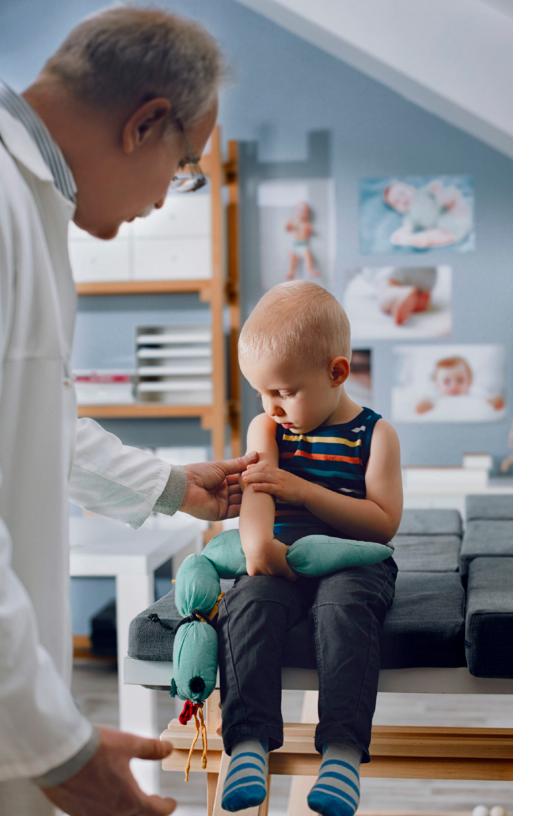


HEALTHCARE

Robotic Process Automation (RPA) in the Healthcare Sector

Removing the Barriers for Better Patient Care



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UIPATH IS LEADING THE "AUTOMATION FIRST" ERA – championing one robot for every person, delivering free and open training, and enabling robots to learn new skills through artificial intelligence (AI) and machine learning. Led by a commitment to bring digital-era skills to more than a million people, the company's enterprise Robotic Process Automation (RPA) platform has already automated millions of repetitive, mind-numbing tasks for business and government organizations all over the world, improving productivity, the customer experience and employee job satisfaction.

RPA: The data-wiring for a robust and accessible healthcare system

Whether working for a healthcare provider or payer, most healthcare professionals work toward a similar goal: to extend high-quality, affordable healthcare to the broadest population possible.

Governments and healthcare stakeholders further attempt to create a resilient and more prosperous society through creating a robust and accessible healthcare system.

Healthcare professionals want to bring highquality healthcare to the broadest population possible. To do so, however, providers and payers alike have to complete and manage a myriad of forms, paperwork, and information. All this information—patient records; provider information; billing and payment data—is collected, processed, filed, and stored in a vast array of siloed and disparate systems.

Operating in this space becomes even more complicated when one considers the entire infrastructure that supports the healthcare system: HR departments, IT departments, and supply chains. The multitude of processes and web of networks have made healthcare convoluted and sluggish, resulting in care that can be more expensive, slower, and less effective for the patient. For private providers, this also means lower profits.

The price and negative consequences of that care fall predominately in the laps of taxpayers and individual patients or their familial networks.

Further, the healthcare industry is facing a need to digitally transform their organizations. Some of the compulsion to digitalize derives from government mandates and others from increasing demand to stay competitive. There is a way that stakeholders in the healthcare industry can make the system more efficient.

Robotic Process Automation (RPA) is a tool that supports digital transformation. Conceptually,



it is the wiring that can link all the data in all the systems together in a faster, more accurate, and more efficient way than heavy business process management systems, custom application program interfaces (APIs), and other traditional IT approaches. RPA enhanced with artificial intelligence (AI) can push and pull a vast array of data from system to system quickly and accurately. In addition to accelerating the system, it takes the time-consuming, low-value tasks out of human hands, freeing them up to do more value-added work.

¹ Weber, Lisa, "RPA and AI: Physician Practice and Hospital Use Cases," 2018. ² Ibid



USE CASE

RPA can make the insurance approval process faster and more user friendly

RPA can make the insurance approval process faster and more user friendly.

