

# Sharing our learning on Robotic Process Automation



West of England  
Academic Health  
Science Network

# The purpose of this report

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This report collates learning gathered by the West of England AHSN about Robotic Process Automation technology, implementation and benefits, as an emerging technology that appears to have the potential to make a significant contribution to releasing NHS capacity.

It complements [the national RPA guidance document](#) issued by the NHS Transformation Directorate's Digital Productivity Programme.

## Who is it for?

This report is aimed at NHS senior leaders, board members, digital leads and transformation leads.



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# What is Robotic Process Automation?

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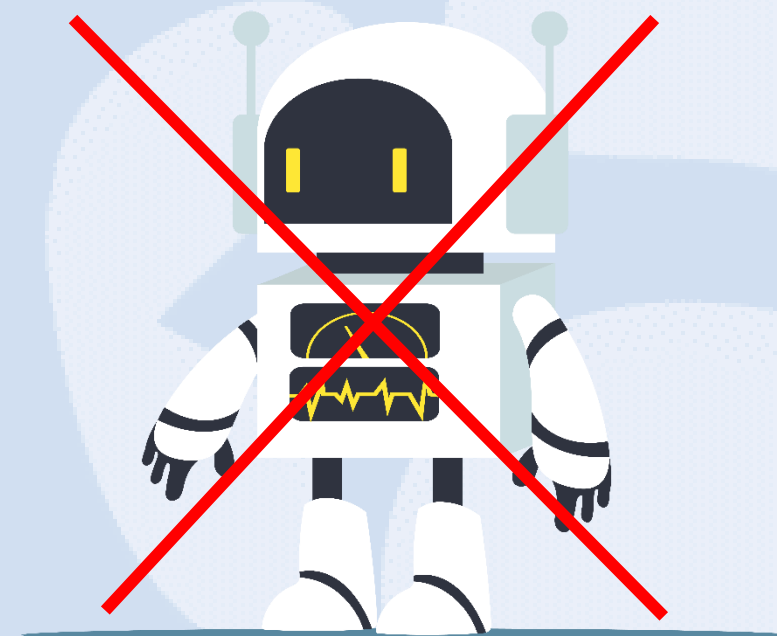
Robotic Process Automation (RPA) is simply a computer programme, or script, that runs in the background to automate a task or set of tasks that had previously been done by a person through a series of keystrokes.

The computer programme code runs in the cloud, often referred to as the robot, or 'bot'.

The computer programme is sometimes called 'Process Automation', which removes the misconception that robots are an inherent part of this technology.

In the NHS, RPA can be used in clinical and non-clinical settings to automate administrative tasks performed by clinicians or non-clinicians. A number of real example case studies are described below.

Automation can be enhanced with other features, such as character recognition and translation services.



