential to help achieve those goals.

ACT-IAC and Management Concepts, with oversight from government sponsors **Veronica Villalobos**, former Principal Deputy Associate Director, Office of Personnel Management and **Andrea Brandon**, Deputy Assistant Secretary, Department of Interior, collaborated on this report to help agencies better understand the challenges, approaches, and solutions they face in adopting RPA. Both organizations interviewed personnel from nine federal agencies that were already using RPA. This report contains lessons learned and recommendations from the experiences shared in those interviews.

In addition, we would like to acknowledge the Government Co-Chair of the ACT-IAC Intelligent Automation Working Group, **Shang-Jeo (SJ) Gaublomme**, Financial Systems Modernization Branch Chief, Financial Systems Division, Office of the Chief Financial Officer, Federal Emergency Management Agency (FEMA), and Department of Homeland Security (DHS) RPA Working Group Chair. Finally, we greatly appreciate the time and insights from those RPA pioneers, each contributing to this narrative and without whom this report would not have been possible. A list of these contributors can be found at the end of this document.

Within these pages, we hope to educate you on why robotic processing automation (RPA) is becoming a common conversation topic within federal government circles. Through snapshot descriptions of game-changing federal RPA programs, we will familiarize you with the outstanding ROI, leadership, and workforce development benefits that RPA provides. You will learn—in plain English—how to plan your own RPA program, beginning with the importance of mission alignment and identifying champions and proceeding to your CIO's role, security and cultural risks, infrastructure and governance, funding options, and communication pathways.



What is RPA?

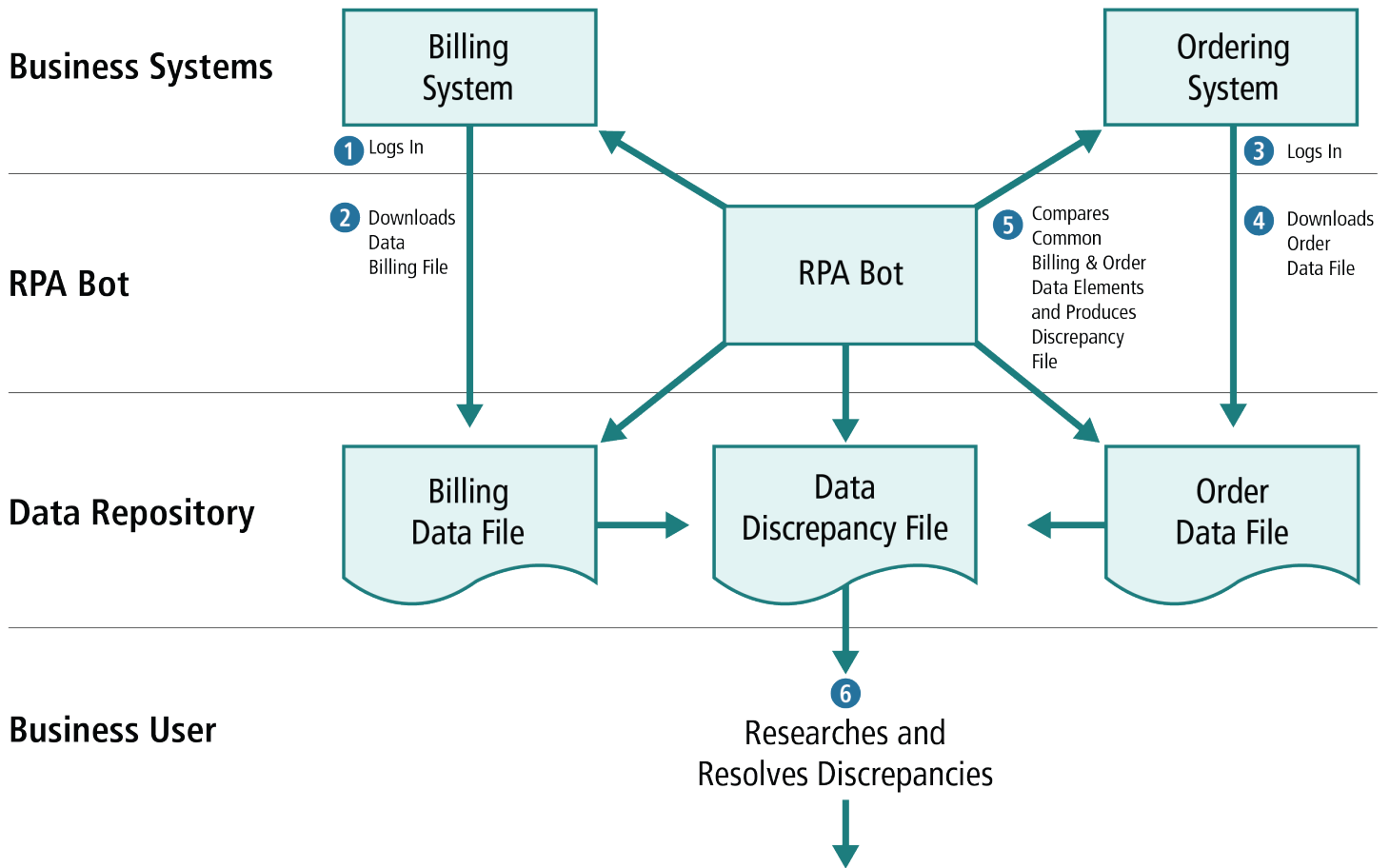
Robotic Process Automation (RPA) uses simple software commands to automate highly repetitive, rules-based processes that individuals would otherwise perform manually. These RPA automations are called bots. Bots complete relatively uncomplicated tasks that involve structured data to save time and effort and to eliminate the possibility of human error. Common examples of processes that RPA automates include:

- **Data Entry** – Repetitive entry of data into a system user interface
- **Screen and Email Scraping** – Extraction of data from websites and email text into a structured form for processing
- **Data Reconciliation** – Extraction and comparison of common data elements from different systems to identify discrepancies for human resolution
- **Form Data Validation** – Application of business rules to validate data accuracy

How do bots perform these functions? Consider data reconciliation as an example. Many business systems contain common data, such as names and email addresses. Manual data updates often result in unsynchronized data between the systems. For example, a person's contact information may be updated in one system but not in another, causing a disconnect. Tracking down discrepancies like these involves costly staff hours and results in processing delays, rework, and customer dissatisfaction. Implementing a formal system interface that automatically synchronizes data between systems solves the problem but can be costly and slow to implement.

