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Process Automation in Primary Care

A review undertaken on behalf of NHS England's London Digital First Programme

V1.1 June 2022

Health Innovation Network South London

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Disclaimer

Disclaimer

The experiences and opinions set out in the following slides reflect the views of Primary Care stakeholders engaged through this automation workstream and does not represent the views of the Health Innovation Network or NHS England. All information provided by suppliers is assumed to be accurate, however the Health Innovation Network has not independently verified its accuracy and assumes no responsibility or liability for any errors or omissions in the content.

Suppliers and products identified through this report have been included to illustrate the current capabilities across a range of use cases. The Health Innovation Network and NHS England & Improvement do not endorse or recommend any of the commercial innovations outlined within this report and it is acknowledged that there are other solutions not discussed within this report that can support the challenges identified.

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Overview

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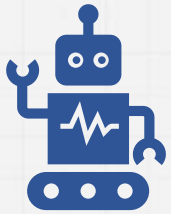
What is Process Automation?

- Process Automation technologies are software-based solutions that emulate human execution of a process reducing the need for human intervention.
- Robotic Process automation means that it performs its task on a computer, and in some cases uses the same interface a human worker would; clicks, types, opens applications and uses keyboard shortcuts.
- An organisation can use automation software to capture, interpret and manipulate data, process transactions, trigger responses based on defined criteria and communicate with other digital systems.
- Automation scenarios can vary in complexity from generating an automatic response to an email to bots which use AI driven natural language processing to review handwritten clinical notes and input codified data within an EPR system.
- Current process automation solutions mostly target low risk repetitive tasks, and the more advanced solutions aim to support clinicians in making decisions – but not replace them. The ultimate aim of most automation tools is to free up clinical and administrative time, allowing clinicians to work at the top of their license and administrators to focus on more complex and value adding tasks.

Automation technology types

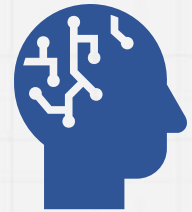


Robotic Process Automation

RPA is a technology that enables the build, deployment, and management of software (robots) that can be programmed to emulate human actions and interact with digital systems in order to automate basic manual and repetitive tasks.

Intelligent Automation

IA refers to the integration of robotic and intelligent systems from various emerging technologies, thereby increasing the scope of automation beyond simple rule-based tasks.



Artificial Intelligence

AI is the simulation of human intelligence or cognitive processes such as problem solving, visual perception, speech recognition and decision making by computer systems.

For example use cases of each of these automation types please see appendix 2

Process Automation in Primary Care

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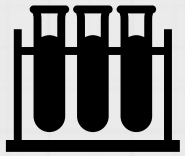
Focus areas in Primary Care

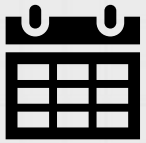
Engagement across NHS providers has demonstrated that process automation is currently more developed in secondary than primary care. Based on the transferable learning from secondary care and the priorities identified through engagement with primary care, the opportunities identified for automation within primary are:

Call & Recall

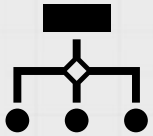


Filing Test Results

Data Management



Appointment Management



Triage

Patient Registration

Prescription Processing

Referral

Coding form Clinical Letters

Frequently reported opportunities for automation support in Primary Care:

- **Call and Recall**
- **Filing and managing pathology tests/results**
- **Data management (checking and entry, linking to reports)**
- **Appointment management**
- **Triage and Consultation**
- **Patient registration**
- **Prescription processing**
- **Referral**
- **Coding from clinic letters**
- **Translation**

What's happening in primary care?

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"Automation is not always a fancy bot; some forms of automation have been happening for years using the existing systems (e.g. using SystemOne and EMIS effectively)"

Dr Zuhaib Keekeebhai
Chief Clinical Information Officer
North Central London CCG/ICS

Use of automation technology in primary care is infrequent and the solutions themselves are less technologically mature than those seen in secondary care. Although many primary care providers already have access to solutions with low-level automation capabilities such as AccuRx (automated messaging) or Sensley (automated consultation booking and triage responses), these features tend not to be adopted or optimised in the majority of practices.

Market engagement suggests that there are primary care automation pilot sites live across the country with various suppliers and use cases, however the learning from these pilots has not yet percolated through the wider system. Case studies from a selection of these pilots are presented within this report.

Automation tools exist which can support practices and PCNs with varying levels of digital maturity

- Simple solutions focused on using existing systems more efficiently
- Third party products, generally with AI functionality, that help connect systems and processes
- Bots that take on the more burdensome admin staff tasks

Centres of Excellence

There are two Centers of Excellence for Robotic Process Automation in the NHS:

- Royal Free NHS Foundation Trust (London Based)
- Northampton General Hospital

And one Expert Partner:

- Guy's and St Thomas NHS Foundation Trust

All of the centres have been predominantly focused on secondary care in the first instance, with successful use cases across both clinical and administrative workstreams.

The Royal Free have begun work in Primary Care Automation with the North West London Digital First team, using automation to address diabetes Call and Recall . A case study of this work can be found later in this report.

Guy's and St Thomas' offer organisations in South East London support in building their own capability and developing robust governance to underpin any NHS platform.

The main benefits of working with an experienced NHS partner to develop RPA are:

- Aid in selecting a suitable RPA vendor for your organisation and negotiating licenses.
- Support in developing your own robust RPA capability and associated governance
- Technical support, hosting support and maintenance making it easier for small organizations to deploy RPA

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"The core goal is to make our staff more efficient – make all the hours they spend at the NHS more enjoyable, spending more time with their patients"

Chief Technology Officer – Intelligent Automation, Royal Free London NHS Foundation Trust

Automation in Primary Care

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The main goals cited for automation in primary care are to:

- Reduced administrative burden
- Improved efficiency
- Improved staff experience
- Improved patient experience
- Improved process assurance
- Improved Long Term Condition Management
- Improved data and information capture/quality

Process Automation has the potential to achieve these outcomes by supporting the following activities:

Clinical Tasks
- Clinical Administration
- Support Clinical Decision making
- Referrals
- Risk Stratification
- Triage
- Online Consultation
- Long Term Condition Monitoring

Admin Tasks
- General back office admin
- Call and Recall
- Patient Registration
- Appointment scheduling
- Operational Reporting
- Telephony
- Communications
- Analytics

Most challenging non-clinical and clinical tasks/process for primary care providers

Non-clinical tasks/processes

- **QoF Reporting** (61%)
- **Other Reporting** (57%)
- **Patient Recall for Screening and Annual Health Checks** (61%)
- **Patient Feedback** (57%)

Clinical tasks/processes

- **Prescribing** (78%)
- **Referrals** (83%)

Figure 1: Based on 21 responses to a GPs/Practices managers survey across London March 22. Percentage of respondents who stated process was a key challenging.

For further information on the benefits of Process Automation in health care see Appendix 3

London's Automation Landscape

Identified priorities North London:

1. Recall process in relation to clinical safety and LTCs
2. Automation to convert unstructured data to structured data and implement it into EMIS
3. Automated prescription processing

Identified priorities in South West London:

1. Call and recall for Annual Reviews (LTC, SMI, LD,) other screening (cervical etc)
2. Referral/ secondary care communications
3. Clinical decision support

Identified priorities in South East London:

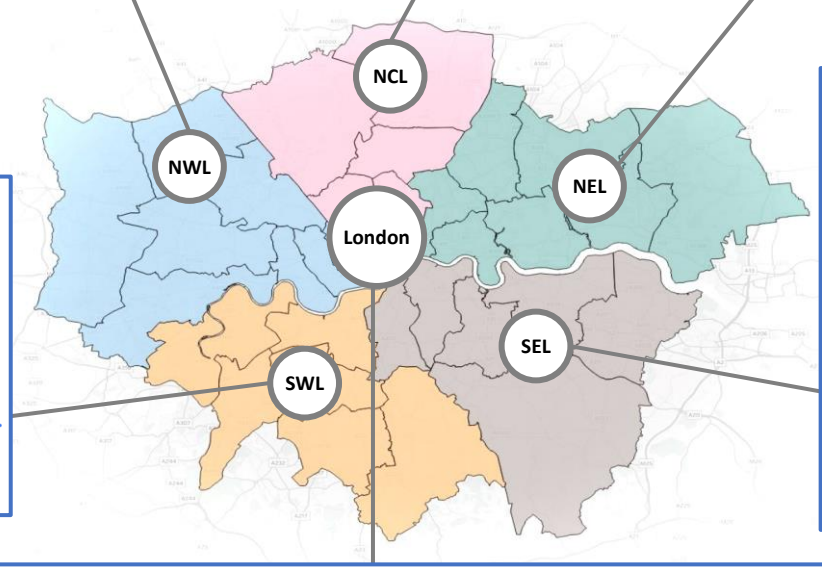
1. Blood test results, ordering and management
2. LTC monitoring (e.g., routine pill checks, TSH monitoring)
3. Review appointments (right person, right time, right place) – SMS to book appointment.