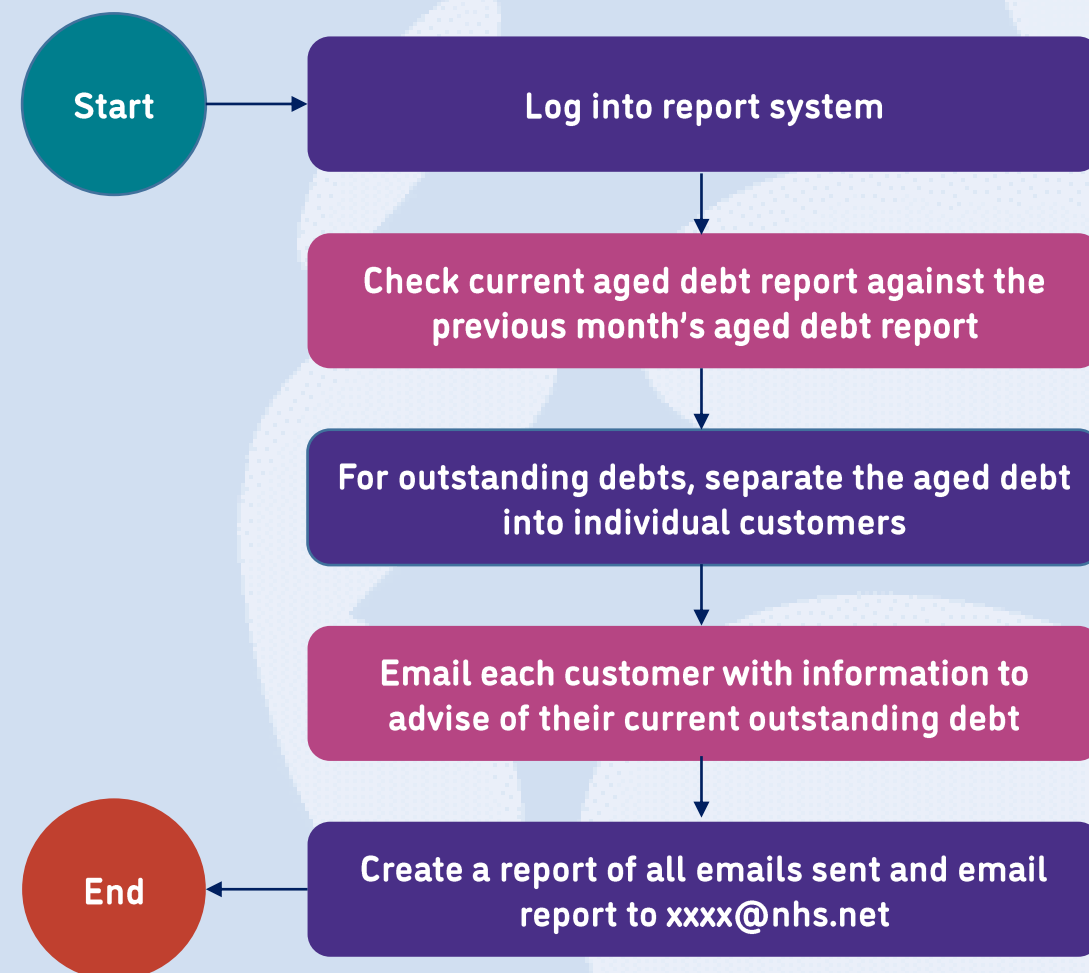
# Is RPA safe?

RPA is a computer programme and will therefore run a set of instructions and then stop. It has no ability to action anything that isn't written into the computer programme, and RPA scripts will include instructions on what to do should certain conditions be met.

It is therefore specified and controlled, and would be implemented following testing and validation.

## Example:

Automating the finance process of emailing debt reminders to customers would require the steps illustrated on the right.



The script illustrated on the previous page could be set to run monthly. It would not need any human intervention unless there were system changes, such as a new password for the report system, or a requirement for the final report to be sent to a different email address.

In this scenario, the script would be paused, updated, tested and validated and then re-activated.

An automated process may require a login and password, which would be securely stored in line with NHS cybersecurity and Information Governance requirements.

As RPA scripts don't involve humans, there is no human error. The script will run repeatedly as required. It doesn't fatigue, get distracted or suffer from boredom – factors that can lead to human error.



# What are the benefits of RPA?

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RPA enables departments to increase capacity without recruiting additional staff.

- RPA releases staff time by automating their administrative tasks. These staff are then available to carry out higher value tasks to offer improved services or fill other vacancies.
- Releasing time from a clinician by automating their repetitive administrative tasks, creates clinical capacity without employing additional clinical time.
- Releasing administrator time by automating their repetitive administrative tasks can help with staff retention as staff can be developed to move into more satisfying roles.
- As increasing numbers of processes are automated, some roles may not be required, resulting in departmental efficiency and cost reduction.
- RPA performs tasks much faster than humans, and can scale up to high volumes at pace.
- RPA can run processes 24/7 and overnight, so work is not limited to office hours.

RPA can improve safety and assurance as it reduces human error from automated processes by removing the human factor from the task.

Additional benefits can be seen in terms of supporting the workforce through reducing the burden of administrative tasks, improving patient outcomes from increased capacity as clinical and non-clinical staff have more time for patient-facing activities, and waiting times may be reduced or prioritised.