RPA can be used to create an effective solution that frees up staff time without the overhead cost of a programmed system solution. Bots can extract common data elements from multiple systems, identify discrepancies, and produce a file that the human business operations teams can use to resolve issues and correct data quickly. The result is improved data quality, increased efficiency, reduced process cycle time and cost, and increased customer satisfaction. Additionally, the automation enables employees, who would do this manually, to redirect their time to higher-value activities. Figure 1 illustrates an example of reconciling billing and order data using RPA.

Figure 1: RPA for Data Quality Improvement



Process	Outcomes
<ol style="list-style-type: none"> 1. RPA bot logs into the billing system 2. RPA bot downloads billing data file 3. RPA bot logs into the order system 4. RPA bot downloads the order data file 5. RPA bot compares common billing and order data and produces a discrepancy file 6. Human business user researches and resolves data discrepancies 	<ul style="list-style-type: none"> • Improved data quality • Increased efficiencies • Reduced process cycle time • Reduced labor cost • Increased customer satisfaction • Elevated employee morale

How Does RPA Benefit the Federal Government?

Federal agencies are expected to drive value, increase efficiencies, reduce costs, and enhance citizen engagement and satisfaction despite diminishing financial and human resources and increasing workloads. These may seem to be insurmountable obstacles, but according to **The State of Federal RPA**, multiple agencies have significantly increased their capacity and improved their customer engagement by developing mission-driven RPA programs. The bots they develop carry out low-value, rule-based tasks with unmatched accuracy and efficiency, increase public service workers' capacity, and enable them to shift to higher-value work.

NASA was the first to pioneer RPAs in 2017 and generously share their experience with others. RPA is now gaining traction in many federal agencies. In interviews conducted for this report, many agency RPA executive champions continue to pay forward the positive effects of deploying RPA by sharing how RPA has transformed their workflows.

The following snapshots provide first-hand descriptions of the processes these agencies underwent to launch their RPA initiatives. In each case, the agency had a specific pain point they hoped to address through RPA.

USE CASE 1: Workload Reduction and Improved Customer Experience at GSA

In early 2018, the U.S. General Services Administration (GSA) became one of the first federal agencies to explore RPA actively. **Gerard Badorrek**, Chief Financial Officer, and other leaders attended presentations that demonstrated the potential of RPA. They immediately knew that this technology could improve the budget approval processes that are a core part of GSA's mission.

GSA identified two main objectives for their first RPA test: to specifically target GSA financial management employees' workload reduction and to enhance the experience for those federal organizations submitting budget justifications to GSA for approval. They launched an agency-wide challenge to implement automation in under 100 days, a true test of the flexibility of RPA. During that first year, GSA trained 12 employees to develop RPAs. By May of 2018, they learned the potential for benefit. They began working with their IT organization to set up protocols as well as security and privacy approval processes. They identified the IT platform they would need and the training that would be required to build, implement, and maintain a robust RPA program.

By the end of 2018, they had launched ten automations. Taking the time to understand what RPA could do and what it would take to build a successful RPA program—including change management—was critical in becoming the recognized leader of federal RPA practice and implementation.

Today, Gerard Badorrek is one of the leading authorities on RPA in the federal government. In addition to being CFO for GSA, he is also the federal **Robotic Process Automation Community of Practice** sponsor and co-lead for the former administration's Cross-Agency Priority (CAP) Goal 6: Shifting from Low-Value to High-Value Work. He has facilitated the publication of the **RPA Playbook**, a reference for federal program and technology management strategies for RPA programs at all levels, and **The State of Federal RPA** report, which provides an assessment of the impact of RPA within the federal government, identifies implementation trends, and highlights best practices.

USE CASE 2: Dramatic Reduction of Processing Time at NSF

The National Science Foundation (NSF) processes thousands of grants for colleges, universities, and school systems. Processing payments for grant recipients involves numerous applications and is very time-consuming. It requires coordination between grant participants, NSF, and the U.S. Department of the Treasury (Treasury) disbursement system.

Gisele Holden, Branch Chief, Financial Systems Branch, Division of Financial Management, NSF, learned about NASA's implementation of RPA at a professional development training session hosted by the Association of Government Accountants. She was intrigued because NSF was experiencing a similar challenge to the one that drove NASA to implement RPA.

After speaking with her financial management support contractors and **Mike Wetklow**, Deputy Chief Financial Officer and Division Director for Financial Management, NSF, she submitted a proposal to the **Financial Management Innovation Partnership** of the Treasury's Bureau of the Fiscal Service, Office of Financial Innovation and Transformation (FIT) which solicits small pilot or proof-of-concept projects that are intended to improve the efficiency or effectiveness of federal financial management. Since implementing RPA in the finance department, the offices of the CIO, HR department, grants management, and merit review processes have also begun developing automations.

The **Financial Management Innovation Partnership** described NSF's 2018 award with the following remarks:

"Like many federal entities, NSF faced issues with limited resources resulting from decreased contract support, reduced federal hiring, and increased regulatory requirements. Based on the first proofs-of-concept in 2017, NSF determined that RPA could help with resource issues and identified several repetitive, time-intensive, and error-prone processes for automation.

NSF socialized RPA across the agency, set up an internal governance structure, and then identified two processes to automate through a pilot using RPA: 1) automate an alerting system that NSF uses from Treasury called the Invoice Processing Platform; and 2) process joint grants or intra-agency purchases through the Intra-Government Payment and Collection system. These two automation efforts combined, both now in production, saved NSF staff 600+ hours annually, cut transaction processing time by 90%, and increased employee morale by allowing them more time to perform analytical work to grow both technically and professionally.

NSF's first proofs-of-concept and subsequent pilots of RPA technology opened the door for future automation. Not only has NSF been successful in implementing RPA across the agency, but they have also been a leader for the entire government through sharing their internal governance structure and control plans with other agencies on their RPA journey."

