Artificial Intelligence in HealthCare

Agenda

AI CENTRE for Value Based Healthcare

1. Who is the AI Centre
2. What is AI
3. The SEL AI Framework

Who is the AI Centre

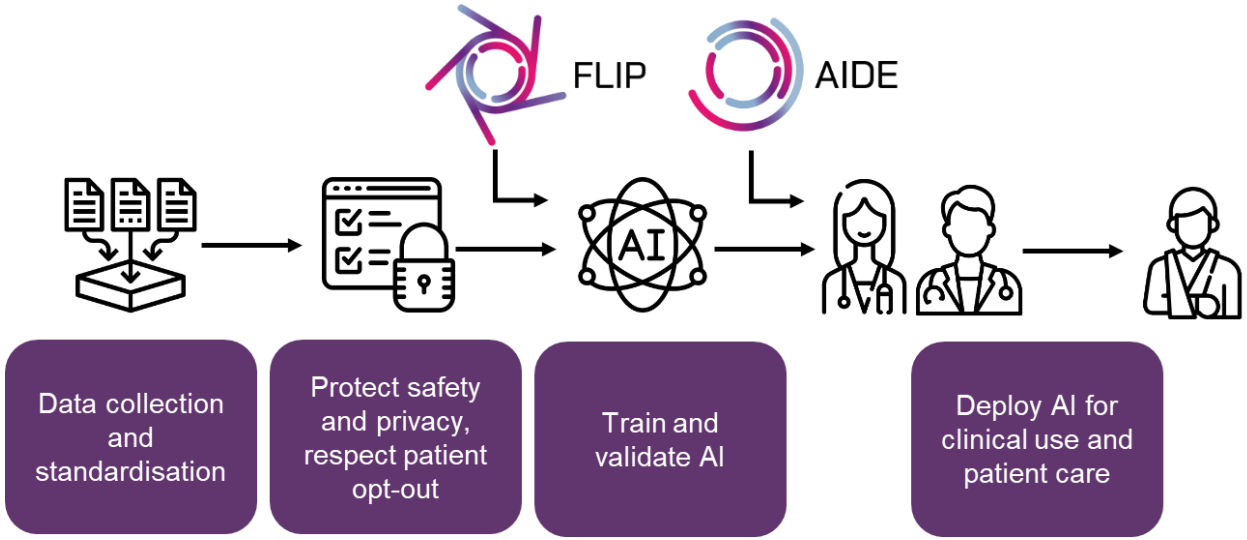
From Deep Data to Artificial Intelligence

1. Originally an Innovate UK and UKRI funded centre (2019), with NHS, Academic, and Commercial partners, working together to build and deploy Radiology AI

2. Consolidation (2024) into a consortium of NHS Trusts - operationally based out of GSTT and KCL - with technical expertise across full vertical of multi-modal data engineering to AI development/deployment

3. Delivering on public sector, research grant, and commercially funded projects, with R&D function in AI development for Medtech, RWD, and life sciences

Platform to Support Full Lifecycle AI Development



Taking models from conception, to development and deployment, within the clinical environment

Federated Learning and Interoperability Platform (FLIP)

Data held locally in Trusts within ‘secure enclaves’, with on-prem high compute. Joined through secure tunnel to AWS hub, which orchestrates federated SQL queries, and federated AI model training.

AI Deployment Engine (AIDE, now replaced by DeepcOS)

Orchestrates data flows and predictions, and provides platform for monitoring, across radiology AI ‘applications’. AIDE is being deprecated and merged into deepcOS.

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Linked Multi-Modal Data*

We create a **high-fidelity representation of the entire patient,** across the full clinical pathway, opening doors to truly personalised care and precision medicine

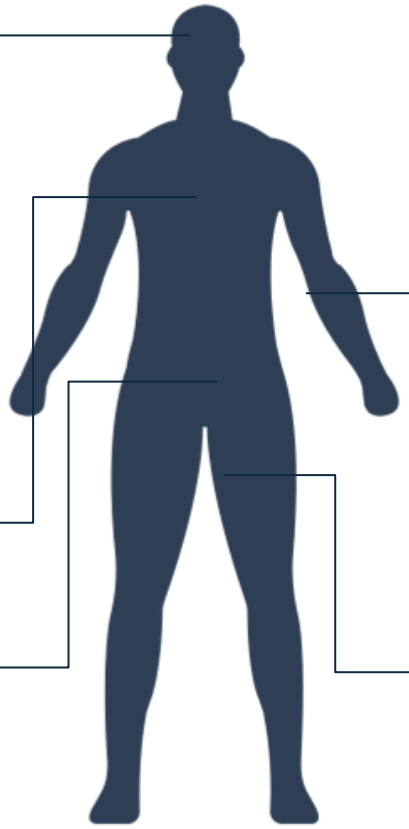
156,000 CT Head

142,124 MRI Head

1,819,000 XR Chest

271,000 CT Chest

369,000 CT Abdomen



~5.2 million longitudinal patient records

- Diagnoses
- Medications / Chemotherapy
- Laboratory
- Procedures
- Genomic Testing
- Histopathology
- Microbiology

>80% of information in raw document text. We curate this using language AI pipelines across 100s millions of documents.