In the U.S., when a patient goes to a physician for care, the patient must first register with the place of care. During the registration process, hospitals and health systems are required to measure a patient's predicted length of stay, the risk a patient poses, and other factors that can affect patient satisfaction and reimbursement. Obtaining insurance approvals as soon as possible is vital in order to calculate the length of stay and forecasted reimbursement. However, U.S. hospitals on average can have around 29 different disparate electronic systems that house a patient's information.¹ These systems are rarely integrated, and the lack of integration slows down the insurance approval process, and ultimately revenue cycle management.

RPA robots can be programmed to gather all the relevant data, even if housed in disparate locations, and to push it to the appropriate employee handling registration much faster than if an employee performed the process manually². Advice and thoughts from UiPath healthcarefocused Customer Success Managers

"

RPA presents a very real opportunity for the healthcare system to stop the bleed of rising costs across the globe. RPA and Intelligent Automation can lead the way in eliminating waste and changing the consumer's health journey"

 Nikki Ahlgren, Customer Success
 Director and Healthcare expert, UiPath.

Taking on Goliath one step at a time

Figuring out how to achieve desired healthcare outcomes is a massive challenge, due to the sheer numbers of people targeted (as many as possible) and the funding needed to reach the target group. The healthcare industry is an \$18 trillion global economy,⁴ employing approximately 13 million people in the United States alone.⁵ Healthcare spending is gigantic, and has increased steadily since the year 2000.⁶

The healthcare sector is also experiencing one of the most disruptive periods to date. While providers confront hindering factors to improve patient outcomes, increase operating margins, and improve patient experiences, many payers operate on disjointed and fragmented systems and are facing declining profitability.⁷ These demands are causing consolidation in the industry, resulting in the need for the large-scale data integration, process automation, and advanced analytics.⁸ It's easy to lose sight of the patient within this colossal network.



³ https://tincture.io/prelude-to-himss19-technology-isnt-healthcare-959b02e8df0b

⁴ https://www.kff.org/other/state-indicator/total-health-care-employ ment/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Locat ion%22,%22sort%22:%22asc%22%7D

⁵ https://apps.who.int/iris/bitstream/handle/10665/276728/WHO-HIS-HGF-HF-WorkingPaper-18.3-eng.pdf?ua=1

 $^{^{\}rm 6}$ Where applicable: not all payers are for-profit, as is the case with German Krankenkassen

⁷Weber, Lisa, "RPA and AI: Physician Practice and Hospital Use Cases," 2018.



Digital technologies empower providers to better care for patients

A healthcare provider can be a person (such as a doctor, a nurse practitioner, a clinical psychologist) or the institution of care (hospitals, nursing homes, or hospice agencies).⁸⁹ Evolving technologies, a growing patient advocacy culture, changing expectations in the patient-provider relationship, and demographic and economic shifts are propelling new demands for providing care.¹⁰ Further, healthcare providers face constant pressure to improve patient outcomes and experiences, while simultaneously reducing costs.

When harnessed correctly, digitization and new technologies can reinforce patient care, increase

a provider's revenue, speed up cash flow, and increase patient and employee satisfaction. Hospital and clinic administrative staff, physicians, and nurse practitioners all carry out to some degree repetitive rules-based activities that can be automated to give them more time for higher-value work.

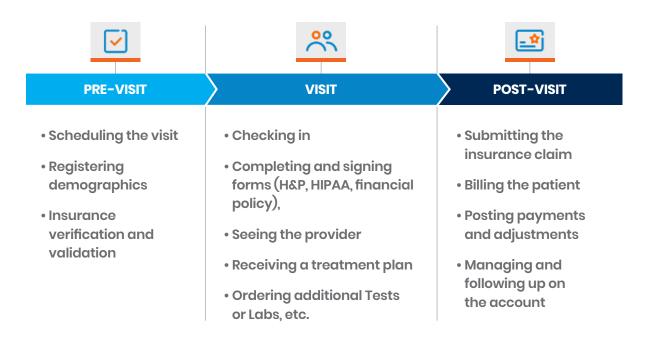
The activities carried out in the healthcare provider space can be understood as activities set up along the patient's journey for consultation, treatment, and payment for the care. One way to view the activities in this journey is by dividing them up into three time periods: pre-visit, visit, and post-visit activities. Pre-visit activities are all the tasks that set the patient up for the visit with their provider. Visit activities are the activities performed while the patient is at the provider, and post-visit activities are those that revolve around ensuring payment for the provided care.¹³