USE CASE 3: Improved Processes and Workforce Satisfaction at the IRS

The IRS procurement community continually faced the challenge of shifting their workforce to higher-value tasks in a compliance culture that frowns on trying new things. In addition, like many other agencies, the size of the Internal Revenue Service (IRS) workforce continues to diminish as older employees exit. **Shanna Webbers**, Chief Procurement Officer, and **Harrison Smith**, Director, Enterprise Digitalization, sought to attract and retain employees who would drive efficiencies and engage in critical thinking, thought leadership, and automation. But the ever-increasing tactical procurement processing workload was leaving little time for higher-value work, making it difficult to keep those valued employees happy and engaged.

By developing bots to conduct repetitive manual tasks such as searching multiple systems to locate and extract data, Webbers and Smith aimed to address two specific pain points: the inefficiency of the procurement process, which was taking far too long according to their internal customers, and the complexity around defining requirements, which was problematic for the IRS staff. Like other agencies, the IRS wanted to begin with relatively low-risk pilots. Utilizing the FAR — and adhering to what Webbers calls the Rule of 20, i.e., awards within 20 days and proposals under 20 pages in length — a small team at the agency worked with industry partners to build, test, and deploy the first RPA tools.

“

I’m not going through Excel charts anymore and trying to run down things.
I’m able to utilize automation, help make corrections, and identify errors.

— Michael Crawford, Policy Analyst at the Department of Treasury, Internal Revenue Service

For the IRS, RPA became the starting point for a cultural shift around the role of technology innovations in improving employee satisfaction. By moving low-value work to RPA, Webbers freed her staff to focus on higher-value tasks, to question previous assumptions around inefficient processes, and ultimately to be better contributors to the agency’s overall mission. The adoption of technology-driven solutions among this traditionally risk-averse workforce has been so successful that the IRS established a dedicated procurement innovation team — Pilot IRS — that drives additional improvements.

USE CASE 4: Rapid Process Evolution at NIH

Before COVID-19, vendors of the National Institutes of Health (NIH) submitted their invoices by mail. Once they were received, a contractor then scanned them and sent them electronically to the appropriate people for processing. But, if the Office of Financial Management was teleworking full-time, who would collect the mail?

Glenda Conroy, Director Office of Financial Management (OFM) and Deputy CFO at NIH, looked to RPA to help swiftly adapt their paper-based invoice process to a remote workforce’s realities. She started by asking their vendors to send their invoices digitally via email and to include specific information in the subject line. An RPA bot used this subject line information to accurately route approximately 10,000 monthly invoices to the appropriate email inboxes for processing.

RPA handled the brunt of the invoices, freeing OFM staff to focus on exceptions to the process, such as vendors who did not submit their invoices electronically. This flexible and highly functional solution allowed NIH to avoid missing invoices that may have been submitted by mail, which was likely an enormous relief to their vendors during the early days of the pandemic. As an added benefit, this shift resulted in significant cost savings by minimizing the need for scanning. This relatively simple instance of RPA enabled NIH to keep their newly remote workforce productive, get their vendors paid in a timely fashion, and save both time and money through processing efficiencies.

USE CASE 5: Improved ROI at the Office of Financial Innovation & Transformation

In a quest for beneficial innovative ideas, the Office of **Financial Innovation & Transformation** (FIT) within the Bureau of the Fiscal Service (BFS) at the U.S. Department of Treasury launched a pilot program to explore how implementing RPA could potentially save them time and money.

Marisa Schmader, Deputy Assistant Commissioner for Accounting Support & Outreach at the U.S. Department of Treasury, and her team quickly realized that RPA had immense potential to benefit Treasury customers, perhaps through their **Administrative Resource Center**.

Excited by the tremendous amount of time and money an RPA implementation would save, the staff quickly identified additional processes to automate and validate the ROI. One drawback, they soon learned, was that each automation was developed for a very specific environment, making the “plug and play” functionality they had envisioned unlikely. The Resource Center offered RPA services to BFS business owners as a cost-effective solution that could be leveraged with technical expertise, implementation, and ongoing maintenance. Schmader’s team experienced a remarkable outcome when RPA enabled them to convert a massive amount of data for a customer during onboarding. The cost savings were phenomenal compared to their former process of implementing an interface or manual data entry. Since then, the Treasury’s RPA program has grown exponentially. FIT has expanded its RPA support throughout BFS and developed more than 60 bots to date to leverage the skillset and knowledge gained from their pilot.



Why Federal Agencies Are Utilizing RPA

The benefits of RPA in the federal space can be broken into three broad categories:

- **Cost savings** achieved through more accurate processes or higher volume of data managed
- **Innovation** through more intense interaction with industry partners and other agencies
- **Workforce Development** through the removal of busy work tasks

Cost Savings

Automating simple but error-prone or high-volume processes improves productivity, increases capacity, expedites processes, and creates more value with existing resources. This qualitative benefit does not easily translate to a traditional return on investment calculation. As your RPA program matures and the growing number of automations increases, so too will your capacity. This increased capacity does not get applied to one big project that you can cite, and many smaller shifts can be difficult to quantify. Here are some tips from agencies that have faced the quantification challenge.

Gerard Baddorek at GSA suggests calculating the ROI of an RPA program by weighing the average cost per automation against its relative value. This can be achieved by weighing the startup costs against the prior cost of labor dedicated to the activity that is performed by the automation. Other factors include the ability for a bot to work 24/7 and the number of bots in development, production, and deployment. He notes that the greater benefit is the increased capacity, enabling individuals, teams, and entire agencies to achieve more in less time. And, all of these benefits are realized year-over-year.

Harrison Smith at IRS related that many leaders agree that the use of RPA at the IRS will be expanding in the future, primarily because they cannot afford to be inefficient. They must build a case to explore and leverage tools like RPA, artificial intelligence (AI), and machine learning (ML) by demonstrating the value of these tools and their respective potential for return on investment. Not all of the cost-savings are directly attributable. For example, using automation to make the security clearance process faster, better, and more efficient reduces cost. Still, it may have a side-benefit of reducing recruiting costs by making a federal government job more appealing in the best and brightest candidates' eyes.



We are focused on trying to identify projects that make sense for RPA because we believe that demonstrating its value will build additional momentum for increased emphasis across the IRS and Treasury, as well as the federal government as a whole.

