Leveraging digital productivity technologies to optimise the NHS: RPA and ADC

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The need for Digital Productivity

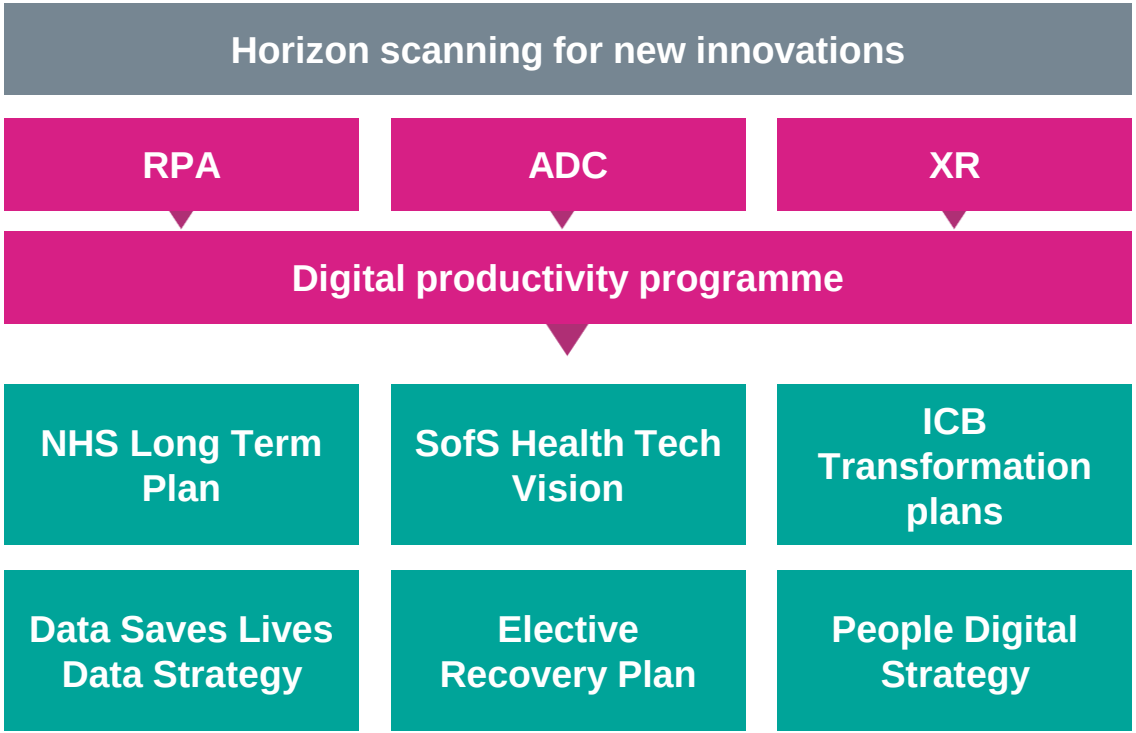
The Digital Productivity programme of works – now in its third year of delivery – aims to **accelerate the adoption of evidence-based digital tools** to:

- improve productivity across the NHS and deliver care and treatments to more patients
- improve the quality of care
- save time, lower costs, reduce waste
- reduce burden on the workforce
- increase patient and staff satisfaction

We are committed to accelerating the **scale up and spread** of productivity improvement technologies by:

- improving capabilities **sustainably** and **impactfully**
- leveraging the power of **communities of practice**
- creating and sharing **best practice**
- ensuring **benefits, evaluation and evidence-based research** underpins our work

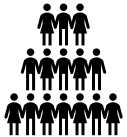
Strategic alignment



Our strategic delivery focus for 2022/23

Empower & enable ICBs

to meet digital transformation priorities, and offer guidance and support to accelerate progress regionally



Tackle elective recovery backlog

by collaborating to ensure RPA is enabled to support the national ambition

Economies of scale

by ensuring we're maximising the knowledge and resources across the health and care system

Future proof & develop

by considering how we build on RPA, adopting IA where appropriate across the system

Leverage the portfolio

and look for opportunities to connect digital tools and technology nationally and cross-sector

Underpinned by consistent two-way communication and system engagement

Our journey to a more productive NHS

We are HERE

Foundation

Set the foundation
- define the problem
- identify needs
- deliver tactical solutions

Structure

Build the right structure on the right foundations
- improve knowledge
- capital support

Acceleration

Accelerate the adoption
- build on evidence based approaches
- capital support

Growth

Enable safe and rapid growth
- provide continued support and direction

Sustainability

Embed self-sustainability
- monitor performance
- capture values
- RPA as BAU

RPA- Robotic Process Automation **IA**- Intelligent Automation

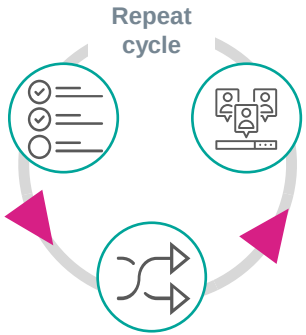
The importance of collaboration

A collaborative approach based on shared learning and insight will ensure we maximise and optimise our digital transformation across the NHS.

