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# How to deliver better patient outcomes with Digital Workers

RPA and applied AI in healthcare



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## Building better patient outcomes

The global healthcare industry is booming. It's predicted that by 2040 it will be valued at \$25 trillion, growing by triple digits every 5 years or so. The US market represents \$3.6 trillion of that amount, but how can healthcare providers and suppliers continue to increase margins while providing better patient experience and outcomes? <sup>(1)</sup>

Patients today expect more from the healthcare system. They look around at services in other industries and see convenience, simple user experiences and digital platforms, so why shouldn't they demand the same from healthcare?

But the challenges faced by healthcare providers are significant. Despite initiatives taken in the 2009 American Recovery and Reinvestment Act (ARRA), instigating a move from paper to electronic patient records<sup>(3)</sup>, lack of interoperability remains a barrier to providing efficient services. With so many systems and processes in play that operate in silos, continuum of care suffers and patient outcomes are unsatisfactory. This is exacerbated further by medical staff being held back by the time in their day taken up by administrative tasks. In the face of such disruption and challenges, patients often feel forgotten.

In order to achieve better outcomes, many hospitals are doing all they can to give more time for front-line care and creating a patient-centric approach to their healthcare. To achieve this, they are starting to integrate, automate and analyze data so patients feel as if they are more than just a number. <sup>(2)</sup>

While there's no single overarching cure, Enterprise Grade Robotic Process Automation (RPA) and Artificial Intelligence (AI) can provide an answer to many of these healthcare challenges. Whether that's how to free physicians from repetitive tasks or managing medical records more efficiently, RPA and AI together in the form of digital workers can contribute to a better healthcare system for payers, providers and patients alike.

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## \$25 Trillion

predicted value of world wide  
healthcare by 2040

1. <https://www.weforum.org/agenda/2018/05/25-trillion-healthcare-problem-how-to-address-it/>
2. <https://www.statista.com/statistics/491302/health-and-wellness-united-states-market-value/>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2789830>





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## More than just RPA

### Why Intelligent Automation isn't like early automation

When you read the word automation, you may think you've heard it all before. Screen scraping, desktop automation — nothing new here. But that's where you'd be mistaken.

Intelligent Automation combines RPA and AI to create digital workers that mimic the actions of humans working across a variety of systems and applications anywhere in your organization.

Digital Workers free medical and back-office staff from repetitive and manual tasks, empowering them to overcome the work bogging them down. An easy way to picture this is if you think of Digital Workers applied in their simplest and most complex forms. In their simplest application, they can handle the

paperwork which a physician would otherwise be completing. In a more complex scenario, they are handling and interpreting unstructured data.

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## Free staff

from repetitive and manual tasks

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# Applied AI — not AI general

When you hear the word “AI”, you probably think of the singularity — the emergence of intelligent machines like the Terminator in the 80s, or HAL from Kubrick’s 2001: A space odyssey in the 60s. Obviously, the AI in digital workers isn’t this version of AI. The Sci-Fi version is ‘AI general’ and is a long way off.

Inside digital workers is machine learning and a type of AI called ‘applied AI’. This version type of AI’s name was coined in the 90s. It’s a form of intelligence that simulates part of human intelligence to perform a set task or process and is the type of AI that has become the most widely used in recent years.



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# Interoperability

## A challenge in every healthcare organization

According to the American Hospital Association, there are 6 key pathways to reaching interoperability: security and privacy, efficiency and usability, cost effective and enhanced infrastructure, standards that work, connecting beyond electronic health records, and shared best practices. <sup>(1)</sup>

When this is laid out in terms of a patient's journey, it's difficult to see how true interoperability is achievable. There are simply too many data points settings to consider. For instance, as a patient moves from a physician's chair, to blood tests, to hospital treatment, their information moves through multiple systems, applications and organizations. Each of these producing a separate record and data for the patient.

On top of that, healthcare providers and insurers are increasingly gathering data from non-clinical records such as schools and healthcare products. Of course, with the right level of interoperability, all of this data has the potential to improve outcomes and create a better experience for patients. But today it sits apart, often siloed off from the potential benefit it could provide.

As we now look at the roll out of electronic medical records, early attempts have come up against common interoperability challenges. Thankfully, many of these issues are ideal areas that Digital Workers can address with a mix of RPA and AI.

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### The levels of interoperability

HIMSS defines interoperability as having four levels: foundational, structural, semantic and organizational. Each of these defines different levels of format, governance and compliance of data, and how it can be transferred seamlessly, securely and quickly between organizations.