Note: Priorities were discussed and defined at a London Region automation workshop in March 22.

KLINIK HEALTHCARE SOLUTIONS
SENSELY
blueprism

ABTRACE

Primary Care IT
healthtech1



patientleaf
RapidHealth

accuRx.
Powering Primary Care
SENSELY
healthtech1

Whilst certain solutions are live in sites within the indicated ICSs, many are also used at other sites across London. Other process automation solutions that are live within primary care sites across London include:

vantage health
apthealth
patientchase

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Opportunities for automation in primary care

Health Innovation Network South London

Levels of automation in primary care

There are varied levels of automation technologies available to support primary care, ranging from solutions that utilise intelligent automation, artificial intelligence, and robotic process automation. Some automation features exist in commonly used core clinical systems and system add-ons such as online consultation and communication platforms.

It is useful to understand how these varied levels of automation can and are being used in order to optimise existing automation functionality and/or select solutions that are most appropriate for primary care need.

The following slides contain information about a variety of automation capabilities (including core clinical systems, software-based automation, robotic process automation).

Automation within core GP clinical systems (EPRs)

At the time of writing the most widely used EPRs within core GP clinical systems across London are EMIS, SystmOne, and Vision. Currently these systems have varying degrees of in-built automation functionality such as; creating patient letters from custom templates, with merge fields automatically completed from the Electronic Health Record, and patient appointment booking mechanisms which reduce administrative input. These features generally attempt to streamline work processes, rather than fully automate them.

Feedback from primary care suggests that practice staff are not always aware of these features and/or how to use them. It is therefore recommended that practices engage with core system suppliers prior to any potential procurement of 3rd party solutions to understand whether the core EPR provider can deliver the requires features or if they are on their development roadmap. For example, a North London-based practice has raised awareness of a current SystmOne development of an automated call and recall system which may be included at no extra cost.

EMIS currently offers users the ability to design their own clinical and non-clinical processes to automate tasks within EMIS web, also offering standardised protocols which can be edited as needed. Use cases include:

- Automating processes for a flu vaccination campaign to indicate the correct vaccine & drug
- Designing an accessible information protocol to highlight patients with communication/ learning difficulties
- 'F12 protocol launcher' used to auto-populate patient letters with their details
- Creating alerts for patients at high risk of certain conditions

Automation within core GP clinical systems (EPRs)

Potential **SystmOne** automation capabilities have been identified as:

- Auto-filing Pathology functionality (linked protocols also)
- Patient self-booking functionality via SMS URL Appointment functionality
- Communication Annexe - ability to send customisable questionnaires to patients via SMS URL links / email
- Brigid app - allows staff to download patient records securely for offline offsite use, as well as clinical system access. Aimed at professionals doing Home visits
- Airmid app (For patients) Self-check in - Customisable Questionnaires/surveys. Integration with Apple Health / Google Fit devices. Patient-entered data (e.g. BP readings, O2 saturation monitoring). Element of Remote Monitoring functionality
- Coding of Communication from Hospitals
- Scanning rules - customisable at practice end; enables OCR processing of documents to suggest codes to add to patient's records.
- Online Consultations – inbuilt free product within SystmOne which can be deployed/customised with automation features.

Microsoft Power Automate is included within the N365 package and empowers everyone to build automated processes. It enables low-code, drag-and-drop tools and hundreds of pre-built connectors that automate repetitive, mundane tasks with relative ease. Practice staff have reported ability to easily create and manage desktop flows, finding power automate to be a user-friendly interface. The desktop and web recorders provided allow staff to build flows while editing the recorded actions in real time across the web or a desktop. It also allows the setup of safeguards when errors occur through exception handling—enabling complex workflows that require validation through actions and scripts instead of human intervention.

Automation of Clinical Tasks

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Example: Automated solution to support LTC management

Problem: There are multiple recurrent points within a LTC patients' care pathway that require time consuming **clinical administrative** tasks. These tasks include:

- Scheduling review appointments
- Medication prescription (including repeats)
- Booking and reviewing of relevant tests (including bloods)
- Provision of lifestyle support information
- Onward referral
- Clinical decision making

Clinical conditions/pathways that could most benefit from automation

1. **Hypertension** (89%)
2. **Diabetes** (78%)
3. **COPD** (55%)

Note: Based on 21 responses to a GPs/Practices managers survey across London March 22. Other conditions highlighted included CVD, mental health, skin conditions, cancer, frailty, and polypharmacy.

How automation can help: Solutions in the market are able to proactively monitor care using software tools that can integrate with the healthcare record, process the relevant patient data and plug the outputs back into the system. For example, solutions can search through lists of patients and flag and/or take actions such as generating appointments and sending invites to patients based on defined rules.

Potential Benefits:

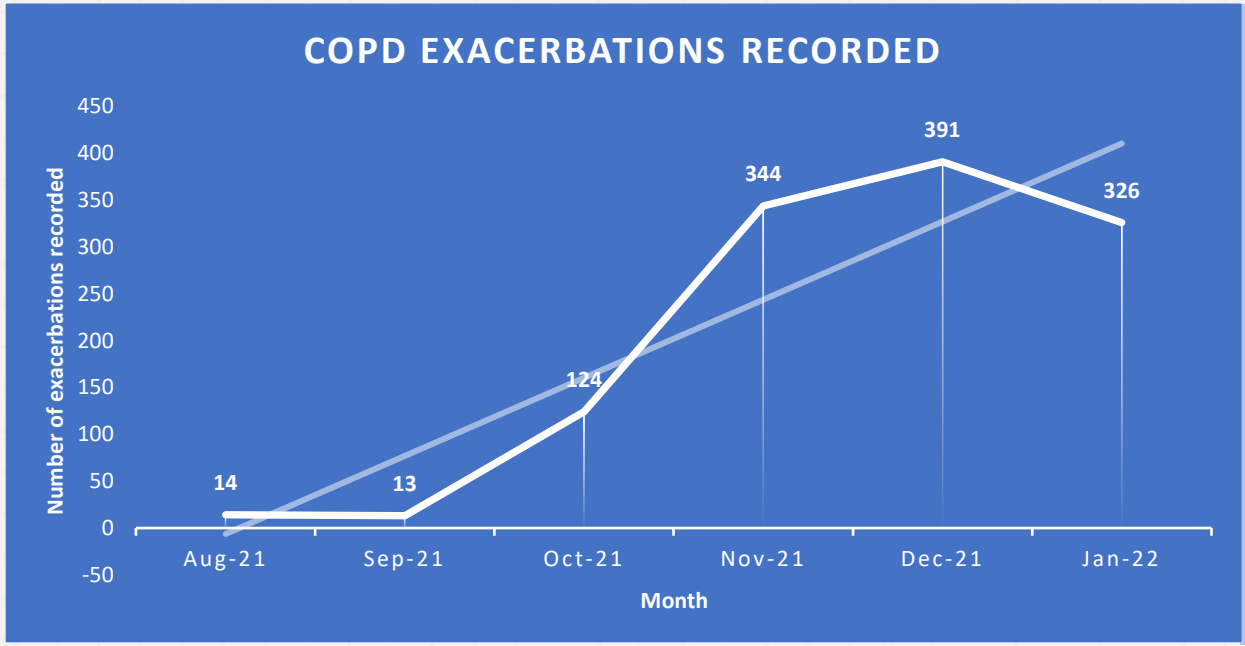
- Reduction in required clinician input due to improved medication monitoring
- Reduced general and clinical administrative burden
- Increased patient engagement with required testing pre appointment
- Optimised GP and HCA appointment time

Automation of Clinical Tasks – Long Term Condition Management

Based on work in Hillingdon, Brent, Camden & Enfield CCGs

CASE STUDY

Solution used:
Primary Care IT Ltd.



The graph to the left shows how the PCIT automation tool improved the accurate recording or COPD exacerbations within a London CCG region.

Use Case: Proactive Long Term Condition Management.

Automated flagging of outstanding clinical actions (blood monitoring for drugs, care for QOF, care for IIF indicators etc), automated data management for reporting (e.g. QOF, CQC, IIF), automated RAG notification of condition monitoring data (e.g. hypertension), automated processing for prescription and advice & guidance (e.g. around anticoagulation medication for AF), Online Triage and Consultation platform which automatically sends out reviews to patients based on their conditions and integrates data back into core clinical systems.

GP Referral Time Saving

~23days of GP time per month across a CCG

Note: Time saved across a London CCG region. A time and motion study compared usual referral practice and GP time spent vs using PCIT automation tools

Automation of Clinical Tasks – Long Term Condition Monitoring

Based on work in Hillingdon, Brent, Camden & Enfield CCGs

CASE STUDY

Realised Benefits:

- Streamlining of data entry and data quality checking
- Automation of repetitive tasks leading to GP time savings
- Highlighting of relevant evidence, local guidelines and medicines management advice
- Enables delegation of tasks to other team members
- Improved accurate data recording for locally commissioned services
- Provision of CQC searches and tools to ensure patient safety
- Prevalence improvement – ensuring the right patients receive the right care

Challenges:

- As the workload of Primary Care continually increases, nurse practitioners, practice nurses and HCAs are asked and required to take on more work and responsibility. PrimaryCare IT provides a support desk to facilitate the upskilling of the workforce and also to ensure that best practice and guidelines are continually followed on a day to day basis.