Those who have implemented RPA have also reported benefits from working collaboratively, including reviewing the collective effectiveness of existing processes.



# What are the costs?

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To futureproof this document, costs have not been included. However, an investment in terms of finance and time is needed to benefit from RPA. This includes:

- Procuring the cloud-based technology (robots, or bots) from a vendor. There are a number of options. Open-source technology is free of charge.
- Training or procuring a technical developer or team to work with your business leads to identify processes to automate, and write and implement the automation code.
- Time from organisational and business leads in engaging staff to prepare for automation, communicate the case, create an improved vision and plan for the business that automation will enable.
- Time within the department to manage the business transformation processes of implementing this technology, realising the benefits and creating new pathways and workflows.

# What's the difference between RPA, artificial intelligence and machine learning?

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**RPA** replicates computer processes that were previously carried out by a person using a keyboard and mouse. An RPA programme carries out a set of instructions and repeats these as often as scheduled. It does not learn or make any judgement-based decisions. A poorly designed automated process does not have the ability to self-improve.

**Artificial intelligence (AI)** is an umbrella term that describes technology which enables a machine to mimic human cognitive functions, such as learning and problem-solving, using maths and logic to simulate the reasoning that people use to learn from new information and make decisions.

**Machine learning** is a subset of AI which allows a machine to automatically learn from past data without direct instruction. This enables a computer system to continue learning and improving on its own, based on experience.

# Ten top tips for writing an RPA business case

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1. Provide clarity on key drivers for the business case. These could be financial, operational, patient outcomes, staff wellbeing and mental health or all of the above.
2. Align your business case to national, regional and local strategy. Include any specific issues that need to be solved.
3. Build a roadmap for future processes to demonstrate vision for change and the strategic approach across various departments.
4. Give evidence of achievement from other NHS organisations using RPA.
5. Ensure the 'total cost of ownership' is captured.
6. Clearly define all the clinical and non-clinical benefits.

7. Ensure the financial return on investment is realistic and achievable; consider if this is cash releasing, cost avoidance or time released with associated financial benefits.
8. Include specific processes and metrics that will be monitored to demonstrate the return on investment.
9. Access support and advice from the RPA community as needed.
10. Business case support is available free of charge from e18-consulting. See the contact section for details.

# How is RPA being used in the NHS?

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RPA is used in different settings across the NHS. The seven case studies that follow describe some of these.

The range of applications gives an indication of the actual and huge potential this technology has to 'release time' from clinical and non-clinical roles at a time of enormous workforce pressures.

The following case studies cover use in:

- Acute trust clinical and non-clinical application
- Primary care
- Migration of data
- HR services
- Finance services.

# Case study 1: Outpatients

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## The challenges:

- To reduce the cost of the department.
- To increase efficiencies and increase staff capacity for value-add departmental tasks.
- To address the patient backlog accrued during the pandemic.

## The technical solution:

Procured Blue Prism and built-up own Trust-wide in-house automation team over time.

## Processes automated using RPA:

Pre-populating pharmacy prescription lists, semi-automated RAS triage process; booking patients into clinics, clinically validate 'on hold' follow-up clinic appointments; auto-check for DNAs in outpatient clinics and alerting staff by email after two occurrences; escalates two-week wait cancer referrals if approaching target dates by emailing nominated staff member(s); uploading patient details to national cancer register; auto-checks and books patients waiting for diagnostic procedures; 'scrapes' pre-defined data from ERS to populate the Patient Tracking List; prioritisation of backlog waiting lists through auto-search for key words using optical character recognition.

### **Benefits:**

- Achieved 90% outpatient clinical fill level overall.
- Achieved 95% new patient slot booking from ERS.
- Assurance of many routine tasks as automation eliminates human error.
- Significant savings in replacing high churn roles which heavily featured repetitive administrative tasks.
- Significant savings in replacing other roles where staff are redeployed into other vacancies.

### **Other points to note:**

- Initial investment was paid back in 24 months through jobs no longer required.