(1) [https://www.aha.org/system/files/2019-01/Report01\\_18\\_19-Sharing-Data-Saving-Lives\\_FINAL.pdf](https://www.aha.org/system/files/2019-01/Report01_18_19-Sharing-Data-Saving-Lives_FINAL.pdf)



# Managing digital medical records

## A good place to start with interoperability

88% of US Healthcare organizations now use electronic records. A seismic shift in usage considering only half as many had them ten years ago.<sup>(1)</sup> Yet, system operability remains a significant challenge.

In order to digitize US Healthcare, \$36 billion federal dollars were invested.<sup>(2)</sup> Setting aside potential conflicts about government spend, moving people's records into digital data was without a doubt the correct move.

But as with most initiatives of this size and scope, it has come with caveats. There are as many as 700 vendors of Electronic Health Record (EHR) systems which often don't talk to each other, meaning providers still routinely resort to transferring data by hand or fax.

Unsurprisingly, with all this manual handling and lack of integration, 1 in 5 patients have noticed an error in their electronic data and nearly half are concerned it may negatively affect care.<sup>(2) (3)</sup>

### How can Digital Workers help?

Essentially, digital workers can optimize the use of systems without the need to replace them. They can move, update and seamlessly integrate data, without the related issues you'd usually associate with APIs or other costly integration projects. They work with the same interfaces that people use and bridge the gap

between disparate systems. The result is an elimination of the risk of human error, a significantly lower cost and a faster competition time than when performed by trained healthcare professionals, or outsourcers. Meanwhile, the systems and data are completely compliant and secure from potential prying eyes.

(1) <https://www.kff.org/other/poll-finding/data-note-publics-experiences-with-electronic-health-records/>

(2) <https://khn.org/news/death-by-a-thousand-clicks/>

(3) <https://www.kff.org/other/poll-finding/data-note-publics-experiences-with-electronic-health-records/>

# Transforming electronic referrals at East Suffolk and North Essex NHS Foundation Trust (ESNEFT)

A Public Healthcare use case from across the pond

The UK government has recently launched an initiative for 'Paper switch off' which took place in 2018 and another with the aim of having 'predominantly' digital records by 2020. <sup>(1)</sup> While this is part of socialized medicine in the UK, the overall process is one that is easily transferable to the US healthcare system.

ESNEFT was told that it needed to move to the Electronic Referral Service, or eRS. This system is used to refer patients from their physician, or local surgery, into the hospital or another healthcare service.

Before automation was implemented, when a General Practitioner (GP) referred a patient, they'd typically have up to 15 different pieces of data on that patient. A medical secretary had to print this information and then re-enter the information into another application. As you might imagine, this wasn't a wise use of anyone's time.

Digital workers were deployed to actively monitor the 2,000 inbound referrals that were typically coming into the Trust every week. The automation reduced the time it took to evaluate, sort and forward the referrals from 25 to 5 minutes and freed the medical secretaries to complete more valuable, patient facing tasks. Introducing digital workers resulted in the release of 500 hours of time and a significant reduction in agency spend across five clinics.

Many similar and varied use cases of this kind of automation are also being adopted in US healthcare today, such as inbound referrals from affiliate community providers being sent to hospital specialty providers, or insurance plans to obtain prior-authorizations and eligibility verification.

(1) [https://www.aha.org/system/files/2019-01/Report01\\_18\\_19-Sharing-Data-Saving-Lives\\_FINAL.pdf](https://www.aha.org/system/files/2019-01/Report01_18_19-Sharing-Data-Saving-Lives_FINAL.pdf)



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## Better patient care and experience

### Providers, payers and frontline care

Today, 91.5% of people are insured in the US system, or 296 million people — mixed between 67.7% private and the rest public<sup>(1)</sup>. The mix of insurance and the intertwining system which comes with it, can be troublesome for building better patient experiences.

After all, any for-profit insurance company needs to stop profit margins from decreasing, while dueling with ever-growing regulations and competition. Meanwhile, providers have similar challenges making sure everything is ready pre-appointment, no one unnecessarily misses their care and every step of their pathway is smooth.

On the frontline, physicians, nurses and specialists are hindered from providing more care by non-medical tasks, or 'scut' work. According to physicians, nurses and specialists, they spend an inordinate amount of time doing it.<sup>(2)</sup> In fact, in one report from the American Journal of Emergency Medicine, they found that 44% of doctors' time is spent on data entry and a meager 28% on direct patient care.<sup>(3)</sup>

Let's look at how automation can be the savior of patient experience for providers and payers alike.