Tasks:

- The clinical pathways on PrimaryCare IT enable HCAs, Nurses and GPs to manage a patient's condition at various different stages, from screening to diagnosis and treatment. The pathways facilitate effective handover between staff and enables joined up care.
- PrimaryCare IT provides a list of reports which identify patients who should potentially be on the 'At Risk' register. These reports identify patients with significant co-morbidities, frailty and/or multiple recent hospital attendances. The reports and OneTemplate are then used during MDT meetings, in order that all appropriate patients are discussed and that ongoing care and support of the patient is provided.

Automation of Clinical Tasks - Monitoring

Marylebone Health Centre, North West London CCG

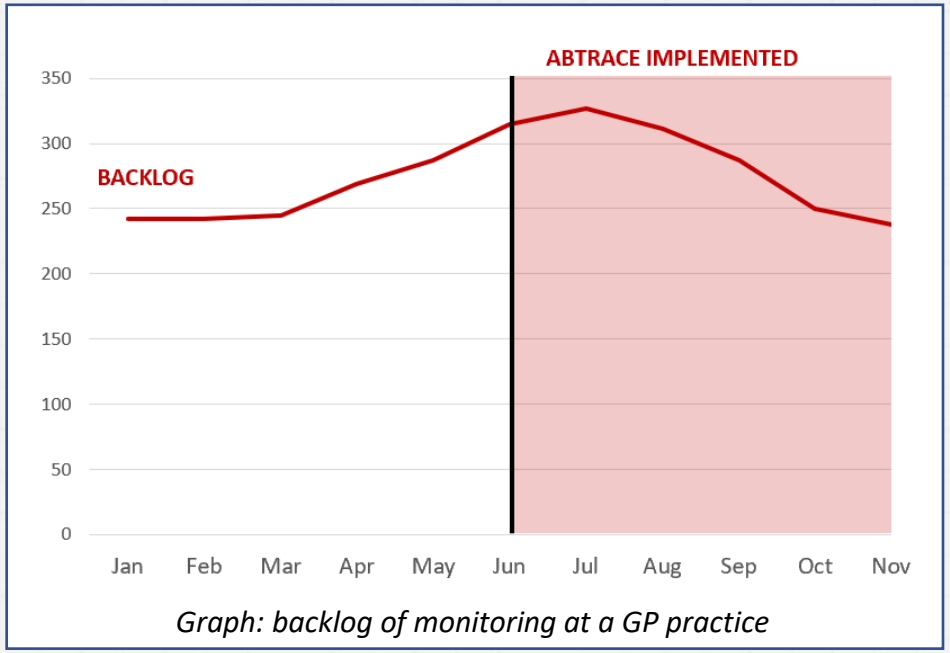
CASE STUDY

Solution used: Proactive Monitoring Tool by Abtrace

Use Case: Automate Decision Making about Long-term Condition and Medication Monitoring at Individual Patients and Population level.

On a patient level this solution identifies what observations and tests are required for each patient for safe monitoring . Generates a single, simple, easy to understand list for Healthcare assistants. Identifies tests which are about to be overdue allowing opportunistic testing – Makes Every Contact Count.

On a population level this solution allows rapid filtering / sorting through entire population to help identify at risk patients. It can task Pharmacists or other staff to work through segments. Direct SMS and Booking will automate recall further.



Graph: backlog of monitoring at a GP practice

Realised Benefits:

- 37% reduction in healthcare assistant (HCA) appointment use whilst maintaining monitoring levels
- 16% reduction in required GP input due for repeat prescriptions due improved medication monitoring
- Staff savings of £1.40 / patient population
- Receptionists, Healthcare Assistants and Nurses empowered to conduct tests without needing to ask a GP
- Allows prioritisation of at risk patients for practices in a way that is fast, simple and easy to understand

"Transformative! We've been able to get right back on top of our COVID related backlog whilst still reducing appointments"

Automation of Admin Tasks (Call and Recall)

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Example: Automated system to invite patients for appointments in relation to their condition. Particular need has been highlighted to support Hypertension and Diabetes

Problem: The traditional systems for call and recall do not provide practices with notification of patient contact failure. Patients with multi-morbidities are often invited to multiple reviews, which is an ineffective use of time. There is a perceived lack of two-way communication for call and recall related processes. Appointment bookings often require phone calls which can be time consuming, and difficult for patients to reach a staff member due to busy call lines.

How automation can help: Automated identification of failed patient contact can automatically generate letter invites, follow up messages, or flag to a staff member for action. Automated identification of patients with multi-morbidities is also possible and can facilitate contacting patients for single consolidated review. Automated prompts for gathering patient information to include in review ahead of appointment, linking back to patient record alongside presenting available appointment slots for them to book. The aim is for full automation and integration of the process and coding in relevant clinical systems

Potential Benefits:

- Improved patient experience
- Staff and patient time saved
- Streamlined information gathering for improved review appointments
- Single multi-morbidity reviews

61% of staff surveyed considered call and recall for screening and health checks to be a high burden or very high burden task.

Automation of Admin Tasks (Call and Recall)

North West London Digital First: Diabetes Call and Recall Automation "Birthday Bot"

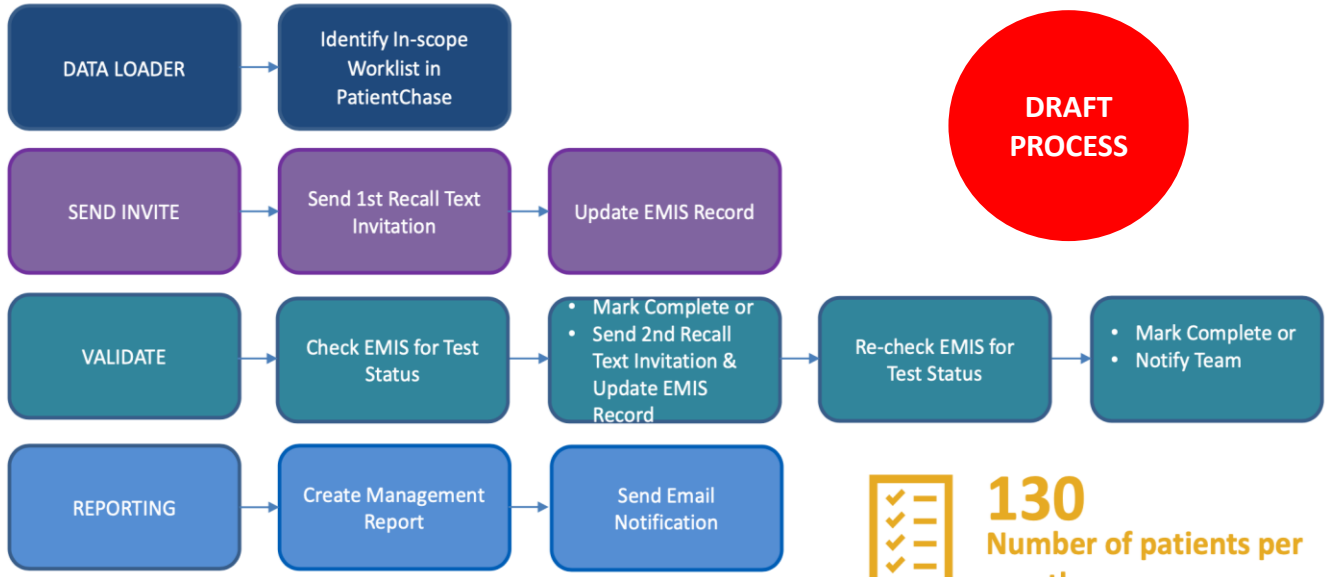
CASE STUDY

Solution used: Blueprism, working with Royal Free Centre Of Excellence for automation team.

Use Case: The Birthday Bot automates the end-to-end process of annual recalls for patients with diabetes.

High-level Workflow – GP Birthday Recall Process

Royal Free London NHS Foundation Trust



130 Number of patients per month

Expected Benefits:

- ✓ Clinical time saved (~17hrs per week)
- ✓ Improved efficiency in practice
- ✓ Standardised recall process across NWL
- ✓ Reduction in incorrect patient recalls
- ✓ Enable better connected patient pathways including links with existing resources and services
- ✓ Support workforce planning with clear overview of number of specific reviews needed quickly shown
- ✓ Improve patient experience
- ✓ Inclusive communications out to patients

Automation of Admin Tasks (Call and Recall)

North West London Digital First: Diabetes Call and Recall Automation "Birthday Bot"

CASE STUDY

Challenges and tasks:

- Process mapping has been carried out with the pilot practice and other EMIS practices across NWL with the aim of building the "ideal" process for the bot to follow. The complexities of the pathway requires engagement from clinical, digital, IT, and administrative stakeholders in order to clearly capture the needs for this process and to truly identify what can be automated.
- Understanding clinical system landscape and integration requirements. Across the 8 boroughs in NWL, the Clinical systems are SystmOne (5 boroughs) and EMIS Web (3 Boroughs). Identification of clinical system usage was required to develop plans for the automated process. Scoping was required to explore how automation will work in the two different systems. NWL decided to focus on EMIS to help deliver initial areas of automation more rapidly.
- Understanding the more detailed process and rules for the bot to follow. NWL DF team worked with clinicians to develop a list of all clinical targets for each review inc. hba1c, systolic/diastolic blood pressure, cholesterol: HDL ratio.
- Creating assurance. The Process Definition Document will be sense-checked across practices in NWL for assurance purposes

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Automation of Admin tasks (Patient Registration)

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Example: Automated solutions to reduce administrative burden associated with patient registration.