⁸ https://hr.berkeley.edu/node/3777

⁹ Examples of healthcare providers found at the healthcare.gov website https://www.healthcare.gov/find-provider-information/

¹⁰ https://www2.deloitte.com/content/dam/Deloitte/global/ Documents/Life-Sciences-Health-Care/us-lshc-hospital-of-thefuture.pdf

¹¹ Interviews with UiPath Healthcare Expert, Lisa Weber



Healthcare provider activities divided into three time periods

Many of these tasks are still carried out

manually by administrative staff, doctors, nurses, and other practitioners. Errors that occur during manual entry can slow down the provider getting paid for their services, and when operating on razor thin margins, that speed matters.

Take for instance one of the visit activities: completing and signing forms. When a patient checks-in at a physician's office, the patient is typically given forms to complete: demographic background, medical history, required regulatory forms like HIPAA or GDPR, and more. The responsible staff uploads the information either by scanning it in or entering it manually. The work, while necessary for treating a patient effectively, is tedious and rife with duplication errors.

However, software robots can enhance the data entry process. An RPA robot can enter pertinent and specific health information into a patient's Electronic Medical Record (EMR). Because RPA robots have greater accuracy than humans, the EMR will be more robust, and staff can use their extra time more efficiently.

Providers can use RPA robots for all the activities listed in the chart above. Picking the task with the most potential for an automation pilot program is one of the real initial challenges. Advice and thoughts from UiPath healthcare-focused Customer Success Managers

"

Don't try to automate your hardest and most complicated process first. Look for the low-hanging fruit that has the most repetitive, manual steps that cause heartburn for the end user. End-user buy-in will be critical for success and quick wins will generate buy-in for future backlog ideation. Executive sponsorship of the automation program will be required when looking to scale."

– Nikki Ahlgren, Customer Success Director and Healthcare expert, UiPath.

Taking a step in the right direction for healthcare payers

The way a nation's healthcare system is designed results in a variety of challenges for

its payers. In a single-payer healthcare system like that of the United Kingdom (U.K.), Spain, or New Zealand, government-collected taxes create a pool that pays for citizens' healthcare expenses.¹² These systems can face the challenge of meeting the nation's healthcare needs, extending service, and improving quality while the funding source doesn't increase, as is the case with the U.K.¹³ When the public funding for the healthcare system does not grow as fast as the population and its increasing demands for care, paying for healthcare becomes challenging.

For Japan, a country that guarantees the right to universal healthcare and combines private insurance with public insurance, while tightly regulating the costs of healthcare procedures, it faces another challenge. High life expectancies, economic stagnation, and generally high prices in technology have led to a strain on financing the system.

The United States (U.S.) on the other hand has a complicated system. 294 million Americans are insured – roughly 91.2% of the U.S. population, according to data published by the U.S. Census Bureau.¹⁴ Additionally, 56% of Americans receive health insurance from their employer, followed by Medicaid (19.3% of Americans, and Medicare

(17.2%).¹⁵ The latter two systems are funded by the government. In the for-profit insurance sector, payers tend to be facing declining profitability, driven by losses in their exchange businesses, regulatory reforms, and market competition.

Regardless of the system, to stay ahead of these challenges the modern payer – private insurance companies, government payers, or otherwise – will need to identify manual and rules-based activities to take advantage of emerging technologies and automate. Process automation is one major driver in an organization's digital transformation program that can drive breakthrough performance.¹⁶

Similar to the provider example, one can divide the activities of the healthcare payer into particular segments based on the way it interacts with the patient/customer. Many of

- ¹³ https://improvement.nhs.uk/about-us/who-we-are/
- ¹⁴ https://www.census.gov/content/dam/Census/library/ publications/2018/demo/p60-264.pdf
- ¹⁵ https://www.census.gov/library/publications/2018/ demo/p60-264.html

¹⁶ https://www.ey.com/Publication/vwLUAssets/eydigital-transformation-in-insurance/\$FILE/ey-digitaltransformation-in-insurance.pdf



¹² https://www.pbs.org/wgbh/pages/frontline/ sickaroundtheworld/countries/models.html

these activities can be enhanced, sped up, or pushed to gold-standards of accuracy through with the help of RPA. **Some of these activities are visible in the chart at right.**

In the payer world, one could look to the example of claims management to see how automation can enhance business goals. Claims processes in general are usually complex, manual intensive, cumbersome, and error-prone.