— Harrison Smith, Director, Enterprise Digitalization, IRS

Innovation

Process and technology innovations are common benefits of RPA. Many past President's Management Agendas (PMAs) have focused on encouraging efficiency across the federal government. But because the government employs so many people, past initiatives to improve efficiency tended to focus on a top-down approach of putting better tools into the workforce's hands. The intention is to make them faster and more accurate at their assigned tasks without changing the type of work they were expected to do. RPA upends this approach by removing tedious, monotonous tasks, thus creating opportunities for employees to engage in higher-level work and contribute to innovative process improvements within their span of control. Initiating an RPA program enables government agencies to incorporate best practices as they interact with vendors.

Agency Innovation Groups

In addition to external groups, many agencies have developed internal sounding boards to explore new technology. For example, Gisele Holden of NSF shared that innovation is steeped in the National Science Foundation's culture. In addition to having the role of innovation and data analytics in its strategic plan, the Innovation Management Group allows anyone in any position across the agency to bring concepts to the group for evaluation. RPA and AI have been explored in the group as well as in some of the science directorates.

Engaging with Industry

Gaining insight from industry partners is important to the federal government as it strives to improve its use of technology. Part of the transformation reorganization at IRS involves having more of a dedicated presence with industry engagement. Many of the agency's leaders participate in industry forums and dialogues to learn about available capabilities and best practices. They emphasize the value of being open to industry feedback about technical approaches, processing models, cybersecurity, terminology, and stumbling blocks. They have found that welcoming feedback from industry helps them better understand their agency's problems, needs, and limitations. When partnering with industry becomes easier, they have more time, energy, and passion for supporting the mission.

Workforce Development

The benefits of RPA are both quantitative and qualitative. New jobs are created to develop, deploy, and monitor bots. Employees have the opportunity to learn new skills and say goodbye to tedious, repetitive tasks. Not only does this increase efficiency and productivity, but it also has a significant impact on job satisfaction and mission-driven enthusiasm. Here are a few examples of how federal agencies are reaping benefits from their RPA programs.



The National Science Foundation (NSF) invests heavily in training, including RPA. They are continuously exploring ways to improve efficiency. They are working with a vendor to provide training on a new no-code automation platform that enables users to join objects to create simplistic automations. The tool's user-friendly nature attracts more people who identify rule-based, mundane tasks for automation and allows employees to explore different job avenues. Four NSF employees (from outside the CIO's team) have now learned to develop automations, and one has gone on to become a certified developer.

Schmader at Treasury echoes the value of RPA in developing staff. As natural turnover or promotion occurs in entry-level positions that involve repetitive, tedious tasks, the efficiency created by RPA can eliminate the need to hire replacements because responsibilities have shifted. In most cases, employees welcome the opportunity to take on new and different work. Managers at Treasury, familiar with RPA, often answer questions posed by other managers and executives. This grassroots interaction normalizes RPA and lends it credibility.

NIH takes a high-touch approach to promote the positive impact of RPA to their employee base. Conroy communicates directly with the staff to alleviate fears and help people understand RPA with training, contractor support, and participation in the Health and Human Services (HHS) RPA Day. And as bots are deployed in different areas, Conroy and her deputies speak with branch chiefs to learn about their successes, challenges, and experiences with RPA.

GSA CFO Badorrek finds that in some cases, they have been able to automate 20% of the responsibilities of a job, such as connecting data between different systems and extracting data, providing significant value immediately.



If you can eliminate mundane, tedious tasks from a person's work, they will be able to contribute more. In fact, we have seen a tremendous response from employees who want to figure out ways to apply RPA to their jobs.

— Gerard Badorrek, Chief Financial Officer of the U.S. General Services Administration

Planning Your Own RPA Program

When developing any new program, it is advisable to review the approaches and outcomes others have experienced. Following this recommendation is essential to any federal agency's success in developing an RPA program, regardless of the agency's size or the number of automations planned. Agency representatives provided a wealth of information from their personal experiences, which could save future explorers many months of research and thousands of dollars in trial and error. Most importantly, their candid comments and sincere advice will prevent many from making crucial mistakes. The following process has been compiled from the experiences and recommendations of those federal agencies.

NOTE: while each of the following steps is essential, the appropriate order may change, depending on individual circumstances.

Step 1 – Ensure that Your Robotic Process Automations Support Your Mission Objectives

Every federal agency has a stated purpose—its mission. Every person they hire, every project they launch, every program they design, and every dollar committed must be essential to fulfilling the mission. While the promise of doing more with less and eliminating repetitive, mundane tasks with RPA may be enticing, these efforts too must be tied to mission completion.

For example, IRS Chief Procurement Officer Shanna Webbers explained that implementing an RPA program freed the procurement staff from manually identifying and correcting system errors, addressing dataset quality, capturing data, and processing new contract responsibility actions. Now, they can focus on mission-driven objectives with improved efficiency and increased capacity. They gather, consolidate, and analyze large volumes of data and other higher-value tasks that they could not accomplish in the past. This foundational work helps the procurement staff become innovation experts as they mature in their roles and spread the knowledge across the organization. Implementing RPA at the IRS Procurement Office helped them be more efficient, more productive, and provide greater value for American taxpayers.



We felt that using automation would give us additional bandwidth to focus on a different skill set and the areas of emphasis that we want for our procurement professionals.

— Shanna Webbers, Chief Procurement Officer, IRS

Step 2 – Find at Least One Champion

In every workplace, some people welcome change, some tolerate it, and others try to avoid it whenever possible. For this reason, the people who present new concepts should be enthusiastic about their benefits and offer specific examples that their audiences can relate to. They should respond to objections and refer to successful instances that are similar to their recommendations. These individuals should be well connected and influential. There is no single profile that makes for a great RPA champion; as you can see from our interviewees, their backgrounds range from financial to IT, but their common factor is a passion for change and improvement and the willingness to learn and adapt.

Step 3 – Enlist the Help of Your CIO and IT Department

You must have the cooperation of your CIO and IT department for RPA to be safe and effective. Failure to do so will result in additional costs, delays, and potential failure. It may take some time to come to a mutual understanding, but after you have mapped it out once, you'll be able to use that experience as a guide for future automation projects. Here are some relevant experiences from federal agencies:

Gisele Holden of NSF shared her experience of beginning an RPA pilot without the CIO or IT organization's involvement. In hindsight, she strongly recommends that agencies bring in the CIO and IT department as soon as they have a concept so that they can start thinking about security, credentialing, the infrastructure – and save them quite a bit in delays and rework.