Problem: There are a large number of administrative tasks both at a clinical and clerical level which are time consuming and a barrier to productivity. There are a reported 190,000 patient registrations per month (nationally) equating to around 6,000 days of work, of which 60% are still paper-based.

How automation can help: Removal of laborious patient registration admin tasks where over 71 data points can be collected & coded including; GMS1 form details, protected characteristics, height, weight, BMI (QOF), exercise frequency, alcohol quantities, smoking status (QOF) and safeguarding information. Automation has the potential to reduce the cost of patient registrations by 40% and there is opportunity for automation to cover 80-90% of patient registrations that are considered simple, where the remaining complex cases can be passed over to practice staff to be investigated.

Potential benefits:

- Reduced administrative burden
- Improved staff satisfaction
- Cost savings
- Improved accuracy of patient information/reduced human error
- Improved risk stratification

26% **of GP surgery staff surveyed felt patients would like to see improvements to the registration process.**

Automation of Admin Tasks (Patient Registration)

CASE STUDY

Herne Hill Group Practice

Solution used: Healthtech1

Use Case: Patient Registration.
Automation of administrative process of patient registrations including patient data capture.

"They took a massive problem for me and made it negligible. The consistency in the registration process has been great, we've had fewer rejections and there's been less time involved."

Partner & Medical Director

"The automation solution has halved my workload."

Administrator & Registration Clerk

Realised Benefits *(Since November 2021)*

For Practice staff

- ~99 data points **collected & coded** per patient including protected characteristics, safeguarding & QOF data
- Reduced amendments and rejections due to standard Royal Mail address
- Increased GP2GP transfer rate, and reduced duplicate patients
- Herne Hill register ~101 patients per month and used to spend 25 hours per month (15 mins per registration) and £337.50 in wages. Now they spend 0 hours per month on registrations and spend £269 per month with Healthtech 1. This is saving of £106 per month or 28%.

For Patients

- Increased **speed of registration from 36+ hours to 12 hours**
- **Patients on average rated** the automated registration forms **4.76/5.**

Automation of Admin Tasks (Patient Registration)

Herne Hill Group Practice

CASE STUDY

Challenges:

By completing registrations through traditional processes, admin staff become familiar with a patients' details and automation may prevent this occurring ,creating risks around continuity of care. To mitigate against this, complex registrations are handed back to the practice, for example patients who have had a gender re-assignment.

Tasks:

- Onboarding is comprised of 3 steps [< 2 hours]:
  1. Interview with practices registration clerk to understand existing registration process [1 hour]
  2. Permission access on clinical system [10-20 minutes]
  3. GO-LIVE Switch registration link over on GP practice website [5-20 mins]
- Minor checks are then required e.g. amendments that EMIS needs for accepting info (such as information being entered on the correct line).
- General tasks include completing any outstanding amendments to registration forms, reviewing rejected registration requests and medication approval.
- Paper registrations are still used for patients that prefer it.

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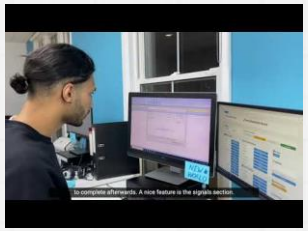
Robin Knight – Registration & Admin Clerk - robin.knight1@nhs.net



Healthtech 1 - Product Demo Video

Automation of Administrative & Clinical Triage

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Example: Automated solutions for handling patient's clinical and non-clinical queries, triaging and signposting to relevant clinicians/staff.

Problem: There are a large number of clinical and non-clinical queries that come into a practice. In most cases, this demand is dealt with by receptionists in the first instance where variation in approaches to triage can lead to patient dissatisfaction and staff frustration. Recent drives toward improved online access to primary care services including adoption of online consultation tools have in some cases generating additional demand which practices have found difficult to manage. Three in five of those responding to the BMA Covid-19 tracker survey said that they were 'not at all' or 'not very' confident about their ability to manage patient demand.

How automation can help: There are numerous online consultation solutions on the market that use algorithms to attempt to capture information from the patient and direct them to the most appropriate person, service or information. This approach generates rich data which can be used for many purposes including understanding and optimising service delivery based on demand, automatically addressing non-clinical queries, and reducing demand through signposting to self-help where appropriate.

Potential benefit:

- Efficient resource allocation
- Improved staff satisfaction
- Reduced clinical and non-clinical costs
- Positive patient engagement

43% of GP surgery staff surveyed felt patients would like to see increased access to appropriate levels of advice and support

Automation of triage within online consultation: There are a number of online consultation software on the market which provide varied levels of automated clinical triage functionality. It is useful to explore the automation capabilities within online consultations to improve triage processes.

Other automation of triage: Platforms capturing patient data or other sources (e.g. health kiosks, wearables, remote monitoring, ePROMS solutions) may also enable automation of triage.

You can find several of these products in the NHS Digital buying catalogue

Automation of Admin Tasks and Clinical Triage

CASE STUDY

Roxbourne Medical Centre – Triage/Patient Flow Management

Solution used: Klinik

Use Case: Triage/Patient Flow Management. Automation of administrative tasks such as triage, signposting to appropriate services and data management.

*There are numerous online consultation products on the market that automate triage processes. Due to the extensive literature already available about these solutions, we have selected one case study to demonstrate an automated triage process for illustrative purposes within this report.

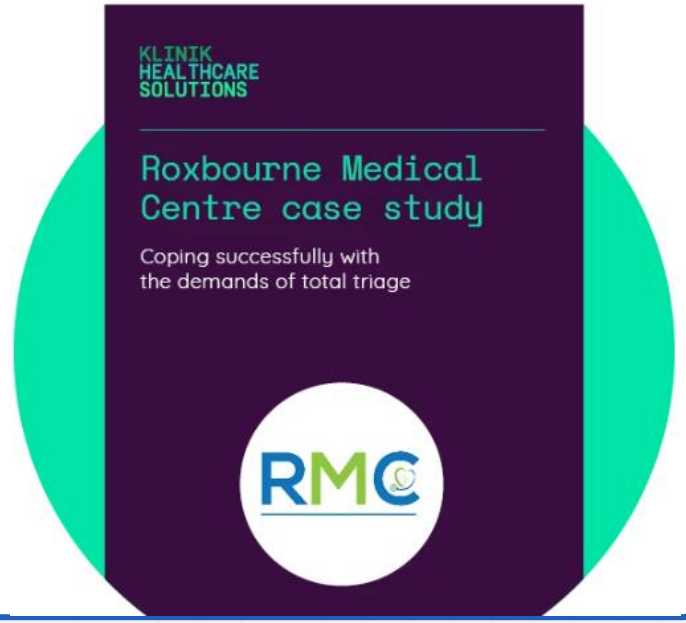
You can find several of these products in the NHS Digital buying catalogue

"Now we know what the demand is, we can see what changes need to be made, and we can manage expectation and optimise the journey for every patient. We can assign the right level of resources to deal with the enquiry and use the most expensive resource where it's most effective."