### **Contact for further information:**

Peter Coutts, Deputy Divisional Director, Great Western Hospitals NHS Foundation Trust.

Email: [peter.coutts@nhs.net](mailto:peter.coutts@nhs.net)



# Case study 2: Migration of data

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## **The challenges:**

- Large migration of data needed from six EMIS instances into single EMIS instance.

## **The technical solution:**

- Support with business case from e18-Consulting (free of charge service).
- Blue Prism, including start-up consultancy services. Plan to recruit in-house team in the longer term (Band 7 and Band 5), and complete Blue Prism training (40 hours).

## **Processes automated using RPA:**

- Migration of patient demographics, referrals and clinical data from EMIS.

## **Benefits:**

- Able to procure an RPA set-up at the same cost as employing a team of 16 Band 3 staff to manually carry out the EMIS data migration. The RPA infrastructure will be available to automate many additional processes across any settings.
- Faster migration of data using automation over a person.
- Increased data integrity through elimination of human error.

## **Other points to note:**

- Secured funding from NHS Unified Tech Fund for Year 1.
- High demand across the ICS in different settings for RPA now programme is in place, specifically HR services with opportunity to streamline processes, and desire to automate a system-wide clinical 'sitrep' of capacity status.

## **Contact for further information:**

Baljit Chahal, Head of Clinical Systems Transformation, Sirona care & health. Email: [baljit.chahal2@nhs.net](mailto:baljit.chahal2@nhs.net)

# Case study 3: Acute trust

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## The challenges:

- To reduce the cost of the department.
- To increase efficiencies and increase staff capacity for value-add patient tasks.
- To transform activity to meet the patient backlog accrued during the pandemic.
- To improve the patient experience.

## The technical solution:

- Procured Blue Prism and developed in-house automation team.

## Processes automated using RPA:

- GP routine, urgent and Fast Track (two-week wait) referrals; telederm referrals; cancer MDT referrals; dental referrals; clinic preparation; appointment cancellation via online and text; patient demographic validation between PAS, eRS and SPINE; finance invoices to web centre; radiology RTT clock stops; texting of staff PCR covid results; vehicle tax and MOT status for Northern Ambulance Alliance (which comprises four ambulance trusts); appointment status with primary care.

## **Benefits:**

- Significant WTE savings through redeployment of staff.
- Increased job satisfaction and staff experience for colleagues redeployed from repetitive administrative processes to 'higher value' roles.
- Reduced staff turnover
- Reduced human factor errors
- Built NHS processes for the NHS by NHS substantive staff – no expensive consultancies or private providers needed.
- Improved patient experience.
- Cost benefits for patients and colleagues.
- Delivering Trust-wide services in a modern way.
- Inter- and intra-Trust integration; primary and secondary care integration through automation.