James Gregory, Robotic Process Automation Program Director at the U.S. General Services Administration (GSA), described working hand-in-hand with IT to address the following elements of every automation:

CONCEPT – They meet with the customer and the IT organization to talk about the parameters for the automation, access controls system access, data, and transaction volume

FRAMEWORK – A summary of the concept is used to develop a framework to continue planning the automation

PLATFORM – IT reviews the requirements and functionality to establish an enterprise RPA platform

SECURITY – IT implements security controls to certify and credit the platform

ASSESSMENT – They socialize the concept and documentation of the initial evaluation. Input is solicited from everyone who may be impacted by the proposed automation

APPROVAL – After the input has been received and reviewed, the automation plan must be reviewed and approved before development can begin. In some cases, this may involve assigning Authority to Operation (ATO)

DEVELOPMENT – As the automation is developed, system owners and IT staff, including security, address any concerns that arise

CREDENTIALING – If the automation requires system credentials, the roles and responsibilities are reviewed with security to ensure that the least privilege required is leveraged to perform the automation

PRIVACY – If there is any personally identifiable information (PII) involved, a privacy review will be conducted, and a strategy will be developed to preserve the integrity of the PII. The life cycle of accessing, processing, and transacting of the PII data will be documented

THRESHOLD ANALYSIS – Privacy controls, if included, will be validated according to the payment card industry data security standard (PCI) organization. Optimal approaches to the application programming interface (API) will also be considered if necessary



We made the mistake of assuming that porting information from our lab into production would be relatively easy. None of it could be reused. We had to rebuild the environment from scratch in production. Because we were trying to move very, very quickly in our pilot, we only sought to prove the concept, not realizing that it would actually affect the bots that were developed and how we needed to set them up for our environment.

— Marisa Schmader, Deputy Assistant Commissioner at U.S. Department of the Treasury

Step 4 – Find Internal and External Resources with RPA Experience

If pursuing RPA seems daunting, it may be time to turn to your peer group for some creative thinking. There are many different paths you can take to gain the same results. Here are some of the methods used by agencies that have successfully launched an RPA program:

Learn from Others: Communities of Practice

After launching a robust RPA program, GSA received multiple requests to share what they had learned with other agencies. To better serve the federal government, they established the **Robotic Process Automation Community of Practice** to enable all federal agencies to learn from one another. The topics range from how to get started in RPA to how to expand your RPA program to how RPA sets the foundation for emerging technologies.

Many offices that develop an RPA program also create a small community of practice within their group. The community of practice established by the National Institutes of Health (NIH), Office of Financial Management, was so successful that it was elevated to the Office of Management and expanded to serve all of NIH. These communities can provide you with real-world feedback on the pros and cons of various approaches.

Lean on Shared Services

Through the Working Capital Fund, James Gregory at GSA has established an RPA infrastructure to provide automation products to agencies. All of the services they provide are automated, which frees the agencies they support from direct investment or support related to automation – they receive the automated product. His team spends time with business owners, mapping out and optimizing the process and obtaining approval from the IT system owners.

Bootstrap with Existing Resources

Following the success of the Air Force Personnel Center's (AFPC) first proof-of-concept bot, deployed in May 2019, the AFPC formed a small internal team of airmen who have become basic to intermediate-level developers under the leadership of a contracted senior RPA developer. Despite COVID-19-related challenges, they have deployed 20 attended bots so far. As the value of RPA spreads throughout the Air Force, they hope to establish a dedicated RPA team permanently.



Start Small

Testing out RPA for a small, well-defined application before rolling out larger projects can be a practical way to familiarize yourself with its requirements and benefits. Of the four pilots run by the U.S. Department of Housing and Urban Development (HUD), one was not a good application for RPA, two were plagued with security issues, and one made it to production. After the environment had been established, they got the authority to operate (ATO) and addressed the security concerns with a virtual machine in their JIRA cloud. By September of 2021, they plan to have 31 bots in the pipeline.



Launching an RPA program takes a lot of time and attention. You really have to look at the processes and make sure that you understand what you're currently doing. You wouldn't want to automate an inefficient or antiquated process. Spending time to optimize processes provides the best outcomes.

— Glenda Conroy, Director Office of Financial Management and Deputy CFO, NIH

While focusing on process pain points worked well as a starting point for the IRS's RPA program's success, this ambitious approach turned out to be the cause of growing pains at the National Science Foundation (NSF) because of the system implications. Despite a good partnership with Treasury, Gisele Holden of NSF strongly recommends that agencies start with a small use case before attempting complex objectives that involve multiple systems.

Step 5 – Assess and Manage Risk

A fundamental rule of any project is that with every requirement comes risk. This is especially true with RPA. Although it does perform tedious, repetitive tasks more quickly, efficiently, and accurately than humans, it does so by accessing data and systems in a new way. In addition to the security risks, agencies need to address agency culture risks—the fact that not every employee may be excited about the arrival of automation.

To reap the benefits of RPA, every organization must look closely at the potential risks involved and develop a strategy to mitigate those risks. Here is one recommendation from the experience of the federal agency representatives.

Befriend Your Privacy Organization

James Gregory at GSA shared that they rely on their privacy organization for guidance on how to protect and preserve privacy for everything they do. They discuss how to secure and control access to the automation credential.

Step 6 – Leverage and Adapt Existing Practices

Work Within the Framework

To explain the IRS' strict governance, Chief Procurement Officer Shanna Webbers explained that years ago, every organization created its own solutions and had different versions of every type of software, which was unmanageable. Then, the fiscal constraints at the IRS caused tight control. Now it is moving more toward the middle of these two extremes. As innovative contracting demonstrates value, such as **Pilot IRS**, Webbers and her team can identify tests and deploy emerging technologies in an agile fashion incrementally at low costs and have the ability to turn it off if it doesn't work.