Operations Manager

Benefits & Feedback:

- Between Nov 2021 and Jan 2022 Roxbourne handled 39,530 cases through automated triage
- The average time it took a patient to fill in the form was 9 minutes
- Roxbourne staff user feedback was 3.22 (1 = poor / 4 = excellent) - 117 responses
- Roxbourne patient feedback was 3.26 (1 = poor / 4 = excellent) - 3837 responses
- 62% increase in online contacts following the launch of their automated triage solution
- Fewer phone calls into the practice, allowing for re-purposing of reception staff



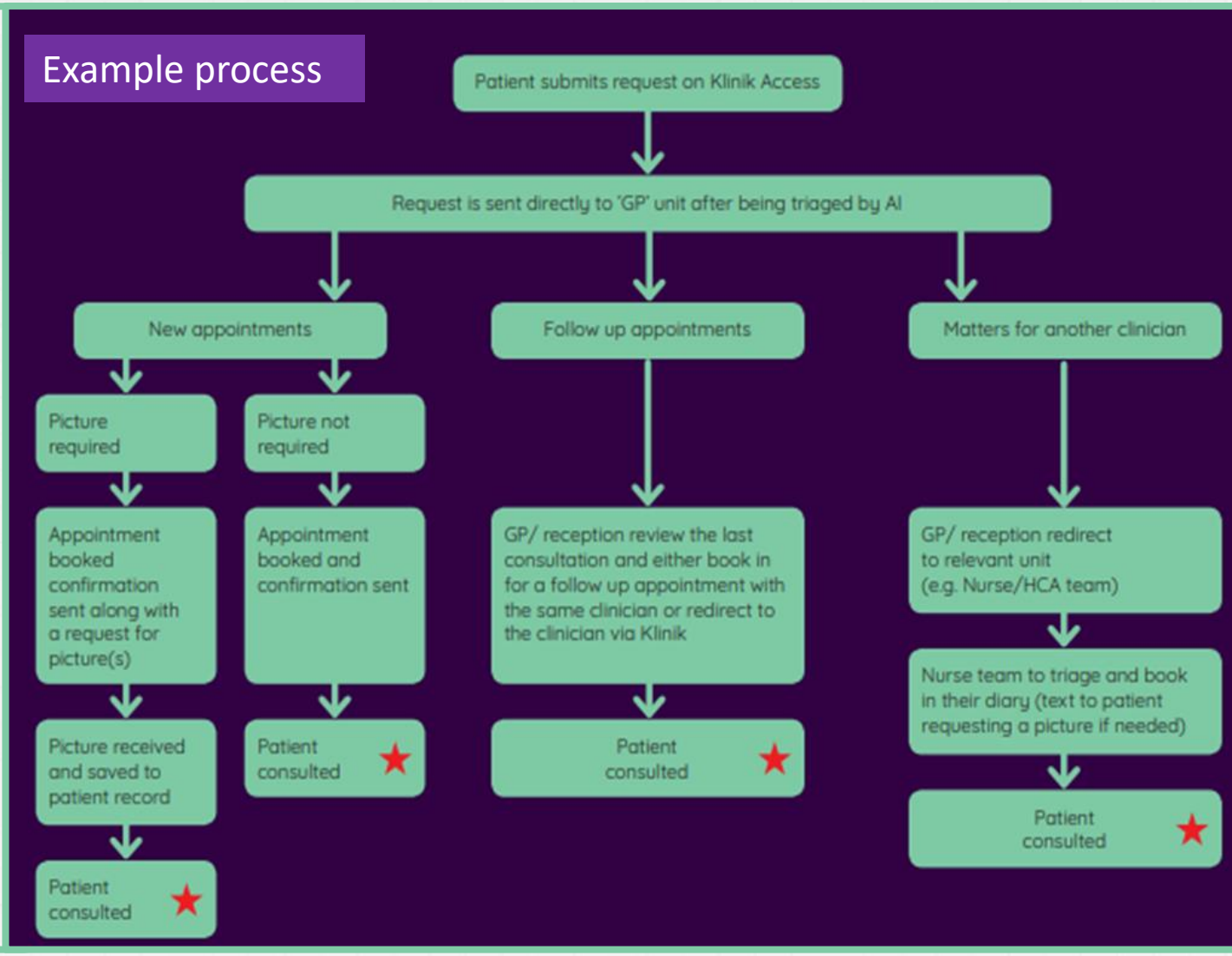
Automation of Admin Tasks and Clinical Triage

CASE STUDY

Roxbourne Medical Centre – Triage/Patient Flow Management

Challenges and tasks:

- In order to realise the benefit of the automated triage solution in taking the pressure off practice staff, Roxbourne knew that processes would have to evolve as a result. After six months of use, those processes are becoming more effective.
- Roxbourne used the solution to create groups (or 'units') of staff, such as GPs or the admin team. They then assigned these units to support processes for common requests, so they can make the most of practice time.
- Management involved in the triage process, as well as working closely with the supplier helped in adapting the solution to the practice's particular needs. This was determined by actively monitoring what was coming in, in order to make the needed changes.
- Change was difficult at first, however good communication within the practice and with patients helped the system bed in.



Automation of Admin Tasks – Workflow Planning

Lavender Hill Group Practice- SWL CCG

CASE STUDY

Problem: Lavender Hill Practice work sessions vary on a weekly basis as on-call clinicians schedule for out of hours work is unpredictable, which creates a recurrent admin burden to make and manually add rotas into EMIS.

Anything you can do with data entry into the EPR can be automated through Power Automate in-house

GP Partner

Converting unstructured data into structured data within EMIS was highlighted as a priority area during a (2022) London based Automation in Primary Care Needs Articulation Workshop.

Solution used: Microsoft Power Automate

Use Case: Automated Session Upload into EMIS . Session data inputted into Microsoft Excel automatically generates sessions within EMIS.

Realised Benefits:

- **Time saving:** clinicians/staff can save between half an hour to one hour a week by automating input sessions into EMIS.
- **Improved staff satisfaction**: clinicians/staff can focus on more fulfilling tasks than routine session upload into EMIS.
- **Improved accuracy**: information is transferred by a bot from a spreadsheet that uses data validation tools. Errors are returned if a session is not found, if a clinician's name is not found, or if there is a conflict of sessions.
- **No added automation costs:** Microsoft Power Automate is free for NHS staff as part of the N365 package arrangement. This means that anyone within the NHS can develop new automation tools with the right skillset.
- **Microsoft Power Automate** can be used to automate a wide range of other processes.

Automation of Admin Tasks – Workflow Planning

Lavender Hill Group Practice- SWL CCG

CASE STUDY

Challenges:

- Building confidence in the workforce to accept and trust the technology.
- Understanding how Power Automate works and how to set it up so that it interacts with EMIS and is not limited to clinicians/staff with higher levels of technical literacy. Training people how to use the bot is an additional challenge.
- Replicating an automated process developed on one machine to other computers may require manual calibration as the bot relies on computer vision, where variances in screen resolution would stop the bot functioning. This will require someone familiar with Microsoft Power Automate.
- With the current Power Automate license available to NHS staff, the tool cannot be shared with other practices but would need to be rebuilt separately.

Contact info: for general information on Microsoft Power Automate and to hear more about the work being done at Lavender Hill - **Ashley Bowcock** a.bowcock@nhs.net

Further examples

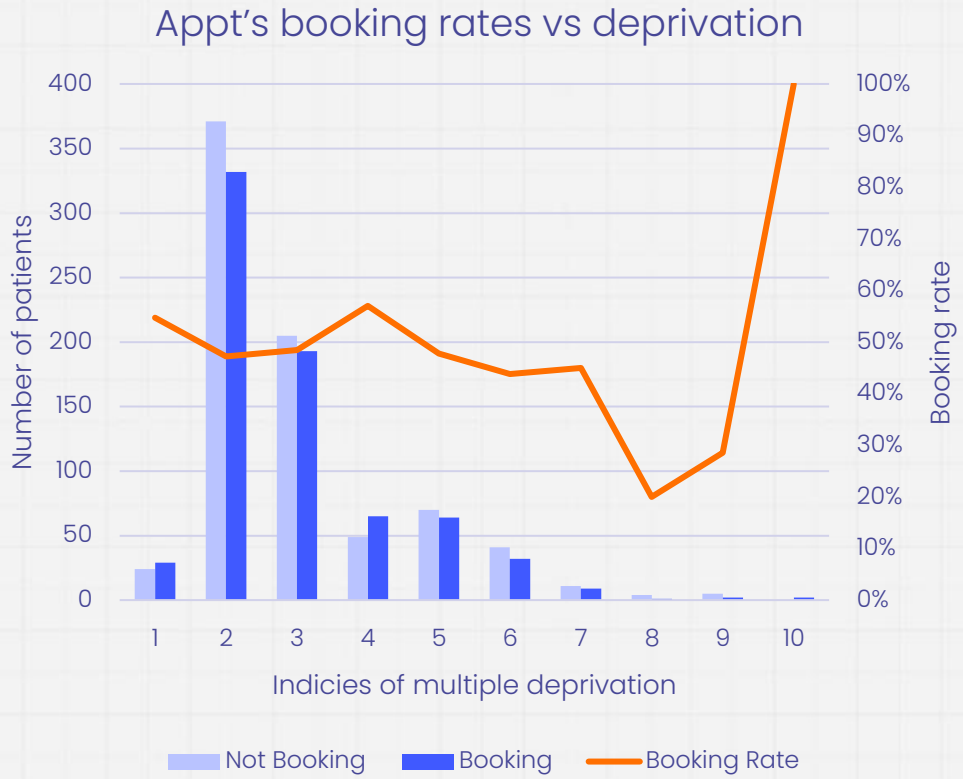
Automated Health Check Programme

Controlled trials at 17 GP practices in Barking and Dagenham, London

Solution used: Appt Health to automate the call and recall process and improve the uptake of preventative healthcare programs such as NHS Health-checks, diabetes screenings, hypertension reviews and cervical screenings.

Findings:

- £1.25 cost-saving per patient recalled stemming from a reduction in telephony, materials, management, and administrative staff costs.
- Independent evaluation revealed that GP practices using Appt's system improved by 40% in terms of patient uptake of NHS Health Check programme.
- Data demonstrated that Appt service was equally as effective in reaching more deprived patients from the lowest income distribution as those in the top half. This helped combat health inequalities in the uptake of preventative healthcare.