For example, one healthcare insurer was confronting a systematic and daily error with their claims process. A range of one thousand to two thousand claims were bottlenecked due to an issue with an error code. Employees in the claims group had to manually change the error in order to move these claims along in the process. The manual work contributed to excessive amounts of time and money spent. The claims group was able to program an RPA robot to take the same rules-based steps human employees would take, which significantly saved employees time and freed them to focus on more valuable work.¹⁷

The activities mentioned in the list above, which are just a few out of many, are areas where healthcare payers could immediately examine their own automation potential.

Payer activities segmented into interactions with patient/customer

Managing Plan Members	Billing Members	Managing Network Providers	Managing Payment Claims	Customer Service
Eligibility check	Payment processing	Provider credentialing	Claims intake	Service requests
Enrollment applications	Subsidy processing	Provider data management	Claims processing and adjustment	Customer assistance
Account reconciliation		Performance management	Fraud management	
	RPA can enh	ance, sped up, or	push these	

activities to gold-standards of accuracy.

Advice and thoughts from UiPath healthcarefocused Customer Success Managers If an agency has gone through business process management (BPM) or business process analysis (BPA), that's an ideal point in time to start RPA. That's because they've already looked at the tasks and the workflows. So, the next logical step is RPA. The agencies who have the most momentum are those that have done BPM and BPA recently."

- Lydia Cooley, Sales Executive, US Federal Health Care, UiPath.

¹⁷ https://www.uipath.com/solutions/process/ healthcare-payer-automation

RPA is always evolving, enabled by Al

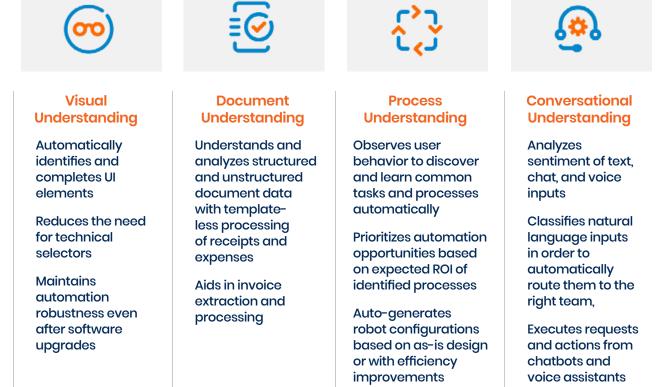
RPA is a technology that helps automate routine, rules-based, and repetitive tasks to create a digital workforce that can focus on more value-added work.

The technology allows businesses and organizations to configure computer software which emulates the way humans interact within digital systems to execute a business process.

RPA is continuously evolving, developing new capabilities, and making process automation more efficient. The introduction of Al to RPA has enabled it to evolve from automating rules-based and repetitive tasks to increasingly complex and cognitive tasks.

Al can be generally described in one of two broad types: pragmatic Al or general Al. Pragmatic Al is Al which solves specific customer needs and delivers immediate ROI, whereas General Al (also at times called pure Al) is theoretical. RPA robots are learning new skills enabled by Pragmatic Al. This type of Al can be expressed in terms of pillars and capabilities.

Required capabilities for Al-enhanced RPA



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Don't believe the hype on generalized Al

In popular culture and news reports, AI is often described as a complex, multi-functional, selflearning super algorithm with a mind of its own. Don't believe it. While impressive advancements have been made in AI over the past several years, this type of complex, generalized AI is not realistic. The reality is that generalized AI is nearly impossible to develop, even harder to deploy, and has not demonstrated any ability to deliver meaningful ROI in solving real customer problems.