Begin with Established IT Governance and Modify as Needed

Considering that RPA is a new program at the Air Force Personnel Center (AFPC), a formal governance structure and rollout process is a work in progress. The approach began like other IT initiatives but now has some Agile qualities due to development speed. The AFPC achieved a deployment rate of one bot per month before COVID-19 slowed them down. The U.S. Department of Labor and the National Institutes of Health also have IT governance processes that apply RPA. In addition to ensuring that a variety of products are offered, and duplication is avoided, it helps forecast demand and validates that RPAs meet stakeholders' business needs.

Establish Protocols

Marisa Schmader at Treasury shared that one of the first obstacles they had to overcome when exploring RPA was IT security. Because there aren't any standard security protocols established for RPA, their discussions with their CIO about running a bot that would integrate data and run processes for them were met with strong objections due to their efforts to prevent bots from entering their systems. After agreeing on the potential benefits of RPA, they developed a formal process whereby an authority to operate (ATO) is given to each bot before it goes into production. They have an operationally clean system and process that ensures both security and a well-running bot in a timely, efficient, and effective manner.



I would say the culture eats strategy for lunch nine times out of ten.
We have incentivization problems, and the incentivization is don't ever make a mistake.
Well, great, the logical extension of that is, 'Don't ever do anything.'
And I think that's a dangerous thing to get aligned to.

— Harrison Smith, Director, Enterprise Digitalization, IRS

Establish a Best Practice Model

Artie Chin, Chief Digital Services Officer, U.S. Department of Housing and Urban Development (HUD), described the HUD RPA Program's governance structure. To simplify any issues that may arise, the process is managed in the digital services office. The senior leadership team handles intake. A normal security review is not sufficient for the functionality of RPA. They had to develop standards along the way, such as user credentials, which was quite challenging to sort out. The final approval is managed by a committee that consists of the digital services RPA lead, the chief technology officer, the information security officer, and one or more representatives from the program office. The intention is to develop a best practice model that can later be replicated in program offices. Chin added that it is very helpful to have support from leadership.

Consider Ongoing Management

Sustainability is a common concern among newly established RPA programs. Employees who do the development might move to another position, location, or agency. Remaining dependent on contractors leaves them vulnerable to any disruption of that relationship. As systems are updated, bots could get kicked offline and need to be modified.

While bots are designed to work on their own from pre-established inputs, there is a possibility that one of those inputs might change, the desired transformation might change, or the output location or format might change. It is important to establish responsibilities and a budget for ownership, monitoring, and ongoing maintenance of existing bots. At some point, there will also be a need to sunset bots for various reasons, including, but not limited to, new systems that cover what the RPA was doing, changing directives, new bots that render others obsolete, artificial intelligence, and other advances.

Operation and maintenance resources, processes, and procedures must be established early in an RPA program. Business process owners and users must be confident that bot operations faults can be resolved at the same quality and timeliness as core IT systems. Also, procedures and ownership must be established for change management so that bots are modified to accommodate changes to systems with which they interact.



A rule we established was to have the bot do all the mechanical data manipulation, even entering data into the financial system but, before you trigger any transaction, a person has to look at it and do the final sign-off.

— Ed Burrows, Vice President of Intelligent Solutions at Brilliant Corporation
and former General Services Administration RPA Program Manager

Step 7 – Explore Funding Options

While developing bots is not an expensive endeavor, it does require some funding. Fortunately, there are many different possibilities for funding. These are a few of the funding sources leveraged by federal agencies to launch an RPA program.

Tap into Existing Funding Sources

Marisa Schmader Treasury revealed that as a shared-service provider, they leveraged the **Treasury Franchise Fund** for initial startup capital for their RPA program as a shared-service offering. They were also able to leverage BFS's blanket purchase agreement (BPA) to finance contractor support during the short transition from pilot to production. Going forward, RPA has been a budget request, making their cost of entry very affordable.

Similarly, the U.S. Department of Labor will utilize a portion of its FY21 IT modernization budget to build out RPA and designate costs related to agency-specific bots to the appropriate agencies.

Baseline Budget Commitment

Gisele Holden of NSF shared that RPA has become embedded in their budget process. Every year, they have funds committed to sustain and grow RPA because it is aligned with some of the tenets of innovation in the strategic plan. In addition, the RPA program has the support of the CFO and the CIO.

The U.S. Department of Housing and Urban Development also has a line item in its central budget specifically designated for RPA. They recognize that, as the program grows, they may have to revisit this decision, but, at this point, it helps all of the offices within HUD take advantage of the opportunity to benefit from RPA.

The funding situation at the IRS is quite stringent. Shanna Webbers and Harrison Smith explained that the way that IRS appropriations are written, only the IT department can pay for anything that touches their systems. While this makes pursuing RPA difficult, it does not necessarily negate their opportunities to leverage various ways to continue exploring RPA and expand the value it provides (such as shared services). An additional challenge is that their funds are allocated three years in advance. Fortunately, RPA is not expensive, and there is some open-source code available. Most critical to their success is that the CIO understands the investment and that any new project does not interfere with their seasonal workflow.

Step 8 – Communicate the Impact of RPA

Every bot you deploy can potentially save time, decrease processing times, improve customer service, and enable an employee to do things they've always wanted to do. That's worth talking about. The more automations you develop, the lower the cost per automation. A new efficiency in one office would likely benefit many other offices within your agency and beyond. So as you consider ways of communicating the impact, don't focus solely on getting the word into your workforce; remember to communicate across and outside your own organization to spread the word about the benefits of RPA.

Provide a Personalized Intro to RPA

Artie Chin of HUD shared that when any program office shows interest in RPA, they set up a meeting for RPA leadership to talk about automation and answer any questions they may have. Even skeptics soon realize that this technology will not take jobs but instead make their work more desirable.

Create a Safe Zone

Shanna Webbers, Chief Procurement Officer at the IRS, explained that they had established a procurement innovation branch that provides a creative, synergistic safe zone where team members can collaborate on innovative ideas to fuel future RPA and other technological activities. It begins with learning from the individuals who are performing contract actions. They get excited about trying out different ideas and talking to others about it. Webbers emphasized the importance of being very deliberate in the way you portray capabilities and expectations. Although this initiative has just begun, they have already started seeing an increase in interest and acceptance of RPA.

Gisele Holden of NSF stated that innovation is steeped in the culture at NSF. Beyond the RPA Center of Excellence, they have established an Innovation Management Group where anyone in any agency position can bring concepts to the group for evaluation. For example, RPA and artificial intelligence are currently being explored in some of the science directorates.