"For Cervical Screening, we are finding that quite a few patients are not showing up (DNA'ing) to their appointments when they are booked in over the phone, some 15 or 16 just last week. However, the ones who book through Appt Health are turning up and having their Cervical Smears!"

Lead HCA - Barkantine Practice, Tower Hamlets

Further examples

Booking Physio and Mental Health Services

Pilot at 18 NHS practices in Lewisham, London

Solution used: Sensely's Ask First, an avatar virtual assistant, is used to guide patients through various healthcare queries and in this case study was being used for booking physio and mental health service appointments.

Findings:

- 50,000 app users were able to book their local physio services from the app without needing a GP referral
- Threefold increase in the use of physiotherapy resources delivered without the need for input from other healthcare services
- 150 hours of clinician's time saved
- Patient waiting times reduced from 4+ weeks to within 3 working days
- Signposting demand away from General Practice for low MSK issues where a physio is better placed to provide advice and support
- No longer a pilot and has been adopted for use across AskFirst OC practices in Lewisham

"An excellent and efficient service. So good to see technology used for efficiency and a much better patient experience and quicker treatment. Thank you."

Patient

"AskFirst has been invaluable in trying to streamline activity during the Covid-19 pandemic. Having the ability for patients to book via the app rather than calling has really improved the patient journey as well as prioritised phone calls to patients."

Healthcare Professional

52% of GP surgery staff surveyed felt patients want to see improvements in appointment booking systems.

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The Primary Care Automation Market

Health Innovation Network South London

Market Overview

Automation solutions are currently more widely adopted and technologically mature in secondary care than primary care, however there an increasing number of suppliers with a primary care focus, and suppliers with transferable solutions from secondary care and other industries. There are also products within the market developed by GPs to address needs identified in their practices. Within primary care there a number of early adopters across London, with a number of pilot projects at varying stages of delivery.

Based on the inclusion criteria, 20 solutions were longlisted and **15 were selected for more detailed review through interview**. The market review includes both "Robotic Automation" systems (software robots running on a machine, mimicking human action) and "Automation" systems that don't involve bots (software programmes that identify data and automate actions). The aim of the review is to identify solutions that automate time-consuming processes within primary care, to help free up both clinical and administrative staff to focus on more complex and value-adding tasks.

Market Maturity Overview

Integration

14 of **20** solutions identified have current integration/interface with EMIS and System One. All other suppliers evidenced technical readiness for interoperability.

Configurability

All providers described degrees of configurability of their product to match local needs.

Primary Care Sites

14 of **20** solutions have confirmed active use in Primary Care (live BAU services or pilot sites).

Support Mechanisms

All providers described having support teams for implementation, issue resolution, system updates etc.

Evidence

15 out of the **20** solutions confirmed having finished pilots and having shareable case studies and/or evaluations.

Supplier Overview Table

Suppliers and products were identified through a rapid desktop review process intended to illustrate the current capabilities across a range of use cases. The Health Innovation Network and NHS England & Improvement do not endorse or recommend any of the commercial innovations outlined within this report and it is acknowledged that there are other solutions not included within this report that can support the challenges identified. We encourage any suppliers not identified in this report to please contact us to be considered in the event that future versions are developed. hin.southlondon@nhs.net

	Company – Product Name/Website link	Brief description	Use cases	Sites	Evaluation or Case Studies Available	Live Integration with EMIS/Systm One	Standards	Trials/Pilots
Interviewed	Abtrace Limited	Abtrace are automating processes around proactive care monitoring, prevention, and early detection. They provide a real-time portal for complete triage, capturing all patient queries in one interface for efficient overview of patient flow.	Patient Recall Clinical Administration Clinical Decision-Making Appointment Scheduling	**Proactive Care Monitoring:** 30 GP practices mainly in London **Early Detection:** 59 GP practices	✓	✓	CE marked, ISO 27001, ISO 13485, HSCN, NHS DCB 0129 compliant	✓ Two co-development pilot sites
	AccuRx Limited	AccuRx provides a platform to support communication between patients and clinicians. They are most known for their toolbar embedded into primary care clinical systems.	SMS individual and batch messaging Structured medical questionnaires	○ 98% of GP practices nationally ○ All SEL practices	3 case studies have been shared	✓	Meet all needed certifications for Type 1 supplier DCB0129	✓
	Appt Health Ltd	Appt works with primary care organisations at every level to automate the call and recall process and improve the uptake of preventative healthcare programs such as NHS Health-checks, diabetes screenings, hypertension reviews and cervical screenings.	Patient recall	32 practices	✓	✓	DCB0129, MHRA	Adoption stage
	Blue Prism Limited E-18 Consulting	Cloud based solution that creates an AI digital workforce for robotic process automation including recalls, diagnostic tracking, appointment booking, and risk stratification.	Risk Stratification Patient Recall Clinical Coding Prescription Management Back-office admin Operational Reporting Solutions	Rotheram CCG, Doncaster CCG, Stoke CCG, Dorset CCG, Modality Group, NWL Digital First 85 NHS Customers	✓	Does not integrate but can access EMIS and SystmOne	Full DTAC template, DPIA, ISO approved	✓
	General Practice Software Solutions Limited Patient Chase Patient Leaf	PatientChase is an EMIS Web accredited partner product that simplifies and automates all aspects of patient recall PatientLeaf is a real-time clinical safety and efficiency decision support tool that clinicians use at the same time as their EMIS consultations by overlaying NICE and BNF data to the automation of evidence-based guidelines overlayed and specific to the patient in clinic.	Patient Recall Clinical Decision-Making Support	250+ sites 60 sites	x ✓	✓ with EMIS	DCB0129	✓

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	Company – Product Name/Website link	Brief description	Use cases	Sites	Evaluation or Case Studies Available	Live Integration with EMIS/Systm One	Standards	Trials/ Pilots
Interviewed	Healthtech1 Ltd	Automation solution focused on the automation of patient registration and related administrative tasks. Developed by London based GP.	Patient Registration	5 GP sites (London)	available here	✓	DCB0129 to be completed by August 2022	✓
	Jiva.ai Limited	Jiva's Multimodal AI platform allows users to create, version and deploy AI models in a low code/no code environment (negate the need for a data science dept).	Clinical Decision Making	6 sites (trusts and commercial partners)	Currently undergoing a clinical trial	x	ISO 13485	x
	NEC Software Solutions UK Limited (Vantage Health)- Referral Management Platform	NEC /Vantage Health offers an AI powered, online referral support and triage service to primary care providers to make referrals into specialist NHS secondary care and community services.	Referrals	800 GP practices	✓	✓	Compliant with Class 1 Medical Device	Adoption stage
	Primary Care IT Ltd	A collection of tools and utilities that will help practices to recall a diverse population, with varying health needs, conditions and intervals for their health checks in a way that fits into the workflow of a practice. They also provide a comprehensive set of GP practice data dashboards, Including areas like QOF and prevalence.	Patient recall Operational reporting solutions	Sites across Trapit, South Manchester, Cumbria, Workshire, Hellingdon, Brent, Enfield and NEL	✓	✓	MHRA, Class 1 Medical Product, DCB 0129, IS0 21700, Cyberessentials	✓
	Rapid Health Ltd	Smart Triage supports practices with providing their patients access to online consultations at a time that suits them, and supporting GPs to prioritise and manage their workload efficiently.	Clinical administration Triage	35 GP Sites	-	✓	DCB0129 Awaiting CE mark	✓
	RPA Health Ltd	A provider of both RPA development tools and completed RPA solutions that automate manual data processing tasks. Our team has 20 years experience delivering healthcare automation and integration.	Back-office admin in primary care and other health services.	6 UK sites across different sectors Mainly US –based RPA product, SST, is used in 250 hospitals worldwide.	✓	Currently in development	DCB0129 and Cyber Essentials in process. -	✓ currently underway