Linked, Contiguous, Primary Care Data

**Counts from GSTT, January 2025*

What Is and Isn’t AI

What is AI

Artificial intelligence (AI) is the development of computer systems capable of doing things that typically require human intelligence. This includes learning from new information, recognizing patterns, understanding human language, and making decisions

AI is not one thing - it is a family of tools

Category	Key Characteristic	Practical Example
Advanced Analytics	Answers **"What is happening?"**	Identifying which patients are most likely to be admitted next month.
Machine Learning	Predicts **"What is likely to happen?"**	Predicting risk of sepsis or hospital readmission.
Deep Learning	Recognises complex patterns from images, speech or text	Detecting cancer on CT scans or retinal disease from eye images.
Generative AI	Creates new content	Drafting clinic letters, summarising consultations or answering staff questions.

What Is and What Isn’t AI

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✅ What IS AI	❌ What ISN'T AI
Learns from data to identify patterns and improve predictions over time.	**Fixed rule-based systems** that always follow predefined "if-then" logic.
Makes predictions or recommendations based on clinical, operational or administrative data.	**Standard automation** such as scheduled emails, reminders or workflow routing.
Uses Machine Learning, Deep Learning or Generative AI to analyse complex information.	**Traditional reporting and dashboards** that simply display historical data.
Can process unstructured information such as clinical notes, referral letters, medical images and voice recordings.	**Electronic Patient Record (EPR) systems** used only to store and retrieve information.
Supports decision-making by identifying risks, prioritising patients or suggesting actions.	**Databases and spreadsheets** that organise information without making predictions.
Improves through training and validation using high-quality datasets.	**Search functions or keyword matching** that do not learn or adapt.

It can be an uphill struggle

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‘The failure rate for NHS-facing AI companies is not publicly measurable, but the risk of non-adoption is high: many tools fail not because the AI model does not work, but because they do not fit clinical workflows, lack evidence, struggle with procurement, or cannot demonstrate real-world value’

Current Trends

Trend	What is happening now	NHS / healthcare relevance
AI for administration and productivity	Microsoft 365 Copilot is being rolled out to **505,000** clinicians/support staff; a trial found **43 minutes saved** per staff member per day.	Reduces admin burden across drafting, data analysis, correspondence and meeting summaries.
AI notetaking and clinical documentation	AI notetaking tools are accelerating; clinicians report up to **25% more** patient-facing time.	Supports better documentation quality and releases clinical time back to patients.
AI triage and digital front doors	NHS App AI triage is expected to reach **200,000+ patients** within 12 months; full availability planned by **April 2028**.	Helps direct patients to the right service, improving access and demand management.
Diagnostic AI	AI X-ray tools are planned for all NHS trusts by **2029**; already available in around **half** of trusts.	Strongest current clinical use case: imaging, radiology, cancer, stroke, pathology and decision support.

Sources: NHS England; GOV.UK.

Upcoming Trends

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Predicted trend	What it could look like in healthcare
AI-enabled care pathways	End-to-end support across triage, diagnostics, scheduling, documentation, follow-up and outcomes.
Precision medicine and genomics	AI, genomics and analytics help tailor care, shift prevention earlier and personalise interventions.
Predictive and preventative care	Early-warning models combine wearables, lifestyle data and records to flag subtle health changes.
Multimodal clinical assistants	Assistants interpret text, images and other inputs for care, research, public health and drug development.
Population health and risk stratification	Identify high-risk cohorts, target proactive support, reduce inequalities and plan around need.
Research and drug discovery	Accelerate literature review, trial matching, synthetic data, genomic analysis, biomarkers and repurposing.

How AI can become part of the neighbourhood care toolkit

Neighbourhood care depends on joined-up services, earlier insight, and practical support for teams facing demand and capacity pressure.

See need earlier

Risk, deterioration, unmet need, and variation can be identified sooner when data is used well.

Reduce avoidable work

AI can summarise, triage, extract, monitor, and surface patterns so staff time is better focused.

Scale learning

A shared SEL approach avoids each organisation solving the same assurance and adoption questions alone.

Good adoption starts by separating myths from reality

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Myth

AI replaces professional judgement.