Automation First: now's the time to explore automation's potential

Al-enhanced RPA comes at a time where automation and Al-enhanced automation are becoming a ubiquitous part of our everyday

lives. Dr. Amy Webb, a quantitative futurist, spoke at the World Economic Forum's Davos conference in January 2019 about the immediacy of Al. "Al is more than a buzzword and it's not a tech trend. It's the third era of computing, which is to say every single facet of our lives and our work ties into that third era of computing." ¹⁸ Given the current pervasiveness of these technologies, and the undisputable trend towards increased automation, Al-enhanced RPA offers greater efficiency for business outcomes. The mindset of exploring the automation potential of a business is a winning approach.

¹⁸ https://www.reuters.tv/l/PeoC

Automate the provider-credentialing process

When a payer wants to add a new provider to its network, the provider's information must be systematically validated in a process known as provider credentialing.¹⁹ It is a time-consuming, yet unavoidable process that involves multiple steps, including filling out an enrollment form, entering data from the form into the payer system, validating the information received, and more.

RPA is an excellent assistant in this entire process. A software robot can scan the forms filled out and received by the provider and enter that data into the payers' systems. Further, it can be programmed to interact with websites used for validation. Whether the payer is trying to validate educational qualification or services offered by the provider, when these tasks are routine-based, RPA can take them off the hands of employees, carry them out at any time of the day, and inform the responsible employee when exceptions have been found or when human intervention is needed. The benefits gained from automating the provider-credentialing process include a **reduction in operating costs, increased process accuracy, improved compliance, and faster onboarding** of a provider into the payer network.

¹⁹ Provider credentialing is also a step that employers do when hiring physicians. Hospitals, clinics and other healthcare institutions can also use RPA to verify provider credentials.

Public sector healthcare: a lesson from the United States

In T.R. Reid's book, "The Healing of America: A Global Quest for Better, Cheaper, and Fairer Health Care," the author and former Washington Post correspondent, categorizes the world's some 200 countries' healthcare systems into four broad healthcare models established to accomplish three main goals. While this is just one classification of healthcare models, it helps in conceptualizing trends in public sector healthcare. A chart of the models can be found at right.

According to Reid, the United States combines aspects of all model types. While Medicare and Medicaid resemble the NHI model, the Veteran's Administration has been historically more similar to the Beveridge model, and employeeinsured Americans tend toward the Bismarck model. Thus, it's impossible to have a discussion

The National Health Insurance Model (NHI)	The Bismarck Model	The Beveridge Model	Out-of-Pocket Model			
Canada, Taiwan, South Korea*	Germany, France, Belgium The Netherlands, Japan*	Great Britain, Spain, New Zealand*	The majority of our planet*			
Properties	Properties	Properties	Properties			
Government pays private sector providers.	Insurers tend to be financed by employers and	Government provides health care financed by taxes	Those who can afford healthcare, through			
nsurance is universal.	employees through payroll deduction.	Many hospitals & clinics are owned by the government	bartering, trade, or some form of currency can be			
Government has greater power to negotiate medical prices	Not-for-profit health insurance plans cover entire citizenry	Doctors can be both private doctors and government employees.	seen and treated by a healthcare provider Providers can range from trained physicians			
	Predominately private healthcare providers	Private doctors collect fees from the government	to local healers			

Outcome: Keeps people healthy | Treats the sick | Protects families against financial ruin from medical bills

*Chart is not an exhaustive list of nations and how they fit into the four models, but an example of some nations' healthcare systems.

on creating desired results in the U.S. healthcare system without discussing the role of the public sector. Moreover, there are lessons to draw out from this discussion for other public sector providers as well.

According to data released in 2018 by the Center for Medicare & Medicaid Services (CMS), the U.S. government spends most of the budget on healthcare (Medicare, Medicaid, the Children's Health Insurance Program (CHIP), and Affordable Care Act (ACA) marketplace subsidies). In 2017 the U.S. government spent roughly \$1 trillion on health insurance programs, equating approximately one quarter of the overall budget.²² Growing federal spending on health programs is a trend that dates back decades, and is one that is predicted to continue. ²³

For policymakers and stakeholders, stunting those healthcare costs for the government (and the individuals) is crucial. Initiatives such as value-based payment initiatives, which strive to encourage payment for positive health outcomes, is one way in which the U.S. government has attempted to reign in the healthcare spending.²⁴ Another way is through shifting the way government agencies perform their tasks.