** For companies that did not engage in interview , information is based solely on desktop research.*

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	Company – Product Name/Website link	Brief description	Use cases	Sites	Evaluation/ Case Studies Available	Integration with EMIS/Systm One	Standards	Trials/Pilots
Interviewed	Tocalabs Ltd	Toca provides a no-code automation platform for clinical scheduling and management, e-referrals and appointments and automates comorbidity management for patient records.	Clinical Administration E-referrals Back-office admin	Secondary Care sites	✓	✓	ISO 27017 and ISO 27018 cloud security and privacy standard and cyberessentials+ and cyberessntials 9001	✓
	Ufonia Ltd	Ufonia focuses on automating the routine and more transactional clinical conversations and creating accessibility for patients.	Voice assistant	10 secondary care sites	Evaluation by Oxford AHSN	x	CE medical device, DCB0129	✓
	GP Automate Limited	RPA to automate workload in General Practice	Lab Reports New patient registration Automated Accurx Floreys messaging and actioning results Automated Batch Messaging	Premier Medical Centre	✓	✓ With EMIS (and AccuRx)	Registered with ICO and are in the process of completing DSP toolkit, DCB0129, cyber essentials and applying for GP IT futures framework	✓
Initial Engagement	Automation Anywhere UK Limited	Cloud native RPA platform accessed by multiple web browsers and devices. Aligned strategically with NHS England Transformation Directorate Digital Productivity programme. AI-powered document extraction with 24/7 support provided as standard.	Primary Care: Drug monitoring, patient registration, patient admin, Back-office admin, Analytics.	Work with 60+ sites across the NHS. Largest deployment is Northampton General Hospital, a NHS England national centre of excellence for RPA.	✓	TBC	All Certifications can be viewed at: https://www.automationanywhere.com/compliance-portal DTAC Compliant Cyber Essentials Compliant	✓
	Uipath UK Limited	Automation solutions for healthcare that provide self service options and reduce no shows, automate intake, posting and flow of patient data and uses AI/ML solutions.	Back-office admin Operational reporting solutions	TBC	✓	TBC	SOC 2 Type 2, ISO 9001, ISO/IEC 27001, and Veracode Verified™	✓
	UCLP Stratification Tool	The stratification will show who needs to be prioritised for early review and who can safely be phased for later review based on low, medium, and high-risk of deterioration. This framework will also support practices to meet the challenge of shifting to remote consultations by identifying interventions that can be delivered remotely.	Triage/Risk Stratification	TBC	TBC	✓	TBC	TBC

** For companies that did not engage in interview , information is based solely on desktop research.*

Suppliers and products were identified through a rapid desktop review process intended to illustrate the current capabilities across a range of use cases. The Health Innovation Network and NHS England & Improvement do not endorse or recommend any of the commercial innovations outlined within this report and it is acknowledged that there are other solutions not included within this report that can support the challenges identified. We encourage any suppliers not identified in this report to please contact us to be considered in the event that future versions are developed. hin.southlondon@nhs.net

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	Company – Product Name/Website link	Brief description	Use cases	Sites	Evaluation/ Case Studies Available	Integration with EMIS/Systm One	Standards	Trials/Pilots
Desktop Research	Ardens Health Informatics Ltd	Ardens provides a suite of templates/searches and protocols which identify patients at risk.	Operational Reporting Solutions Patient Recall	2800+ GP practices	TBC	✓	TBC	TBC
	Accenda Limited - Gateway	Gateway® is a Pathway, Advice and Referral platform, supporting GPs to refer patients into the right service, first time.	Referrals	16+ CCGs 1000+ practices	TBC	TBC	GPITF framework assurance	TBC
	Microsoft - PowerAutomate	Power Automate is a cloud-native, low-code automation platform that brings together UI- and API-based automation with AI.	TBC	TBC	✓	TBC	TBC	✓
	CareIQ	A health analytics platform and risk stratification tool simplifying chronic care for clinicians	Risk Stratification Appointment Optimisation Population Analytics	6 sites Total 60k patients	6 sites Total 60k patients	EMIS ONLY	TBC	TBC
	Doctrin	Smart Care navigation platform, triaging patients to appropriate clinician	Appointment Optimisation	Piloted in PCN in MSE	✓	Pending	CE marked medical device	✓
	Flo	Florence is managed by admin and clinicians via a powerful, intelligent and secure software platform, clinically validated protocols, and extensive analytics. A digital nurse engaging patients and supporting behavioural change and self-care.	Messaging	TBC	TBC	TBC	CE marked/ UKCA/ DTAC	TBC
	GProta.net	Automation administrative tasks such as compliance documents and locum clinical workforce	Workforce optimisation SMS reminders Clinical Analytics	Multiple practices in NCL	TBC	TBC	Pending DPA0129	TBC
	Automated Triage	*There are numerous online consultation products on the market that automate triage processes. Due to the extensive literature already available about these solutions, we have selected one case study to demonstrate an automated triage process for illustrative purposes within this report. To access a list of potential suppliers **please see** NHS Digital buying catalogue						

We encourage any suppliers not identified in this report to please contact us to be considered in the event that future versions are developed. hin.southlondon@nhs.net

Interoperability

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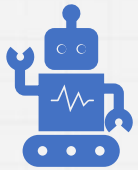
Across the market there are two interoperability models: Interfacing Vs. Integration.



Robotic Process Automation solutions do not require integration as they **interface** with clinical record systems by mimicking human interactions with the system (login, clicks, etc.). Therefore there is no an API partnership or any agreement with the systems themselves. The bots are an extension to the workforce, accessing the system by logging in therefore there only needs to be agreement/provision of log in details which are then written into the process (log in updates are also written into the process automation). All RPA solutions are able to provide this level of interface.

Process Automation solutions do require system **integration**. Integration is usually achieved via partnership agreements where suppliers use APIs to read and write data between systems. Around 60% of the suppliers included in the market review reported having existing integration with EMIS and SystemOne. When selecting suppliers it is important to note that if integration with patient record systems has not yet been achieved, as this is a costly and time consuming process which may cause delays to implementation. All solutions that do not currently have integration expressed capability/road maps to integrate.

Assurance and standards

Across the market, suppliers have provided information as to their **information governance and data security** compliance, which include:

- The Digital Technology Assessment Criteria for health and social care (DTAC)
- Data and Security Protection Toolkit (DSPT)
- DPIA (developed with adopting site)
- NHS data security and protection toolkit
- IM1 or API partnership integration standards

DTAC compliance would be the ideal standard for all suppliers to meet. However, this is not always necessary, and all suppliers have stated compliance with local/site requirements where their solutions are live.

Reported **regulatory standards** include:

- CE Mark, Medical CE Mark
- ISO 27001, ISO 27018, ISO 13485.
- HSCN standards compliance (criteria met to connect with HSCN)
- Cyberessentials approved.

There is variation in standards met across each supplier, with standards acquired linked to the requirements of the products purpose and site-specific requirements.

Assurance and standards

Clinical Safety

Underpinning clinical safety in the Process Automation landscape are the DCB 0129 and DCB 0160 standards, compliance with which is mandatory under the Health and Social Care Act 2012. These require manufactures of health IT systems and healthcare organisations to carry out a risk assessment on the product; DCB 0129 applying to the manufacturer of health IT systems and DCB 0160 applying to the healthcare organisation implementing them.

The manufacturer carries out a risk assessment, documents their findings and passes these to the healthcare organisation (DCB 0129). The organisation then analyse how they plan to configure and utilise the product and conduct a further risk assessment (DCB 0160).

Integral to the process is the Clinical Safety Officer, who must be a registered clinician trained in clinical risk management (CRM). They are responsible for overseeing CRM activities and signing-off the DCB documentation. This documentation includes a Hazard Log and Safety Case, the former of which is reviewed at regular intervals throughout the product's implementation to assess any faults or safety incidents that may arise that had not previously been foreseen.

Support and maintenance

All suppliers described provision of support teams for issue resolution and general support enquiries via websites, contact forms, email, chatbots, phonelines. Updates to systems take place automatically at regularly scheduled interviews in the main, and usually would not interrupt usage.

** When procuring solutions always follow local procedures to ensure that providers meet all requirements.*

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Recommendations

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Recommendations and Considerations

- Explore automation functionality/ capabilities of existing GP IT systems/software before considering any new supplier. Engage with existing providers to gain information on the road map of their solutions and new features currently in development.
- Consider automation software that are built for purpose, as these may save time and money compared with Robotic Process Automation solutions. Automation software may need customisation to meet local practice needs.
- If existing GP IT systems cannot be utilised, and automation software is not appropriate for the pathway to be addressed, consider Robotic Process Automation. However this is likely to take a longer amount of time to implement unless a bot already exists for the desired use case.
- When procuring an automation solution, ensure all local information governance standards are met, safety standards are in place and there are adequate clinical safety resources (such as a designated Clinical Safety Officer) established for the duration of the project.
- For further information on RPA, refer to the recent NHSE&I RPA Report here

Supplier Information

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All suppliers engaged during the market review process provided a variety of information including, case studies, evidence, feedback and indicative costs.

If you would like further information on any of the suppliers mentioned in this document please contact hin.southlondon@nhs.net who will direct you to a relevant team member. Contact details and website links for each supplier have been included in the supplier overview tables.

The Market Review has not been developed with the purpose of endorsing any supplier included, but to provide information on automation suppliers with potential to meet the needs of primary care services and the London Digital Frist programme based on desktop review and supplier interviews.

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Appendices

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Appendix 1 - Market Review Methodology

Project Brief	Project Brief defined with London Digital First Programme
Define inclusion criteria	Inclusion criteria agreed and used to define parameters of scope for the research carried out.
Desktop research	Desktop research carried out, identifying functionalities and accuracy of varied solutions able to complete required measures.
Engagement with NHS/AHSN system	Engagement with researchers/NHS providers active in this area of work to gain information on relevant and transferable solutions currently in use. Needs articulation was carried out with London based primary care sites to understand priority use cases.
Shortlist suppliers against inclusion criteria	Suppliers were shortlisted against the inclusion criteria based on information found online and through system engagement.
Explore and review solutions	Functionality and appropriateness were explored through interviews with suppliers as well as follow-up emails for clarifications.