Leveraging experience from the existing NHS RPA community

1. DISCOVER
Has someone done this before within the NHS?

What business areas / functions / use cases have proven potential?



2. ADAPT & ADOPT
Can existing solutions / codes / assets be repurposed or adapted to fit our requirement, making our implementation faster and cheaper?

3. PROMOTE & SHARE
What channels can we leverage to promote, share and publicise our work and solutions to ensure they are easy to find and top of mind?

- Accessible and practical guidance, best practices and lessons learnt
- Shared infrastructure for faster set up and lower total cost of ownership (TCO) across NHS; NHS is pushing for a SaaS-first approach
- Shared license capacity and ability to leverage national scale for best deals on technology
- Use case / process / component / reusable assets catalogues, enabling faster set up, delivery and quicker national return on investment
- Easily accessible, centralised guidance on regulations, clinical safety assurance and data governance

Collaboration and partnership

Digital health innovators

Leveraging existing internal and external networks and digital transformation leads to guide our work, seeking input and insights to support adoption and maximise benefit across the health and care system. Some RPA networks and collaborative platforms exist, such as the NHS Futures RPA site.

HEE

Collaboratively developing e-learning materials, videos and a training module for automation.

Collaborating on a procurement framework for XR along with national bulk purchasing commercials, 3 year collaboration on development of the ecosystem strategy.

HFMA

Working together to develop benefits management tools based on our programme tools to support the NHS finance community, at the request of Catherine Pollard.

AHSN

We need to work closer with the AHSN network, leveraging their expertise in innovation acceleration, and collaborating to create new content and forums to support adoption across the NHS.

Digital productivity programme

Working with suppliers and vendors – like today - to co-produce events and content to support education and awareness across health and care

Suppliers & vendors

Working with local and regional networks to ensure growth and spread of proved digital tools across the NHS, with centralised support through good practice guidance, communities of practice and regular engagement.

ICBs / ICSs

Collaborating with organisations such as the Kings Fund to ensure input and insights from their network, and promote awareness of good practice etc.

Think tanks

Scale up and spread awareness and education by exploring and showcasing best practice and innovation in the use of digital data and technology within the NHS

UKAuthority

Robotic Process Automation (RPA)

An introduction to automation

‘**Automation**’ describes a **range of technologies** that reduce human intervention in logic- and rules-based processes by using software.

Automation capabilities have evolved and matured over recent decades. There are three distinct groups within automation, based on the actions they enable, the level of sophistication, and degree of complexity of technical solutions used. These three groups are:

- Robotic Process Automation (RPA)
- Intelligent Automation (IA)
- Artificial Intelligence (AI)

What is robotic process automation (RPA)?

Seamless integration
on top of your existing tools and applications

Automation of repetitive routine tasks
including data extraction and data entry

Mimics your use of applications
and interacts with the user interface

Exact task programming
so your robot does exactly as you’ve instructed

Benefits of RPA

Hard return on investment (ROI)
capacity repurposing, cost reduction, economies of scale, etc.

Improved clinical outcomes and patient experience
through automatic appointment scheduling and reduced turnaround times

Improved regulatory compliance
data is easily tracked, analysed, and audited

On-demand scalability
with endless opportunity for improvement

Improved data quality
human error removal, providing improved reporting + decision making

Increased efficiency
optimising and maximising the productivity and capacity of your **existing** workforce

Improved staff morale
by enhancing human value + reducing task inundation

Growth of NHS-wide knowledge and resources
lowering barrier to entry across the NHS to improve diagnostics capabilities

Automation and Elective Recovery: The Art of the Possible

Referrals	Appointments	Diagnostics	Theatres	Outpatients	Patient management
Electonic referral triage	Re-booking automation	Automated remote monitoring	Automated booking & triage	Referral management	Deteriorating outpatient's tracker
Standard referral management	Automation initiated follow up	Automated diagnostics on referral	Readmission predictive modelling	Appointment management	Diagnostic dependent appointments
AI based e-learning	Clinic auto-capacity management	Result alerting		Assessment	Patient cohorting
RTT tracking automation	Automated e-clinic outcoming	Intelligent diagnostic booking		Diagnostic tracking	Patient breach tracker
				Discharge processes	Round robin admission