Reality

AI should support human decision-making and clear accountability.

Myth

AI is safe once it works in a pilot.

Reality

Performance, safety, bias, data quality, incidents, and impact all need ongoing monitoring.

Good adoption starts by separating myths from reality

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Myth

AI will replace staff

Reality

AI supports staff by summarising information, flagging risks, or reducing repetitive admin, but humans remain responsible for decisions, care, escalation, and patient communication.

Myth

AI is always right

Reality

AI can make errors, miss context, or produce biased outputs. Its results should be checked, interpreted, and challenged by trained users.

Core Healthcare AI Domains

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Operational

Faster, more efficient healthcare delivery with reduced administrative burden.

Clinical support

Better diagnosis, treatment, and patient safety.

Population health

analyses large populations to identify trends, inequalities and opportunities for prevention.

Research and Innovation

accelerates medical research, clinical trials and scientific discovery

Improving clinical pathways

deepc

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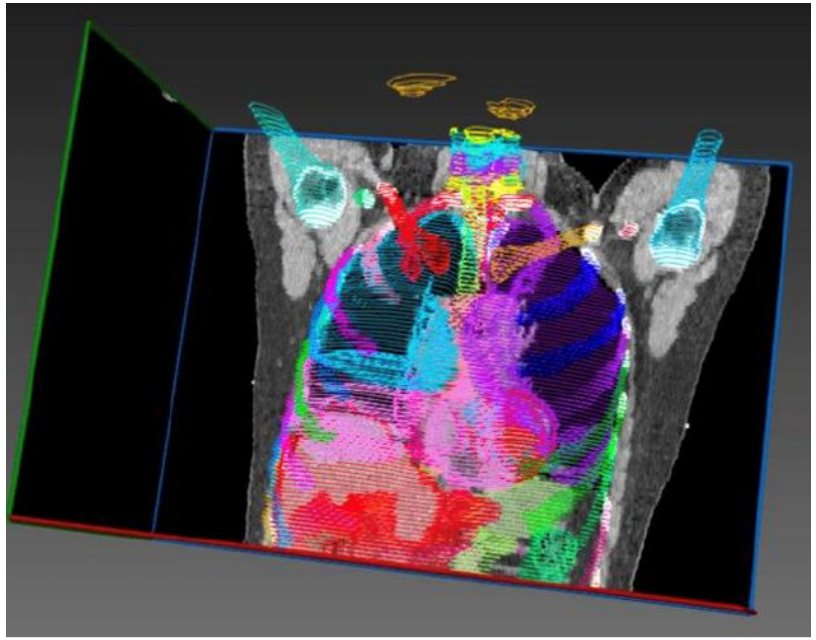
NHS Guy's and St Thomas' NHS Foundation Trust

AutoSeg – Radiotherapy

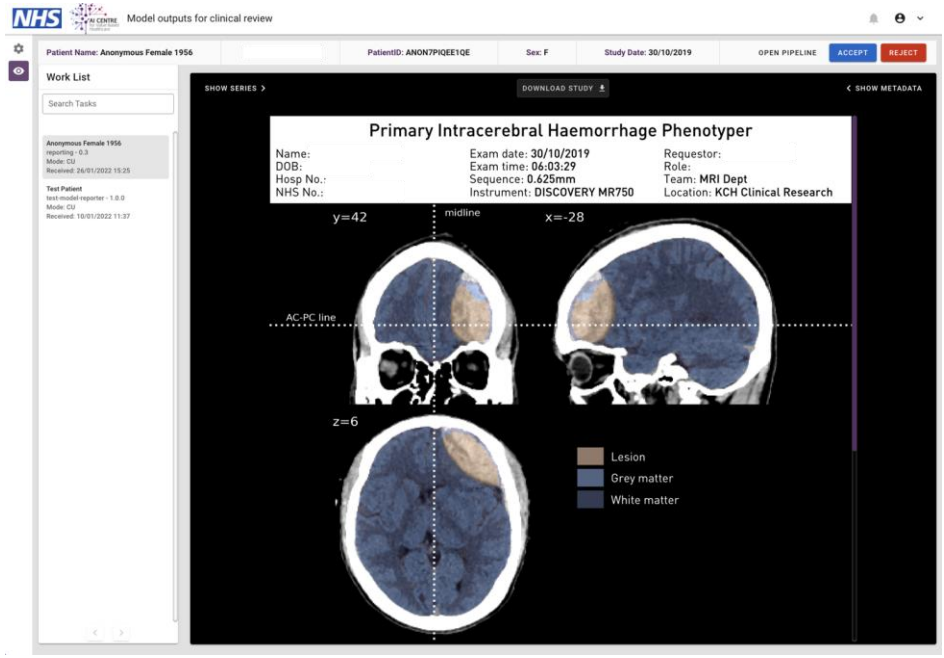
AutoSegCT AI tool enables quick and accurate contouring of organs at risk of toxicity for the purposes of radiotherapy treatment.