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**44%**  
of doctors' time is spent on data entry

- (1) <https://www.census.gov/content/dam/Census/library/publications/2019/demo/p60-267.pdf>
- (2) <https://opmed.doximity.com/articles/scut-work-is-harming-residents-and-their-patients>
- (3) [https://www.ajemjournal.com/article/S0735-6757\(13\)00405-1/abstract](https://www.ajemjournal.com/article/S0735-6757(13)00405-1/abstract)







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## Prior authorization (PA)

### A smoother process for insurers and providers

No insurance policy is a perfect fit for all treatment. Which often means that many treatments, and most referrals to a specialist, require initial checks and repetitive follow up with the insurance organization prior to the treatment. Seems sensible, right? But this simple process is more often than not complex to complete.

It goes a little something like this. The doctor, or physician, contacts the specialist service or prescriber. From there they check whether Prior Authorization (PA) is needed and pull the forms required for the vendor or insurer. At this point, the physician, or healthcare provider usually has to go through a phone tree to work out which form is needed. Once done, the form is faxed onwards to the

insurance provider who reviews it. This process can take between one to ten days and an appeal can take up to two months.

While waiting for the process to finish, many healthcare providers will provide treatment with the assumption that the insurer has approved. The problem with this approach is the potential for an unexpected bill if the insurer decides not to cover it, or utters the dreaded 'out-of-network' phrase. This cumbersome process could work a whole lot smoother with automation.

**Let's delve into how this works from both the insurer's and healthcare provider's perspective.**

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**91.5%**

**of people are insured in the USA**

From a healthcare provider's view, a digital worker can pick up the details of the orders from the start and check against the insurance requirements. Once a digital worker has captured the required information, it can use a mix of technology to both scan and input the correct data. Either through the use of a portal, or through other internal or external systems.

Insurers can also benefit from digital workers in this situation. By using portals and digital workers together, you can structure the required data and forms to capture pre-authorization and speed up the time to adjudication. This gives doctors and healthcare providers an easier way of working out what exactly is covered and what isn't.

Another use case, is having a digital worker review all pending procedures for a missing authorization prior to the appointment. At the 24-36 hour mark, providers, patient access staff and patients can be alerted to potential financial and care experience impact, and even reschedule the appointment if desired.



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## Patient care coordination

### Be the right side of patient choices

There's a lot to think about pre-appointment coordination. It's not uncommon for patients to forget or for key details to be missed by the provider. In order to create the best patient experience possible, you need to do all you can to remind them and make each step as easy as possible. Especially, if you don't want to come out on the wrong side of active patient choices, which according to Siemens and HBR accounts for 60% of healthcare spending. (1)

**There are obviously too many potential processes to go through here. But, let's break down a couple ideas with proven value.**

(1) <https://www.siemens-healthineers.com/insights/news/mso-hbr-improving-patient-experience.html>



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# Leading US healthcare provider

## Patient in-take process

The pathway of a patient through a healthcare provider needs to be as smooth and comforting as possible. But, as often is the case, even though this provider delivered exceptional care, certain sections of the journey didn't quite stack up — namely its pre-appointment required documentation.

The process prior to automation required the patient to bring a host of information pertinent to their medical history, medications and even medical records from other provider visits. Once arriving at the provider's office or hospital they'd again need to fill out multiple forms before treatment — taking valuable time sitting and building frustration with the process.

The solution to this was to utilize digital workers with a portal. By logging in online, a patient's experience can start in the comfort of their own home. Not only does this reduce the risk of delays and remove the need to carry

sensitive medical records to and from hospital, but it also means any issues can be flagged before they arrive and rectified.

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**60%**

**of healthcare spending dependent on active patient choices**

[cloud.blueprism.com](https://cloud.blueprism.com)



# East Suffolk and North Essex NHS Foundation Trust

## Did-Not-Attend (ESNEFT) — Another use case from across the pond

The cost of missed appointments in the USA is a startling \$150 billion each year.<sup>(1)</sup> The UK has faced similar problems with people missing or wasting appointments, costing hospitals thousands of pounds each month.

ESNEFT estimated that each outpatient appointment missed was costing them around £160 (\$200). As in the US, appointment reminders via SMS were implemented in order to reduce these numbers. All patients were sent an SMS reminding them of their upcoming appointment with the option of cancelling via text.