Key barriers and challenges for RPA adoption across the NHS

Funding

- Lack of revenue/capital as organisations prioritise funding elsewhere – due to conflicting priorities
- Difficult business case development due to lack of accessible case studies, including clarity of high ROI case and how this was calculated
- Lack of funding available for project resource – including dedicated project/technical/ developer team members
- Unexpected ongoing costs from licenses and maintenance

Education

- Lack of understanding surrounding which types of process can be automated - locally and across organisations
- Unclear which processes to automate to achieve high and quick ROI
- Lack of knowledge surrounding procurement and vendor models
- Lack of confidence to implement automation
- Limited knowledge around the art of the possible

Collaboration

- Limited knowledge sharing across the system – need to share documentation, lessons learnt, ideas, and solutions
- More collaboration required between technical, clinical and project teams to deliver successful automation
- CoE's aren't collaborative enough, so currently limiting their value to the system, hindering some 'new starters'
- IT issues due to staff shortages, conflicting priorities, and long lead-times, leading to project delays and increased costs

Resistance to change

- Resistance to change due to fear over job losses leading to low adoption
- Change-fatigue to new ways of working

Interoperability & data quality

- Interoperability of systems locally and across organisations
- Unstructured or 'dirty' data
- No standardised templates system-side

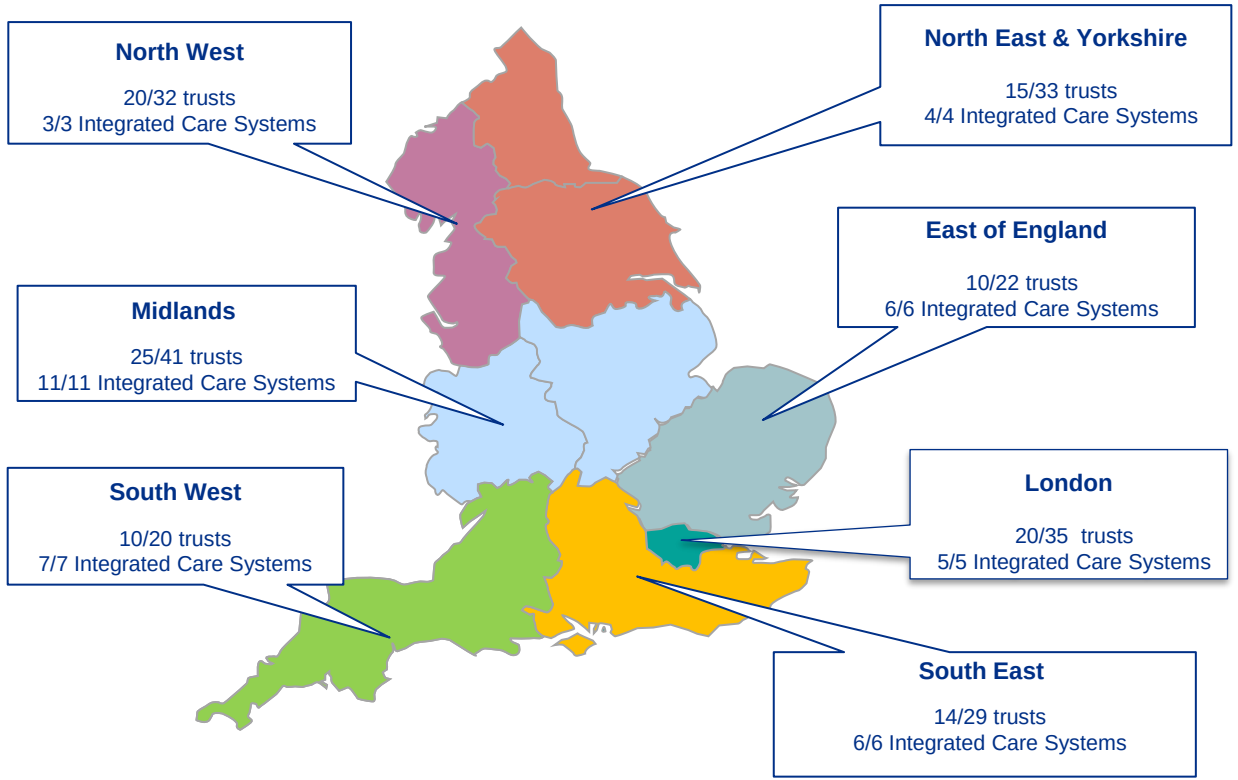
Technical challenges

- Lack of technical expertise / infrastructure
- Lack of developers across the NHS to build / maintain automations
- Legacy processes