NHS King's College Hospital NHS Foundation Trust

Intracerebral haemorrhage Phenotyper

Detects which parts of the brain are affected by the haemorrhage and the likely side effects, as a way to inform downstream treatment.



Real-World Use Cases for Microsoft Copilot in the NHS

Examples from NHS England, Oxford University Hospitals and South London & Maudsley

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1 NHS-wide productivity

- Pilot across 30,000 staff in 90 NHS organisations
- Average 43 minutes saved per staff member per day
- Now being rolled out to 505,000 clinicians and support staff

2 Meeting summaries & actions

- Summarise Teams meetings and capture agreed actions
- Reduced one meeting note write-up from 90 minutes to 25 minutes
- Improves follow-up and frees time for frontline work

3 Email triage & preparation

- Summarises long email threads and highlights key points
- Helps staff prepare for meetings and decisions
- Useful for managers handling high email volumes

4 Drafting reports, papers & presentations

- Drafts and refines reports, agendas, TORs and board papers
- Helps create presentations more quickly
- Turns emails into structured SBAR-style briefs

5 Back-office efficiency

- Supports administrative and corporate service tasks
- Creates summaries, pre-meeting briefs and information responses
- Redirects staff time toward higher-value priorities

6 Patient information & accessibility

- Can help rephrase patient information in clearer language
- Supports translation and accessibility checks
- Human review remains essential before patient use

Real-World Use Cases for Population Health

Examples from Norfolk & Waveney, Bristol, Cumbria, Lambeth and Lincolnshire

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1 Identifying vulnerable patients

- Norfolk & Waveney used PHM during COVID-19
- 12,000 extra people were added to the shielding list
- 23,000 people were engaged and supported by a virtual care team

2 Preventing heart failure

- Bristol Inner City PCN identified 102 people at high risk
- 100% received a clinician review
- Medication reviews, social prescribing and Healthy Hearts groups were offered

3 Personalised care for chronic conditions

- North and North East Cumbria identified patients with chronic illness plus depression
- Linked datasets were used to predict need and target support
- Enabled more proactive, personalised care

4 Reducing emergency demand

- Lincolnshire used linked data to identify frequent emergency department users
- Personalised care plans were created around whole-person needs
- After 6 months: 58% fewer ED admissions, 41% fewer attendances, nearly 3:1 ROI

5 Tackling health inequalities

- Lambeth targeted Black and minority ethnic patients with hypertension
- A 12% blood pressure control gap was eradicated
- 300+ patients were newly diagnosed through proactive outreach

6 System-wide planning & joined-up data

- Lincolnshire built a linked dataset covering 100% of its population
- Data connected primary, secondary, tertiary and adult social care
- Supports targeted care, neighbourhood planning and service redesign

Real-World Use Cases for Research and Innovation

Examples from Genomics England, AIC/GSTT

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1 Clinical trials patient matching and pre-screening

- Haystack is the AIC's in-house clinical trials patient matching and pre-screening stack.
- It is supported by the innovative AI technology 'MESA' (Medical-concept Extraction with Schema Alignment), which enables eligible patients to be identified in a way that has previously not been possible.
- Deployed against NHS real-time data infrastructure (Snowflake), it directly supports the 150-day commercial trial activation KPI

2 Chatbot for Genomics England

- GeNotes is a chatbot front-end for NHS England's genomic notes corpus.
- The chatbot provides clinicians and students with the opportunity to ask genomics queries and receive an evidence-based, hallucination-free response that is grounded in the verified Genomics dataset.
- The platform has been widely evaluated within the health service.