Unfortunately, the lack of interoperability between SMS and provider schedules means patient cancellations seldomly convert blocked appointment capacity back to open.

With intelligent automation deployed, if the patient informs the system of a cancellation, the Digital Workers search multiple systems

and notify the relevant patient contact center. The healthcare staff can then either work the existing patient wait-list or promote the newly opened slot. Now these appointments are put to good use and the Healthcare Trust is avoiding the waste of £2.1 million (\$2.6 million) worth of appointments. But, perhaps more importantly for the patient experience, it meant that people could be seen quicker and engagement levels remained high.

(1)<https://www.hcinovationgroup.com/clinical-it/article/13008175/missed-appointments-cost-the-us-healthcare-system-150b-each-year>





## Revenue Cycle

### Revenue cycle as part of a patient pathway

The revenue cycle is being managed every step of a patient's journey. Yet, it is rarely considered when talking about the patient's experience at a provider. Rather confusing when you consider the average family's health coverage already costs \$19,616 a year and any extra contributions will likely be a point of contention. <sup>(1)</sup>

The key here is that patients want transparency and a process which is clear every step of the way. Because a little surprise along the way can lead to a low satisfaction level even if their clinical care was exceptional. On top of that, an unsatisfied patient will be less easy to collect a large balance from for the provider. The question is what is transparency in this situation?

And, how can you make a revenue cycle both end-to-end and part of a patient pathway with automation?

According to the Healthcare Financial Management Association, the revenue cycle follows ten key steps — from the charge capture, to patient collections, all the way through to utilization review. <sup>(2)</sup> If we take this as the standard route, let's pick apart one and show where automation can help drive efficiency and provide transparency to patients.

Patient revenue collections can be difficult if unexpected. By using Digital Workers to link up the early claims with insurers and expected collection amount, you can accelerate the payment from insurers. And, by informing patients every step of the way of how much they'll be out of pocket, it can lift the financial burden from their minds as they have transparency of cost. What's more, as they are accurate and faster than the manual way of monitoring, you can be assured that delays, errors and losses are kept to a minimum.

(1)<https://www.kff.org/health-costs/report/2018-employer-health-benefits-survey/>

(2)<https://searchhealthit.techtarget.com/definition/revenue-cycle-management-RCM>

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## Provider Credentialing

### Meeting compliance requirements with ease

When a new physician, healthcare specialist or nurse wants to start work at a hospital they need to have their qualifications checked. Each will run through a different variant of credentialing and confirmation that they are fully licensed to fulfill that position. The process for this is complex, multi-party, duplicative and, due to its often manual nature, error prone and intensive.

One healthcare organization was attempting to find a better way to handle this than the usual approach. The process had multiple challenges with an internal legacy system which simply couldn't handle variables, mixed with external sources which were spread across multiple clients. Before automation, they did much of this manually, and were experiencing quite a number of issues with speed to delivery, resources and quality.

By using Digital Workers connected to a human interface, they provided new healthcare workers with a portal to structure the information they need to enter and take that information to decide what forms are needed for compliance. Once completed, they used language recognition and processing to complete the checks. All in all, making the process more efficient, while reducing

risk and keeping the healthcare organization compliant.

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**\$19,616**

**the average cost of family insurance**



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## Digital Workers & healthcare

### The intelligent workers to help you do more

With Mckinsey stating that 36% of healthcare work could be automated and 74% of administrative tasks, there is no question the healthcare industry is ripe for automation. <sup>(1)</sup> Hopefully, throughout this booklet you've seen some key places in your organization where intelligent automation could be implemented.

Whether you start with prior authorization or a human resources process, automation is playing a key part in making healthcare the patient-centric industry it has always wanted to be. But it doesn't stop there. Automation can help your organization do more and your employees achieve more. As your organization finds new innovative business opportunities and your employees have time to care for your patients every desire.

Get in touch with us to see how we can help you do more.

(1) <https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/AutomationBySector/WhereMachinesCanReplaceHumans>







## About Blue Prism Cloud

Blue Prism Cloud delivers an artificial intelligence (AI) driven intelligent automation platform that enables organizations to accelerate their digital transformation journey by swiftly extend the benefits of automation across the enterprise. Our award-winning Software as a Service (SaaS) platform simplifies scaling, giving companies access to a pool of cloud based intelligent digital workers that can perform the repetitive, time-intensive tasks that slow people down. By integrating this digital workforce with their human teams, companies can intensify their focus on growth and achieve a step change in efficiency.

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