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To identify viable solutions suitable for delivery of automated processes within primary care, the approach set out in the table to the left was taken. Inclusion criteria were agreed and used to longlist potential products/supplier via desktop research. Structured interviews were then held with shortlisted suppliers to gain further information which was used to undertake analysis and insights generation.

Suppliers were shortlisted and invited to interview within the timeframe of the Digital First automation workstream. Desktop research information has been included for suppliers who were not able to interview within this timescale.

Appendix 2 – Automation Type Use Cases

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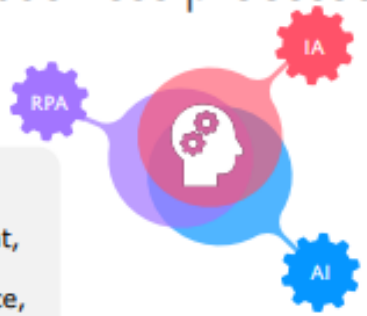
Definition – RPA, IA and AI

Automation can support and enable staff to digitise and/or enhance clinical and business processes across all levels of the organisation.



Increasing technology and process complexity

		Example use cases	Example technologies
RPA	Robotic Process Automation imitates activities carried out by humans. It can automate high volume, rule-based, repeatable tasks, delivered just like its human counterparts. However, RPA can only handle structured and digitised data.	• Front office: Patient administration, Appointment scheduling • Middle office: Operational and service management, Report generation and distribution • Back office: Corporate functions like HR and finance, Claims administration	
IA	Intelligent Automation uses more sophisticated technologies than RPA for structured decision making. It can simulate rule-based decisions to automate more complicated tasks. It mainly handles structured data, but some IA technologies can digitise unstructured data to further enable RPA.	• Front office: FAQs customer assistant, Medical Secretary, OP Call centre • Middle office: Patient enrollment and eligibility, Theatre scheduling • Back office: Physician credentialing	• Intelligent content recognition or extraction • Natural language processing
AI	Artificial Intelligence refers to computer software with the ability to think. It allows examining of large, unstructured, varied data sets to uncover hidden patterns, trends, customer preferences and other useful data that can help inform better decisions.	• Front office: Patient data analysis and triage to assist referrals – eConsult, eTriage • Middle office: Fraud detection and risk management • Back office: Medical imaging analysis support – Clinical administration of diagnostic support services	• Natural language generation • Machine learning

Source: https://www.nhsx.nhs.uk/media/documents/RPA-Guidance-May-22.pdf

Appendix 3 – Benefits

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Unpacking RPA – Benefits

The primary benefits of RPA are operational efficiencies, which help drive better quality of care with faster turnaround times and reduced cost.

RPA excels in taking away repetitive, manual work from employees, such as scheduling activities, copying and pasting data, and booking timesheets. In addition to operational and cost efficiencies, RPA unlocks the capability of organisations by augmenting their staff. Within the context of the NHS, this will mean freeing up valuable staff time – both clinical and non-clinical, so they can focus on value adding activities that improve patient care and outcomes.

Speed: RPA undertakes tasks 4–10x faster than a person, freeing up staff time to focus on patient care.

Reliability: RPA robots only do what they are told (no human errors) and will never mis-key, miscalculate or have a bad day; provided input data and business rules are correct, output data will be correct and consequently improve patient safety.

Productivity: Available 100% of the time 24/7 – the robots will never need to sleep, they will undertake their work whenever required, giving back time for clinical and non-clinical activities.

Flexibility: Robots are easy to schedule and assign to automations once they have been created. They can also be updated relatively quickly if the process requirements change, increasing responsiveness for patients.

Decoupling growth from labour: Robots increase the capacity of organisations allowing them to do more with less/same resources, which then allow teams to tackle care backlogs faster.

Cost reduction and return-on-investment (ROI): Robots are cheaper, faster, available 24/7 and can improve productivity and data quality, resulting in lower operational costs and hence better value for communities. Most organisations report 20-30% cost reduction and 30-50% ROI on RPA projects.

Auditability: Robots collect information on everything they undertake, allowing for full, retroactive inspection on every transaction they have undertaken.

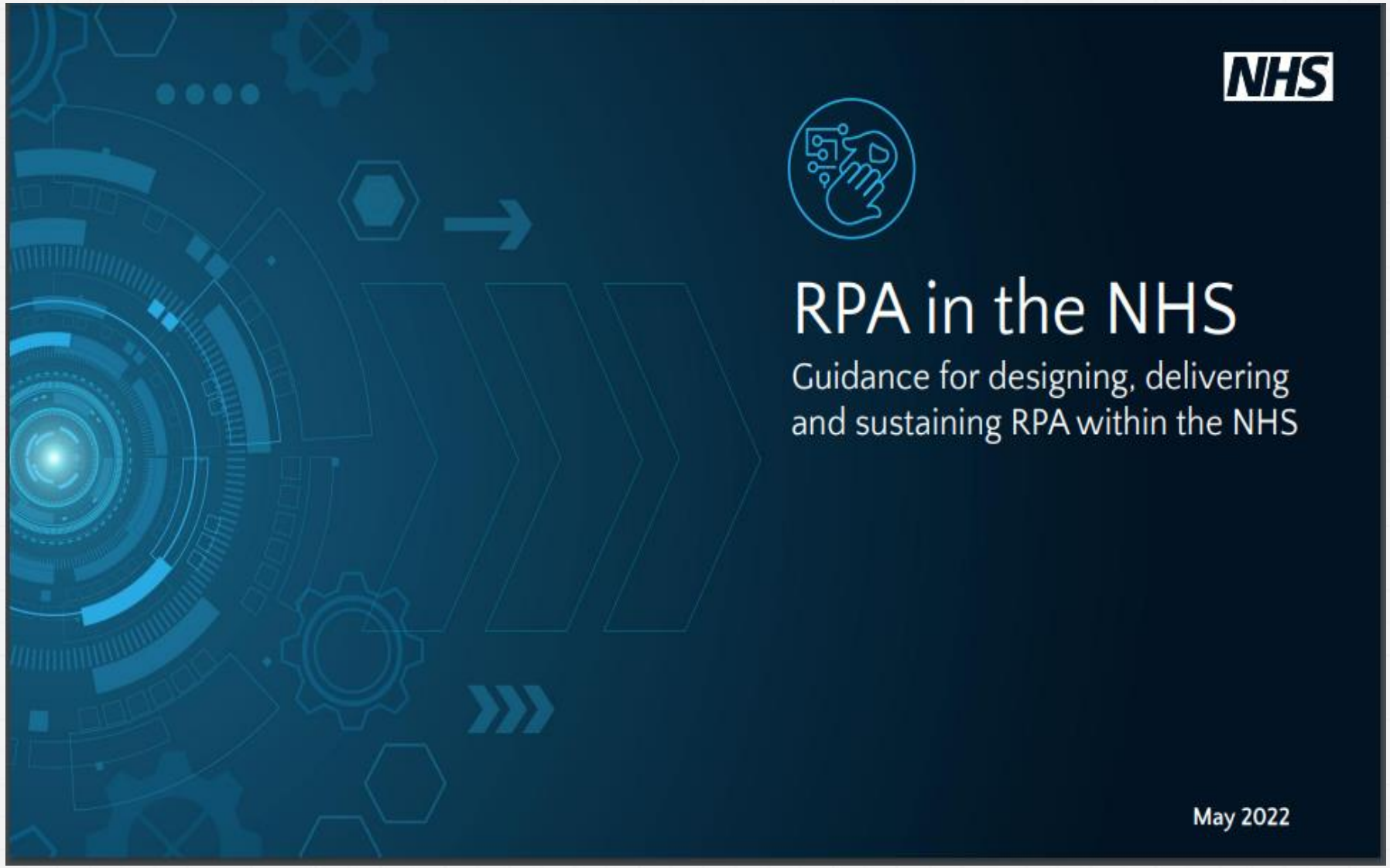
Light touch: Robots work with existing applications and systems that an organisation has, which enable fast-tracking to digital transformation.

Employee satisfaction: By giving robots the mundane tasks, employees focus on the things that people do best (thinking, deciding, producing, and creating). This improves staff resilience – more time to do transformational work and adopt new ways of working.

Reduced attrition: Better staff satisfaction results in reduced attrition across organisations. Increasingly, companies are focusing on this as a main benefit they seek from RPA.

Source: https://www.nhsx.nhs.uk/media/documents/RPA-Guidance-May-22.pdf

Appendix 4 – RPA in the NHS report (May 22)



RPA in the NHS report was released May 2022 and contains guidance for designing, delivering and sustaining RPA within the NHS.

Particular points of interest may be:

- Page 13 – Typical Challenges
- Page 17 – Current Example use cases
- Pages 37 – 40 Examples of existing processes
- Page 58 – Choosing the right tool
- Page 59 – Technical requirements, key attributes
- Page 78 – Driving Value from RPA

Source: https://www.nhsx.nhs.uk/media/documents/RPA-Guidance-May-22.pdf

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