SEL AI Framework

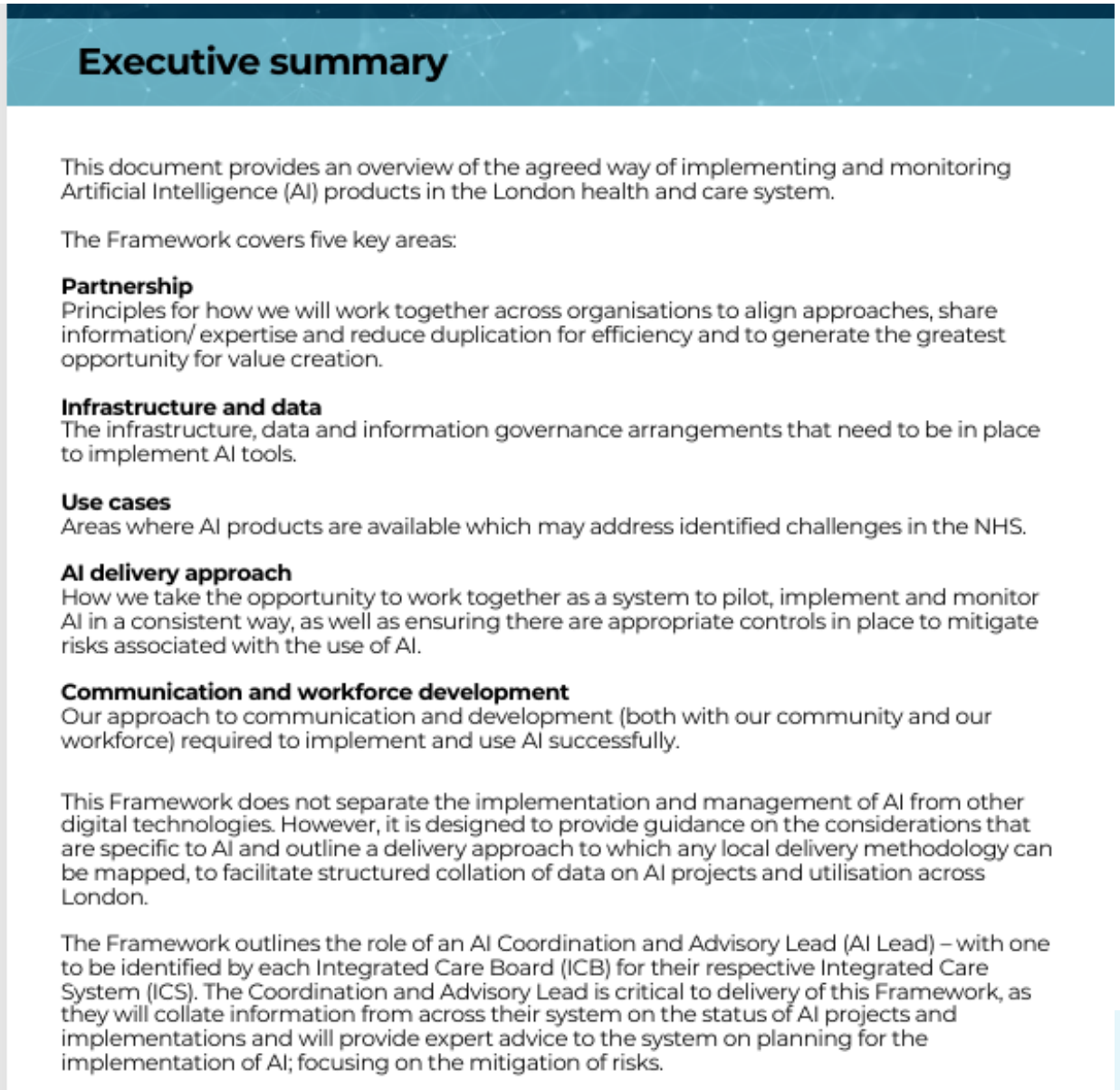
Introduction

SEL ICB commissioned AIC to deliver the London AI Framework

Set out five key focus areas:

1. Partnership.
2. Data infrastructure.
3. Use cases.
4. AI delivery.
5. Workforce development.

AI framework link



Executive summary

This document provides an overview of the agreed way of implementing and monitoring Artificial Intelligence (AI) products in the London health and care system.

The Framework covers five key areas:

Partnership
Principles for how we will work together across organisations to align approaches, share information/ expertise and reduce duplication for efficiency and to generate the greatest opportunity for value creation.

Infrastructure and data
The infrastructure, data and information governance arrangements that need to be in place to implement AI tools.

Use cases
Areas where AI products are available which may address identified challenges in the NHS.

AI delivery approach
How we take the opportunity to work together as a system to pilot, implement and monitor AI in a consistent way, as well as ensuring there are appropriate controls in place to mitigate risks associated with the use of AI.

Communication and workforce development
Our approach to communication and development (both with our community and our workforce) required to implement and use AI successfully.

This Framework does not separate the implementation and management of AI from other digital technologies. However, it is designed to provide guidance on the considerations that are specific to AI and outline a delivery approach to which any local delivery methodology can be mapped, to facilitate structured collation of data on AI projects and utilisation across London.

The Framework outlines the role of an AI Coordination and Advisory Lead (AI Lead) – with one to be identified by each Integrated Care Board (ICB) for their respective Integrated Care System (ICS). The Coordination and Advisory Lead is critical to delivery of this Framework, as they will collate information from across their system on the status of AI projects and implementations and will provide expert advice to the system on planning for the implementation of AI; focusing on the mitigation of risks.