Current spread of RPA capabilities in England

NHS trusts and Integrated Care Systems with known automation capabilities*

7/7	Regions
42	Integrated Care Systems
61%	of Acute Trusts
38%	of Community Care / Mental Health Trusts



*Digital Productivity RPA case studies database, October 2022. True number of use cases may be higher. Includes existing processes and those still in development/testing. Count does not include non-trust organisations

RPA landscape by process type

BUSINESS FUNCTION > 100*

Finance > 14	General Admin and Operations > 12	Human Resources > 41	Information Technology >14	Learning Management >4	Supply and Asset Management >3

CLINICAL FUNCTION > 90*

Appointments Management > 12	Patients Data Management > 36	Referrals Management > 18	Waiting Lists >4	Supply and Asset Management >9	General Admin and Operations >4

*Digital Productivity RPA case studies database, October 2022. True number of use cases may be higher. Includes existing processes and those still in development/testing. Excluding processes where category could not be determined

RPA delivery plan 2022-23

2022/23 deliverables

Develop first RPA e-learning
Programme - the first of its kind - for NHS staff in association with Health Education England (HEE)

Evidence of impact
Generated from applications of RPA from the UTF sites over the next 2 years, in order to track the benefits of implementation

Publish RPA Blueprints
in collaboration with UTF sites to demonstrate how optimisation of processes is achieved through RPA

Launch an accessible RPA repository
on GitHub, where public sector organisations can freely share and obtain codes for various processes

Enable major digital transformation programmes
through RPA, including Elective Recovery, People Digital Strategy and Diagnostics Programme delivery

Grow RPA Community of Practice
as a key tool for knowledge sharing and networking, maximising the value of our work across the NHS and beyond

Future proof the NHS
by building strong digital foundations via automation and workflow improvements

Develop robust plans for Diagnostics
Prioritising Imaging, Pathology and Community Diagnostics Centres capability for automated scheduling and booking, mapping and baselining potential by October 22

Support Elective Recovery Programme
Unlocking the potential of automation within clinical admin and elective services, collaborating across the system of experts to achieve the national objectives

Accelerate automation uptake within HR
Collaborating with the People Directorate to showcase the opportunities for automation with HR functions, supporting the HR and OD Plan

Extensive comms and engagement plans
Ensuring the enablement of automation capabilities to be maximised across healthcare, at professional level supporting the HFMA, CFO network, CIO network, Proud2beOps network, Proud2bAdmin network, HR network, Diagnostics Leads, ICS and regional Digital Leads. Plus, external events to showcase the tech and raise awareness of its value.

Develop the 2023-25 plans for Intelligent Automation
As set out in our 5 year roadmap, evolving to IA unlocks greater potential for automation enablement. Developing and publishing our plans is crucial to achieving the vision in 2025.

Leverage the market expertise
Joining up the wealth of expertise and talent to achieve the national potential

Automatic Data Capture (ADC)

ADC Programme Purpose

Increase Productivity and Operational Efficiency

Reduce Cost

Improve Patient Safety and Staff satisfaction

To help NHS Organisations achieve operational efficiencies using proven technologies that automate the identification, tracking and collection of data from objects*

Sept – Nov 22 → Dec 22 – Mar 24 (TBC) → Apr 24 – Mar 25 (TBC) →

Set the stage | We are here | Decide what to do | Make it happen | Make it stick

*objects refers to documents, medicines, stock, medical devices, people etc. Further work to define objects will be made during the research phase of this programme.