There are several tasks performed each day within government agencies that are repetitive and rules-based tasks that can be successfully automated. In fact, in August 2018, the Office of Management and Budget released a memorandum directing executive agencies to develop and implement strategies to, amongst other initiatives, use technologies such as RPA to reduce such tasks.²⁵

With RPA, both payers and providers can help reduce the time it takes for patients to see a physician, decrease expenses, and improve the quality of care for patients. The implications are broad. Lydia Cooley, a UiPath Customer Success Manager, who focuses on the healthcare sector within the federal government, explained that healthcare divisions within the federal government can use RPA to achieve these objectives.

RPA can improve processes, improve the quality of care, and decrease expenses by:



"Agencies should develop and implement reforms to eliminate unnecessary or obsolete compliance requirements and reduce the cost of mission-support operations. Reforms may include ... introducing new technologies, such as RPA to reduce repetitive administrative tasks ..." – OMB Memorandum M-18-23.

²¹ https://www.pbs.org/video/frontline-sick-around-the-world/

²² https://www.cbpp.org/research/federal-budget/ policy-basics-where-do-our-federal-tax-dollars-go

²³ https://www.crfb.org/papers/american-health-carehealth-spending-and-federal-budget

²⁴ https://www.rand.org/pubs/testimonies/CT381.html

²⁵ https://www.whitehouse.gov/wp-content/ uploads/2018/08/M-18-23.pdf

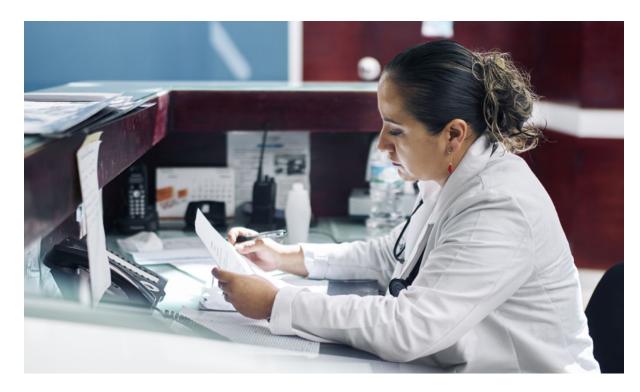
Describing how RPA has a huge impact in back-office functions (financial management, accounting, human resources) but also for the mission-side of the sector, Ms. Cooley described, "While on one hand, it's about reducing costs and serving the community of patients, it's also about the employees and removing the mundane repetitive work so that these **employees can focus on higher-value work.**"

Being able to identify and automate low-value work is a lesson for all government payers,

especially when considering doing more valuable work with the same amount of funding or less. The municipality head from Trelleborg Sweden, Fredrik Greijer found an increasing municipal population putting strain on the administration's capability to work. The municipality opted to automate repetitive tasks and do more highervalue work with the funds they had. "If we fail to do this, we will have to resort to tax increases," said Geijer in one interview.²⁶

Automating also has cost savings and quality and compliance benefits. The U.K.'s National Health Services (NHS) Improvement found that RPA could drive efficiencies in corporate services by undertaking manual data entry, highvolume work. Additionally, RPA could be quickly implemented with a return on investment in less than 12 months, and it could reduce business and compliance risk by eliminating human error.²⁷

Regardless of the type of system(s) a government establishes to pay for healthcare, where there is



manual and repetitive rules-based work being done, there's room for automation. Moreover, due to the need of government agencies to achieve more without increasing spending, automation poses a particularly viable solution. Government providers should examine the potential for automating the low-valued tasks their employees are doing, to give them more time on higher-value work.

²⁶ https://www.uipath.com/solutions/industry/publicsector-automation See video: "Automating administrative tasks in the Trelleborg Municipality (1/2)."