SEL is building a system-wide way to introduce and monitor AI

The SEL AI Framework describes an agreed approach for safe, ethical, consistent, and rapid deployment across the system.

Why it matters

Without a common approach, AI can duplicate effort, create uneven assurance, and make spread across organisations harder.

Efficiency

Lessons learned

Repeatability

Economies of scale

AI Framework workstreams

1

Requirements and maturity review

Consultations with key stakeholders
Already identifying key priorities and trends

2

AI assessment tool

A tool to help organisations select AI solutions that are safe for deployment. The tool is built on the 12×12 framework which pairs twelve complexity dimensions (properties of the tool) with twelve readiness dimensions.

3

Consistent Best Practice & BAU

Developing a set of templates and blueprints that can be used by the ecosystem whenever doing AI projects, including monitoring and benefits realisation.

4

AI Education – training and workshops

Create a series of workshops and webinars covering AI policies / best practice / deployment etc.

5

Registry of active AI projects and products across the system

Create and maintain an interactive AI activity registry, so these can be public and monitored. Also useful to capture PoC success/ failure so we don't replicate effort.

Maturity review

Assessment Purpose

The assessment defines organisational maturity for AI adoption and identifies readiness gaps within SEL ICS.

Methodology Approach

Structured interviews with representatives from diverse healthcare sectors ensured comprehensive data collection.

Outcomes and Impact

The assessment supports benchmarking, informs interventions, and provides support to enhance AI adoption.

Who Participated

Organisations from across SEL ICS:

Primary Care

Mental Health:

- Oxleas
- SLAM

Acute Trusts:

- KCH,
- Lewisham & Greenwich and
- GSTT

Public Health:

- Lewisham Public Health

Gaps and Challenges

Strategic and Governance Gaps

Many organisations lack formal AI strategies and face fragmented governance, hindering effective oversight and compliance.

Education and Workforce Engagement

Staff often lack practical AI knowledge; cultural resistance and job security fears limit workforce engagement and adoption.

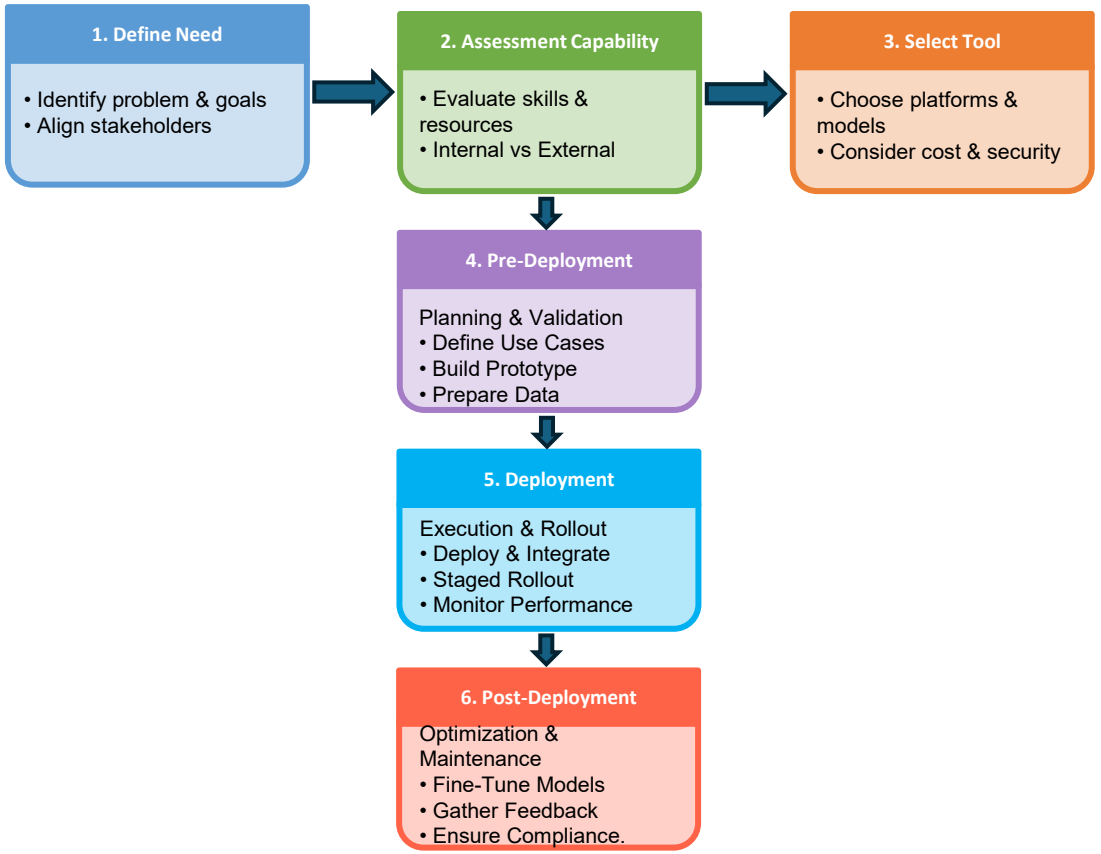
Risk Management and Ethics

Ethical concerns and risk management require strengthened frameworks to ensure patient safety and responsible AI use.