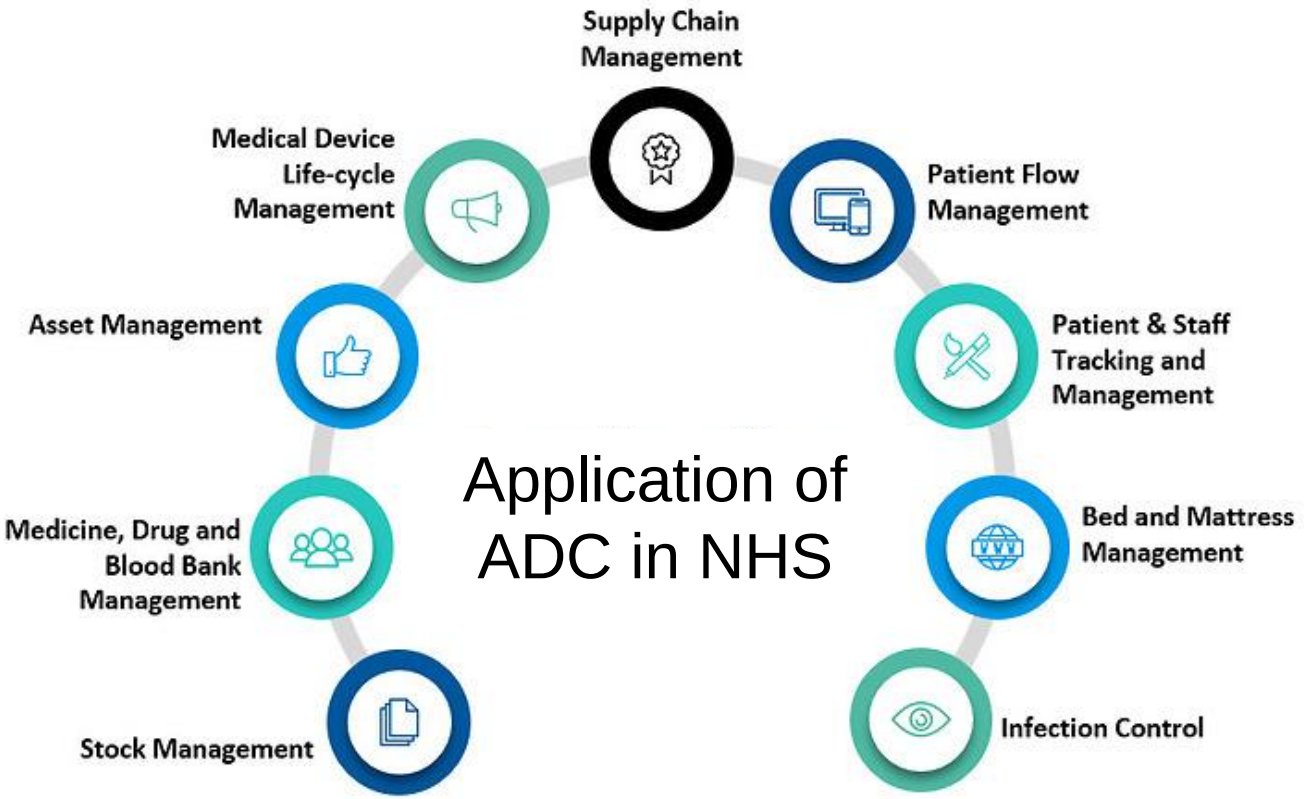
How does ADC work?

- Barcodes
- Tags
- Readers
- Scanners

- Wireless
- WiFi
- Bluetooth
- GPS
- Radio-frequency

- Computer system
- Patient database
- Inventory management database

Healthcare Applications of ADC



Appendix

Case Study

Hull University Teaching Hospitals NHS Trust has implemented ADC using RFID (Radio Frequency Identification) which has now been installed across all patient areas including wards, departments, clinics and sterile services. The project delivers an RTLS (Real Time Location System) solution enabling assets (around 72,000 assets plus 15,000 sterile trays) to be tracked and found, quickly and easily, bringing both staff and patients benefits.

The solution works by having readers and antennas attached to the permanent features of buildings, and all assets having an RFID label attached to them. When an asset passes under a reader or antenna its location is captured instantly, enabling people to find and locate assets in real time.

Blueprint available on FutureNHS

Benefits

Reduced time spent searching for equipment

£652,419.26 total cost of resource which is saved to carry out other duties, including patient care in the year of implementation

Reduced number of cancelled surgeries and planned procedures due to sterile trays and equipment being available when needed

Will be measured through the reduction of patients cancelled due to sterile instruments not being available (data by April 2023)

Assets being found and not having to purchase replacements

60 assets at an average cost of £100 per year = £6,000 saving for not having to buy replacements of items which have moved to another ward or department

Improved patient experience from their belongings not being lost, and the Trust benefiting by avoiding the cost of replacements

We expect to have 2 or less instances per year once the system is fully live and implemented across all areas (awaiting data)

Resources

- NHS England - Transformation Directorate Digital Productivity programme
- Guidance for designing, delivering and sustaining RPA within the NHS
- RPA e-learning programme for NHS Professionals
- NHS Robotic Process Automation GitHub open source repository

Thank you

Get in touch with our Digital Productivity team:

england.digital.productivity@nhs.net

Join our National Communities of Practice:

Robotic Process Automation
https://future.nhs.uk/RPA/grouphome

Automatic Data Capture
https://future.nhs.uk/DigitalProductivityProgramme

XR In Healthcare
https://future.nhs.uk/NationalXRHealthcare