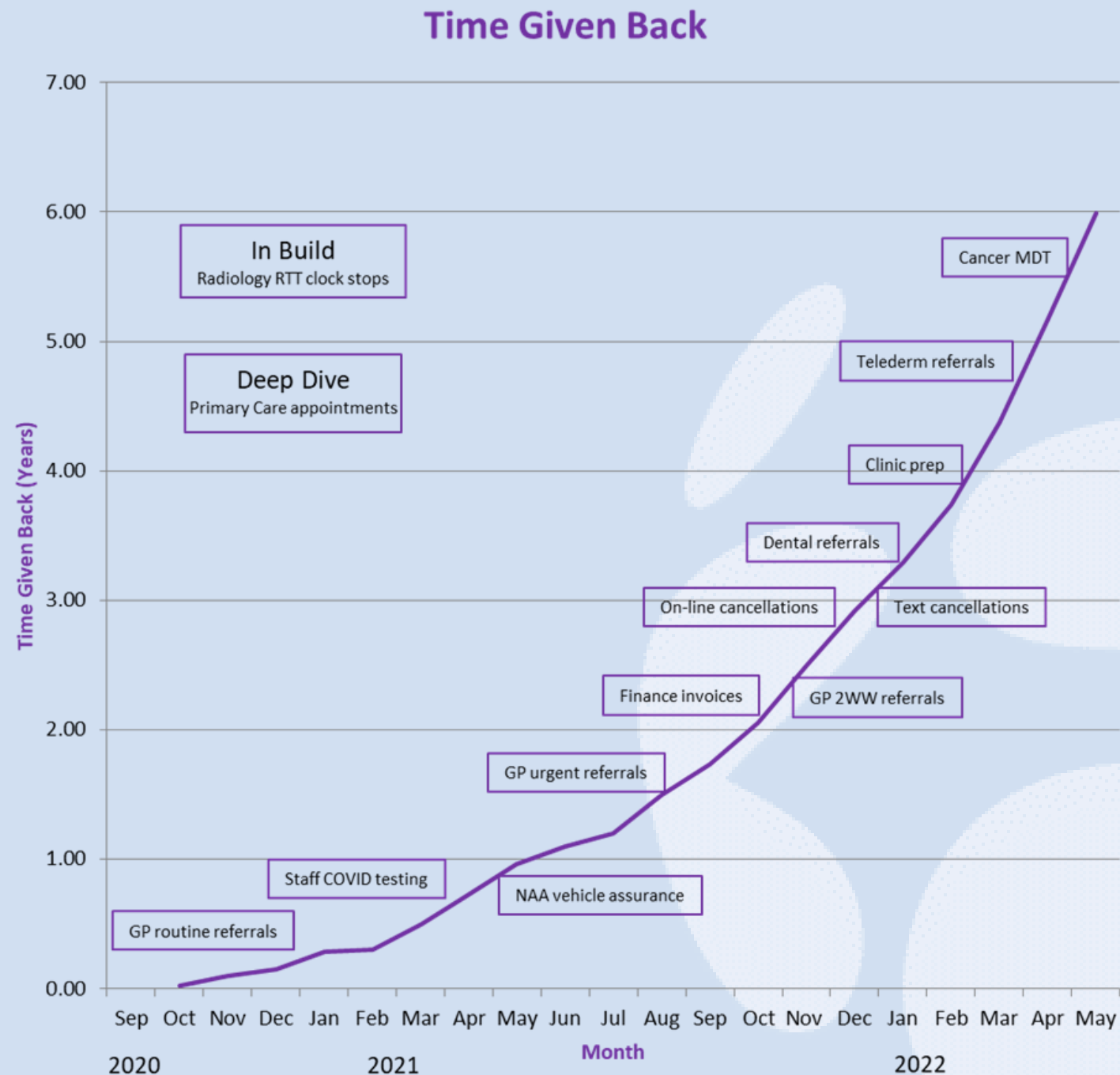
### **Other points to note:**

- 20 months after go-live, RPA has delivered six years of time back to colleagues to have a quality experience at work - see graph on the following page.
- Proof of concept underway with primary care.
- 'Plug and Play' with trusts using like-for-like applications in discussions for proof of concept with two regional Trusts).

### **Contact for further information:**

Richard Moyes, Outpatients General Manager, Leeds Teaching Hospitals. Email: [richard.moyes@nhs.net](mailto:richard.moyes@nhs.net)

## Case study 3: Acute trust



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# Case study 4: Referral-to-treat cancer pathway

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## The challenges:

- To get patients from referral to cancer treatment as soon as possible, within 62 days or less in line with national guidance, to improve outcomes.
- Reducing the time patients on a cancer pathway are waiting for a diagnosis.

## The technical solution:

- Open-source RPA software called AutoHotKey, a free-of-charge Microsoft tool.
- Initial development by computer science students on placement from local University.
- RPA solutions, including the open-source scripting RPA program called AutoHotKey.
- Using open-source and modular solutions, so that learnings can be freely shared across healthcare settings.

## Processes automated using RPA:

- Referrals auto-retrieved into the department from eRS; securely alerting clinicians of investigation results using natural language processing; booking patients into next available lung cancer clinic; ordering investigations during MDT discussions; uploading data to national audit sites.