²⁷ https://improvement.nhs.uk/resources/robotic-processautomation/

Getting started with automation in healthcare

RPA has applications specific to the healthcare industry and applications that one can find in any large business. Considering the entire industry **McKinsey & Company has predicted that up to 36% of healthcare has the potential to be automated with attended robots**,²⁹ UiPath estimates that by including unattended robots, up to 60% of the value chain can benefit from RPA. In contrast, 36% of the processes are quickly automatable with attended robots with a five-tosix week implementation time.

Some of the back-office business functions are the most tried and tested RPA deployments that have fast implementation times and a quick ROI. These functions include automating the onboarding of new staff, invoice processes, general reporting processes, claims management, and supply chain processes, all of which are applicable to healthcare. The automation of these processes has an average implementation time of 5.2 weeks and an average ROI of 5.3 months.³⁰

For providers and payers alike, the potential to automate means thinking through the processes they do daily that are repetitive and systematic. A software robot can be programmed to take on a variety of these tasks, accelerating cycle times and freeing them up to provide the best possible care for their customers. **The tables below should** provide a few ideas of automatable processes for providers and payers. Some of the tasks may also overlap. For example, both providers and payers verify the credentials of individual healthcare providers.

²⁹ https://www.mckinsey.com/business-functions/digitalmckinsey/our-insights/where-machines-could-replacehumans-and-where-they-cant-yet

³⁰ Average implementation time and ROI has been calculated from some 30 RPA deployments of UiPath RPA solutions, for which data had been provided by the client or its RPA implementation partner.

PROVIDERS can automate a wide range of processes

Document processing

Healthcare providers can automate intake, filing, and processing of patient health records, patient registration, and other critical documents.

Prior authorization

Physicians can use RPA to collect the vast array of information needed and monitor the progress of prior-authorization on a daily basis, expediting the process and cutting costs of manual work.

Propensity to pay

Providers can accelerate their cash flow through programming RPA robots to retrieve real-time information on customer copay and deductibles.

Regression testing

RPA robots can be used to aid testers in the regression testing process, through running tests, pulling data and performing other systematic testing steps. RPA robots can perform parts of this process significantly faster than humans.

PAYERS can automate tasks

The claims management process

An estimated 85-95% of the manual and time-consuming claims management tasks can be expedited and performed more accurately with an RPA robot.

The member enrollment process

RPA can expedite the enrollment of new members into a payer's plan, by extracting data, validating information, and coordinating with human employees.

Provider credentialing

Payers can accelerate the credentialing process by automating RPA robots to capture data, perform validation tasks, and provide the employees with exceptions and finalized documents.

Customer service (CS) activities

RPA can reduce customer service costs, provide a better user experience, and utilize the human workforce for more important tasks by automating CS activities.

Centralized billing office (CBOs)

CBOs can use enhanced RPA to improve the quality of patient phone calls and to crunch data to more speedily and accurately produce necessary reports.

Explore your processes and start automating

RPA acts as a wiring mechanism that can retrieve data, complete forms, perform systematic tasks, and harness AI to understand unstructured data, learn processes, and enhance the achievement of humans working in the healthcare sector. The primary impact of deploying RPA in this sector is that it reduces and often eliminates repetitive, mundane, manual tasks (which reduce cycle times) for staff, and it improves the interoperability between disparate systems to close gaps in care and boost revenue cycle management.

In its foundation, RPA tackles the manual, time-consuming, and low-value tasks that both

providers and payers take on every day. As an effective solution for tackling these mundane tasks, RPA benefits everyone.

Providers can generate revenue by spending less time on administrative tasks and

processes and repurposing that time to spend on the patient. They can harness today's technology to offer optimal and thorough care for patients who need it. Payers, likewise, can help their members pay providers more quickly and more efficiently. The combination of cost reduction from both sides can help tackle rising healthcare costs, which are a burden on all parts, but predominately for tax payers and the patients. Healthcare organizations - whether private sector or public sector - should explore immediately the various tasks and process that they can automate using RPA. With an estimated overall 60% of tasks that can be automated, providers and payers both should start automating those processes, as it's in the interest of their organizations, the human employees, and the customers that lie at the center of the health care industry.

Discover how to automate with UiPath

Contact our sales team!

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