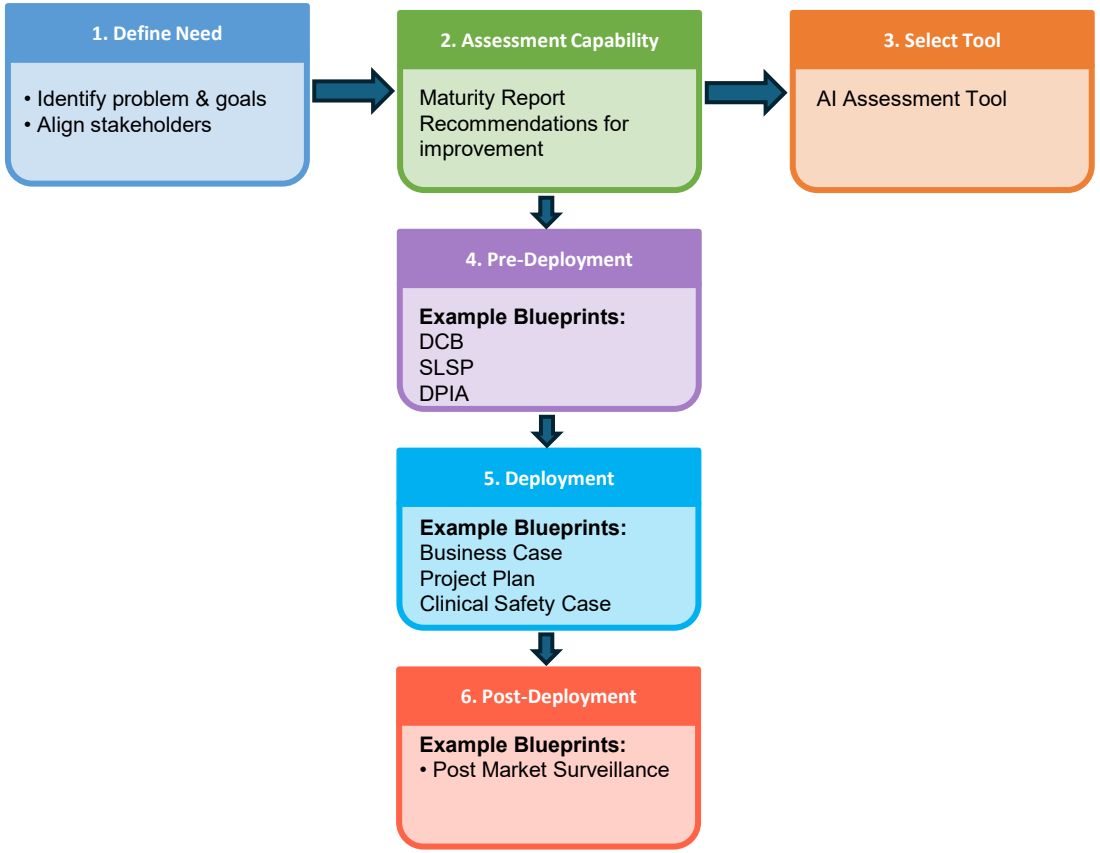
Resource Constraints

Limited funding and infrastructure in public and mental health sectors restrict AI investments and technical capacity.