## Benefits:

- Shorten the lung cancer pathway so patients receive treatment faster, resulting in improved prognosis and potentially better health outcomes.
- Reduce breeches of referral-to-treat cancer target.
- Reduce clinical administrative burden to increase patient-facing time available for clinical cancer staff.
- Improve patient safety by reducing near misses from elimination of human error in the many administrative processes.
- Improve patient experience by using automated processes to send, for example, explanatory videos for procedures and other patient information.
- Reduce patient coordinator's administrative workload enabling higher value tasks including patient management.
- Potential cost reduction through natural attrition of reduced workload on patient coordinator role.
- Can be adapted to other cancer pathways.

## Other points to note:

- This case study is at 'proof of concept' stage.
- Project funded by Gloucestershire CCG, the Somerset, Wiltshire, Avon & Gloucestershire Cancer Alliance, with support from University of Gloucestershire.
- Identification of longer-term funding actively in progress to enable deployment, development and maintenance.
- Open-source refers to 'open code' not open data. Code stored on [GitHub](#) and is freely shared. No patient confidential information is ever placed in the public domain.
- [Reference for open-source software used elsewhere in the NHS.](#)

## Contact for further information:

Dr Mark A. Bailey, Speciality Doctor in Speciality Respiratory Medicine and Clinical Informatician, Gloucestershire Royal Hospital.

Email: [mark.bailey5@nhs.net](mailto:mark.bailey5@nhs.net)

# Case study 5: HR services

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## The challenges:

- To improve the quality of reporting for HR Directors.
- To reduce the cost of the department.
- To reduce bank and agency staff spend.
- To fill vacancies more quickly.
- To improve candidate recruitment experience.

## The technical solution:

- Procured Blue Prism and service from a commercial partner initially, then built up own Trust-wide in-house automation team over time.

## Processes automated using RPA:

- Sending offer letters and Inter Authority Transfer (IAT) requests when hiring existing NHS staff from other NHS organisations; payroll hire; return of candidates paperwork; pre-employment checks.

## Benefits:

- Fill vacancies more quickly which has reduced reliance on bank and agency staff.
- Staff free from data input tasks developed to add-value, such as working with managers to improve job adverts and short listing criteria, run more recruitment open days.
- Changed the service from transaction based to consultancy 'value-add'.
- Improved departmental resilience as automated processes run more quickly than humans, are less error-prone, not affected by sickness absence.
- Increased recruitment experience for candidates and department employees.
- WTE savings through natural attrition (no redundancies)



### **Other points to note:**

- Initial investment was paid back in 18 months.
- [Read another case study on this work on the NHS Employers website.](#)

### **Contact for further information:**

Gareth Jones, Director of Employment Services. North London Partners Shared Services.

Email: [gareth.jones12@nhs.net](mailto:gareth.jones12@nhs.net)

# Case study 6: Finance

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## The challenges:

- Departmental efficiency pressure.
- High staff turnover for roles performing repetitive administrative tasks.

## The technical solution:

- Technical and consultancy services procured from Royal Free London NHS Foundation Trust's Automation Service (at agenda-for-change rates), using Blue Prism.

## Processes automated using RPA:

- Email debt reminders to customers; email purchase order receipting reminders to customers; copy new invoices from 'accounts payable' inbox into dedicated folder for audit purposes; collate and send daily summary report of new invoices to named email inbox; validate and authorise pharmacy invoices for 10 named suppliers (can be scaled); validate and authorise payment for bank staff.

## Benefits:

- Improved staff retention and motivation as time released to complete more rewarding tasks.
- Cost savings as some posts not filled through natural attrition.
- Faster payments to suppliers as automated work is completed faster than humans, and continues out of hours.
- Absence cover is not required as processes are automated.
- Increased accuracy of information for finance team as eliminate human error.