Consider Grass Roots Socialization

When considering how to introduce RPA to a working group, Marisa Schmader at Treasury observed that employees typically share their experiences with their colleagues about what is being done and its impact on the workforce. For this reason, every time they are planning to develop a new automation, they bring in the entire team, including management, and walk through what RPA's all about, how this automation is going to work, and how it fits into the broader picture of things. They use this approach to capture all of the information they need to begin development.

Host Educational Events

To provide information about RPA to all of the staff, the U.S. Department of Health and Human Services (HHS) hosted an RPA event. Glenda Conroy of NIH strongly encouraged her staff to participate to better understand what this technology can do and how it can positively impact jobs. It created a lot of excitement about RPA. Now, HHS welcomes staff to spend time exploring RPA through training.

Utilize Dashboards

Providing transparency builds trust and reinforces accountability. GSA CFO Gerard Badorrek shared that leaders throughout GSA have access to a dashboard that shows how many automations are under development, in production, and deployed. In addition, it displays the automations that have been put into production in the last week or longer and the benefits they provide. This visibility demonstrates the value of RPA within the agency.

Tap into Your Brain Trust

The Air Force Personnel Center (AFPC) recommends utilizing the knowledge of RPA developers, business analysts, enterprise architects, and internal innovation groups to communicate with business process owners and identify RPA opportunities.

Conclusion

The federal agencies' comments in this report represent their actual experiences, challenges they had to overcome, and value and benefits derived from RPA. Management Concepts and ACT-IAC provide this report hoping that the findings and recommendations will assist and guide agency leaders in launching or maturing their RPA programs to support their missions.

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Shanna Webbers, Chief Procurement Officer, Internal Revenue Service



Case Studies

The following case studies were provided by several of the agencies that we interviewed for this report.

Air Force Personnel Center RPA Case Study

1. Describe what were you trying to accomplish (describe the problem or opportunity you attempted to address)

Automate the process of taking specific military member information from an Excel roster and entering each into a personnel change of station orders processing application. Validate each member record in the system and then update the system and spreadsheet accordingly. Send notices to applicable Air Force personnel offices for records needing corrections. Each line item took approximately 5 minutes to process manually by a human, and we had three humans doing this type of work all day long.

2. Describe what you did (what actions you took)

Developed a bot using UiPath Studio to automate the process of pulling information from the Excel roster, looking it up in the system, validating, and then updating the orders processing application system and spreadsheet. Additionally, programmed bot to send electronic notice to applicable personnel office indicating which records need corrections.

Tested the RPA thoroughly until the desired result was achieved and the process automation ran smoothly.

3. Describe the results (improvements achieved)

Deployed military assignments robotics process automation in order to minimize manual workload and keep up with workload (eliminating backlogs).

4. Describe the workforce impact: job satisfaction, workload, type of work, training needed, etc.

Fewer individuals now tied up by this process, over 70% of process automated, backlog erased, greater job satisfaction, human errors greatly reduced, other individuals used to work related areas of work. End-user training very minimal in order to trigger and monitor attended bot daily. Military orders now processed timely, which positively affects traveling military members and their families.

5. Describe what you learned and what would you recommend to others

We learned that an intermediate to advanced level of RPA training is needed to develop, deploy, and sustain bots successfully. Additionally, testing and deployment should take into consideration remote VPN-based usage under slower networking conditions.

Department of Treasury, Bureau of the Fiscal Service RPA Case Study

RPA Name: Travel Audit Sampling Document Retrieval

RPA Description: Automates the retrieval of documentation utilized in the sampling/audit of travel vouchers

1. Describe what were you trying to accomplish (describe the problem or opportunity you attempted to address).

The travel department had an established post payment auditing process in place to randomly review travel documentation for accuracy. This process required staff to pull all documentation/receipts for each trip that was selected to be reviewed. It is estimated that 2,000 hours annually were spent gathering documentation to be reviewed. The travel department wanted to increase the sample size being reviewed and target specific high-risk travel, but they did not have additional resources available to assist with the increased workload.

2. Describe what you did (what actions you took).

An RPA was developed to automatically retrieve support documentation for the randomly selected trips and place the files in a central location. The RPA runs unattended each day at 9pm, which means that the staff can immediately start reviewing the documentation at the start of their workday the following morning. Since the process was streamlined, the travel department was able to revamp the post payment auditing process to increase the sample size and target high risk travel, without adding additional staff or overtime.

3. Describe the results (improvements achieved).

The travel department was able to increase the documents audited by 60% and has increased errors identified by 1,090%. The RPA was developed in approximately 8 weeks, costing travel approximately \$10K annually to develop and maintain, but in the first year was able to assist in identifying an additional \$60K in overpayments.

4. Describe the workforce impact: job satisfaction, workload, type of work, training needed, etc.

The travel department is able to perform additional audits without adding additional staff. Employees are now able shift their focus from retrieving documentation, to actually reviewing it and identifying errors. This shift in focus has resulted in increased job satisfaction.

5. Describe what you learned and what would you recommend to others.

When starting any new RPA, it is critical that the process owners have the standard process documented and have the availability to engage with the RPA team. It is recommended that everyone remains open to changes, rather than just automating something because it is how it has always been completed. Before moving an RPA to production, ensure that there was adequate testing and that the staff clearly understands what tasks remain manual vs automated.

National Institutes of Health RPA Case Study 1

1. Describe what were you trying to accomplish (describe the problem or opportunity you attempted to address)

The new COVID-19 funding appropriated by Congress mandates tracking funding and ensuring proper use for only COVID-19 research. The Department of Health and Human Services comprehensive tracking of the COVID-19 expenses that were incurred by NIH appropriations. To ensure the compliance of these mandates, the NIH Office of Financial Management (OFM) internal audit team was tasked to audit these COVID-19 expenses to ensure compliance with the mandates. In addition, the team was tasked with updating NIH leadership with the status of these funds on a regular basis. The details for these expenses are stored in different applications like the grants management and contract management systems. In addition, the financial data is stored in the financial management system. In order to develop a report and identify the data for the internal audit, it required manually combining data from all sources, which is a cumbersome process. OFM plans to automate the process of collecting data from various sources using the RPA software.