High Level AI Deployment Process



What we aim to provide



AI Assessment Tool

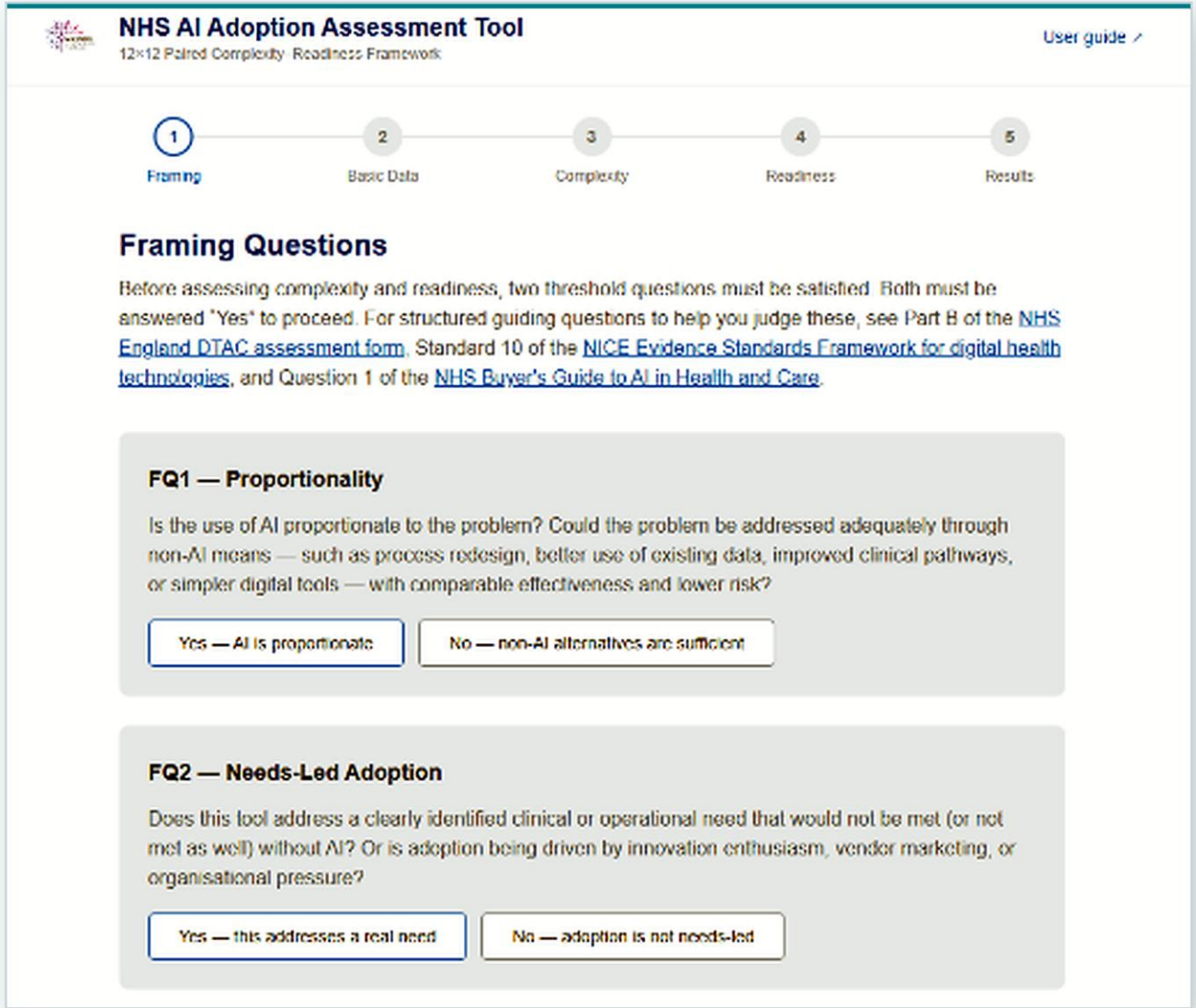
Why is an AI Assessment Tool Need

- The question is rarely whether to adopt AI but which AI to adopt, and whether the organisation is genuinely ready to do so safely.
- NHS organisations lack a structured, practical way to make that judgement
- Compliance frameworks produce binary outcomes and cannot distinguish tools of different complexity or organisations of different capability
- This framework fills that gap. It rests on a principle that the evaluation literature has recently made explicit:

"readiness is not a property of a tool, nor a property of an organisation; it is a property of the pairing between them"

How the framework works

- The tool is built on the 12×12 framework which pairs twelve complexity dimensions (properties of the tool in its intended deployment context) with twelve readiness dimensions (properties of the organisation).
- For each pairing, it asks two questions: what is the challenge this tool presents along this dimension, and does the organisation have the capacity to meet it?



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Responsible adoption is a team sport

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Step	What to ask or do	Why it matters
01 **Notice the opportunity**	Where could AI help reduce admin, spot patterns, summarise information, or improve care?	Start with a real problem, not the technology.
02 **Ask the right questions**	What data is being used? Who is responsible? How will accuracy, safety, and bias be checked?	AI must be safe, fair, and accountable.
03 **Use with care**	Treat AI outputs as helpful suggestions, not automatic instructions.	People remain responsible for decisions.
04 **Share learning**	Feed back examples, concerns, benefits, and lessons into local governance.	Learning helps improve future AI use.

Questions?

Evaluation Form