## Contact for further information:

- Isobel George, Senior Robotics Developer, Royal Free London NHS Foundation Trust.  
Email: [isobel.george1@nhs.net](mailto:isobel.george1@nhs.net)
- Darren Atkins, Chief Technology Officer, Royal Free London NHS Foundation Trust.  
Email: [darrenatkins@nhs.net](mailto:darrenatkins@nhs.net)



# Case study 7: Primary care

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## **The challenges:**

- To improve efficiency.
- Release clinical and admin time to increase capacity with the same workforce.

## **The technical solution:**

- Technical and consultancy services procured from Royal Free London FT Automation Service (at agenda-for-change rates), using Blue Prism.

## **Processes automated using RPA:**

- Annual recall for patients with diabetes, aka 'the birthday bot'.
- Once live, potential to re-use for management of other long-term conditions.

## **Benefits:**

- Automated a process that previously took 71 person-hours to carry out.
- Clinical time released as clinical input automated using a rule-based process so not needed from a clinician.
- Standardising the recall process across North West London GP practices (two boroughs), and potentially beyond.
- Reduction in incorrect patient recall.
- Enables better connected pathways including links with existing services.
- Helps workforce planning as provides quantified demand for patient reviews needed.
- Improves patient experience and uptake through use of more inclusive and tailored communications out to patients, such as links to videos to explain why annual checks are important.

## **Other points to note:**

- Process in pre-live testing as of April 2022.
- Mix of EMIS and SystmOne clinical systems in participating GP practices.
- Translation service provided by a bot, replacing 'google translate' and out-sourced expensive translation services. Automation results in safe, secure, accurate and timely results.
- Clinical coding from clinic letters.
- Auto-filing of normal pathology reports, in line with pre-defined clinical rules.
- Automation and standardisation of repeat prescription request service.
- Automation of pharmacy stock check when surgery issues a prescription, including suggestion of alternative medication if not in stock.

## **Contact for further information:**

- Yasmin Baker, Senior Programme Manager, Digital First, NW London CCG. Email: [yasmin.baker1@nhs.net](mailto:yasmin.baker1@nhs.net)
- Darren Atkins, Chief Technology Officer, Royal Free NHS London Foundation Trust. Email: [darrenatkins@nhs.net](mailto:darrenatkins@nhs.net)

# Lessons learned

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Top tips and challenges in implementing RPA, kindly donated and collated from those who have been there and got the T-shirt.

## Early engagement:

- Identify your key stakeholders in the business including service leads, senior management and potential funders. Engage with them early and as often as possible. An RPA implementation will succeed when those affected understand why it is being introduced and play an active role to make it work with local processes.
- Work with the willing; don't underestimate the power of champions.
- Involve those who will be affected at all levels including staff whose job roles are likely to change as their tasks are automated; reassure them of job security early and repeatedly.
- Engage early with third parties for permission to open up their systems to bots, if needed.

## Change management:

- RPA is a change management tool, an enabler of change. Ensure that implementation is made with both an operation and IT mindset.
- Articulate a clear vision of the overall change objectives for the service without focusing on the IT or the 'time saved'.
- Engage staff with co-creating the vision and what additional value they can add with their 'released' time.

## Implementation approach:

- Think about sequencing your automation changes. Starting small to instil confidence may reap more benefits in the longer-term than going for the 'biggest bang for your buck'. Other considerations will be volume, impact, time saved, and where the process sits in the overall workflow.

## Implementation approach (continued):

- Break larger processes up into sub-processes to simplify automation implementation and roll-out. Bear in mind there will be process that cannot be automated, which require manual input. Creating exceptions is realistic and pragmatic. Full automation may not be possible; striving for it may result in missing simpler but impactful opportunities.
- Don't blame the bots! They just do as they're told.
- Once your RPA implementation is understood and underway, demand for automation may increase or even snowball. Create a method to approve and schedule new automations to manage expectations. Bear in mind that it can be a challenge to know where to stop; the possibilities are potentially endless!
- It is immensely satisfying when the first process(es) go live.

## Identifying processes to automate:

- Factor in time to hold stakeholder workshop(s) to discuss as a team which processes could be automated, and process-map these.
- Use the change process to review existing processes before automating them – there may be room for improvement. Don't automate broken processes.
- Consider using RPA to automate processes that should be done but no-one has time to do.