2. Describe what you did (what actions you took)

OFM mapped the data elements required for the internal audit team to review the COVID-19 related expenses. We also identified the data sources for the data elements. Then we established data pipelines to feed data to the automation bot and developed the most suitable report format for the internal auditors to use the data.

3. Describe the results (improvements achieved)

The manual process of combining the data was taking a financial management analyst more than three hours and not all the data elements could be captured due to lack of access to the data sources. The internal auditor would then combine the reporting dashboard with the data from the contracts and grants management applications which then took two hours to audit the transactions. The automation bot will perform these tasks in under 30 minutes.

4. Describe the workforce impact: job satisfaction, workload, type of work, training needed, etc.

The audit staff is appreciative of the automation as it saves them the manual effort of combining the data. The data is readily available for auditing purposes. As the report layout was designed with the internal audit team's input, minimal training was required.

5. Describe what you learned and what would you recommend to others

Recommend engaging the impacted staff early on during the design process. The early engagement helps in developing automations that are efficient and provide maximum benefit to the organization.

When developing goals for automation it is important to understand the overall process and the organizational goals. Recommend documenting the "As-Is" process and capturing the procedural steps by interviewing the process owners and staff performing the steps to identify areas of improvements to the procedures before developing any automation.

National Institutes of Health RPA Case Study 2

1. Describe what were you trying to accomplish (describe the problem or opportunity you attempted to address)

Our goal was to establish a solution to process invoices electronically via an email-based solution in place of processing hard copy invoices utilized prior to the COVID-19 pandemic. Since the solution had to be interim (due to the long-term goal of implementing IPP), it eliminated a lot of potential choices for the solution. The solution required the email-based invoices be sorted and assigned to the invoice processing staff to record the invoices to be paid in a timely manner as per the Prompt Pay Act. Prior to implementing the solution, vendors were mailing their invoices to our office and it was a manual effort to process and pay our vendors.

2. Describe what you did (what actions you took)

It was determined that the best way to implement this interim solution was to leverage RPA software. The first step was to develop a standard email format for vendors to submit the invoices. The bot monitors the incoming emails within the designated mailbox. When a new email is received, the bot reads the email and captures the Invoice Number, Purchase Order Number, and determines which accounting technician the invoice should be assigned to, based on predetermined logic. This logic was made configurable so that the bot can read the updated logic as required. This reduced the need for updates to the bot should the logic change. The bot also captures the invoice assignment in a log for audit purposes. The bot then moves the email to the accounting technician's queue for processing. The team worked closely with the contracting office to communicate and disseminate the instructions for submitting invoices via email to the vendors, trained staff on how to access the queues, and developed dashboards to monitor the progress.

3. Describe the results (improvements achieved)

The processing time of paying invoices has improved significantly compared to the previous paper-based invoice process. The new solution was well liked by the vendors and they were pleased to see that NIH shifted from paper based to email based invoices so quickly. In April when the new method for submitting invoices was implemented, 50% of the invoices received were email based. By the end of July, more than 85% of invoices received were via email. The timely payment rate for the invoices remained high. The vendors are appreciative of NIH's efforts to process payments in a timely manner, especially during this challenging time.

4. Describe the workforce impact: job satisfaction, workload, type of work, training needed, etc.

The staff were trained to use their queues to process the electronic invoices. The staff was appreciative of this new electronic method, as the handling of the paper-based invoices on a daily basis would have required them to be physically in the NIH office and in close proximity to other team members during the pandemic.

5. Describe what you learned and what would you recommend to others

Selection criteria of the candidate process for automation is a key success factor. Also, removing process redundancies and streamlining the process before automation is important. RPA software is very effective in automating processes that are highly manual and have low exception rates. RPA software is very flexible but might not be suited for complex integrations between business applications. It's worth utilizing the RPA software in situations where truly integrated solutions are not feasible due to the following:

- Cost
- Ownership of the application
- Vendor support
- Timeframe

National Institutes of Health RPA Case Study 3

1. Describe what were you trying to accomplish (describe the problem or opportunity you attempted to address)

The IPACs submitted by other agencies to NIH for collection do not always have accurate information listed for NIH/Office of Financial Management (OFM) staff to record in the NIH Financial Management Application. For each IPAC line that needs to be processed, the staff must run a report from the Financial Management Application to verify the data provided on the IPAC is correct. In order to assist staff and focus on addressing the exceptions by identifying them faster, OFM analyzed and identified a way to automate the validation process until Treasury's G-Invoicing is implemented, which will address most of these pain points. The opportunity we seized on was automating the manual IPAC data validation steps to identify the incorrect or invalid IPAC charges.

2. Describe what you did (what actions you took)

OFM mapped the end-to-end process of processing the IPAC charges that need to be recorded as disbursements. The team also captured all the procedural steps to be performed by staff at each stage in the process and gathered the volume and procedural timing for each step. We identified optimal procedural steps and developed mechanisms to capture the timing at each step. Then we implemented automation using Robotic Process Automation software. We automated the downloading of the IPAC data and verification procedures, which requires no human input, is rule based, and has a low exception rate.

3. Describe the results (improvements achieved)

The process of manually validating each IPAC line was taking 20 minutes for each staff member. With the implementation of RPA, the validation time has been reduced to under one minute. The total overall savings per year will be around 1,600 hours. For the last three months the automation has resulted in 400 hours of time back for staff to focus on more high-value work. The process completion rate for IPACs increased from 70% to 90% in the last three months.

4. Describe the workforce impact: job satisfaction, workload, type of work, training needed, etc.

The staff was very much involved in developing the standardized verification process and the format the validation results should be in. In addition, the staff were trained to use the output of the automated validation results. The staff is extremely satisfied with the impact that automation has made in identifying the exceptions.

5. Describe what you learned and what would you recommend to others

Recommend engaging the impacted staff early on during the design process. Early engagement helps in developing automation processes that are efficient and provide maximum benefit to the organization. Early engagement also increases staff comfort with the change.

When developing goals for automation, it is important to understand the overall process and your organizational goals. Recommend documenting the "As-Is" process and capturing the procedural steps by interviewing the process owners and staff performing the steps to identify areas of improvements to the procedures before implementing any automation.



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