## Metrics

- Time-released metrics are relatively easy to track. Tracking other metrics robustly and regularly can be challenging. Clearly identify what you will measure and how; this should or could link to benefits identified in your business case.
- Obtaining pure cash releasing savings can be challenging, particularly in the face of high service demand as there will likely to be pressure to re-invest monies saved within the service, rather than 'release' it.



## **Collaborate and share learning:**

- Engage with people across the wider NHS ecosystem who are considering or implementing RPA to bounce ideas, access guidance, and share experience and learning.
- The limitations of implementation are only held back by imagination in applying the technology.

## **Primary care**

- GP practices work in very different ways to each other. When working across a group of practices, focus on a common outcome not practice-specific processes, and identify a standard start and stop point that can interface with every practice.

# How can the West of England AHSN help?

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If you would like any further information, please contact Nina Cross,  
Chief Digital Transformation Officer for the West of England AHSN.  
Email: [janina.cross@nhs.net](mailto:janina.cross@nhs.net).

If you are outside the West of England area, [please contact your local AHSN](#).

# References, resources and contacts

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## Appendix 1 – document and video references

- [National RPA guidance document](#) issued by the Digital Productivity Programme NHS Transformation Directorate in May 2022.
- [Innovation Exchange event](#) (recorded webinar April 2021): Robotic Process Automation. Hosted by Yorkshire & Humber AHSN. 1 hour 9 mins. Includes an overview, Centres of Excellence, guidance and use cases.
- [Introduction to RPA hosted by UCL Partners](#) (March 2021). Speaker: Darren Atkins, RPA Lead @ Royal Free London FT. 11 mins.
- West of England AHSN RPA Lunchtime series recording: [‘Revisiting RPA in Primary Care’](#) (April 2022). In this presentation Yasmin Baker, the Senior Programme Manager for Digital First in NW London CCG, talks through the work in her area in primary care. 24 mins.
- West of England AHSN RPA Lunchtime series recording: [‘Lessons learned in RPA implementation’](#) (May 2022). This covers tips for writing a business case and realising benefits, as well as ‘lessons learned’ from a panel of RPA implementors. 37 mins.

## Appendix 1 – document and video references (continued)

- Case Study Blog: RPA in Recruitment at Royal Free London FT: [Robotic process automation in recruitment | NHS Employers](#)
- RPA Blog for the HSJ Digital Transformation Summit: [The role of Robotic Process Automation in releasing time for care - AHSN Network](#)

## Appendix 2 – FutureNHS Workspaces

- [RPA Digital Exchange](#). This is Darren Atkin's workspace, RPA Lead at RFH. His team operates as an NHS consultancy and they have supported approximately 52 trusts with RPA in different configurations.
- [A national RPA workspace](#). This was set up by Maddy Bohrani, the national lead and she now has a RPA programme manager in post who is actively using this workspace. Within this workspace, there is a West of England AHSN folder storing locally created resources, including a horizon scan report from June 2021, and videos recorded at the RPA Lunchtime series.



## Appendix 3 – contacts

- Maddy Borhani, Programme Lead for Digital Productivity, NHS England  
Email: [maddy.borhani@england.nhs.uk](mailto:maddy.borhani@england.nhs.uk)
- Olha Hodgson, Programme Manager (RPA), NHS England  
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- Nina Cross, Chief Digital Transformation Officer, West of England AHSN  
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- Darren Atkins, Chief Technical Officer, Royal Free London Hospitals  
Email: [darrenatkins@nhs.net](mailto:darrenatkins@nhs.net)
- Louise Wall, Chief Executive Officer, e18-Consulting  
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# Acknowledgements

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- **Darren Atkins**, Chief Technology Officer, Royal Free London NHS Foundation Trust
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- **Sharon Ostefield**, Transformation Director, e18-Consulting
- All attendees of the RPA Lunchtime series across the West of England and beyond.

# Connect with us

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