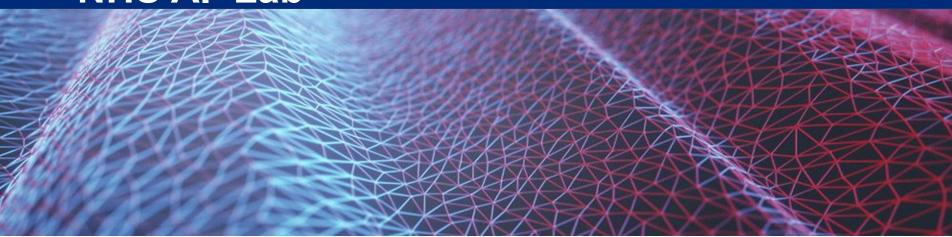


Accelerating the safe adoption of AI in health and care

NHS AI Lab



www.nhsx.nhs.uk/ai-lab/

Indra Joshi - Director of Al NHSX

The Al Lab will be a focal point for

accelerating the safe adoption

of AI to the front line of health and care

The Lab Programmes



The AI in Health and Care Award

Accelerate the testing and evaluation of the most promising AI technologies which meet the strategic aims of the NHS Long Term Plan.

Al in Imaging

Supporting the development of imaging technology; from mechanisms used to safely collect and share data to validating AI imaging software.

The Al Skunkworks

Tackling challenging issues that can help speed up the adoption and use of Al in health and care settings.

The Accelerating Detection of Diseases Programme

Enabling the use of polygenetic tests and available data, to help screening programmes identify patients most at risk of disease.

The Al Regulation Ecosystem

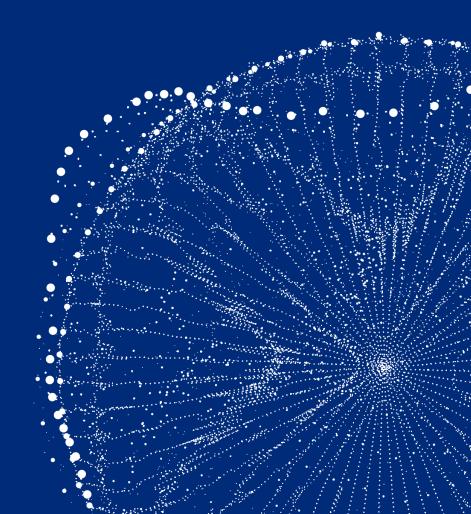
Enable a world leading safe and ethically robust ecosystem for the development and deployment of AI technologies.

Multiple long-term conditions (multimorbidity)

Using AI to identify disease "clusters", enabling research into the underlying causal pathways.



Al in health and care award



Al in Health and Care Award

The Award will accelerate the testing and evaluation of the most promising AI technologies which meet the strategic aims set out in the NHS Long Term Plan. It is run in collaboration with the Accelerated Access Collaborative (AAC) and NIHR in four phases across the spectrum of development: from initial feasibility to evaluation within the NHS and care.

531 applications were received for Round 1 - **42** applications will be funded across Phases 1-4.

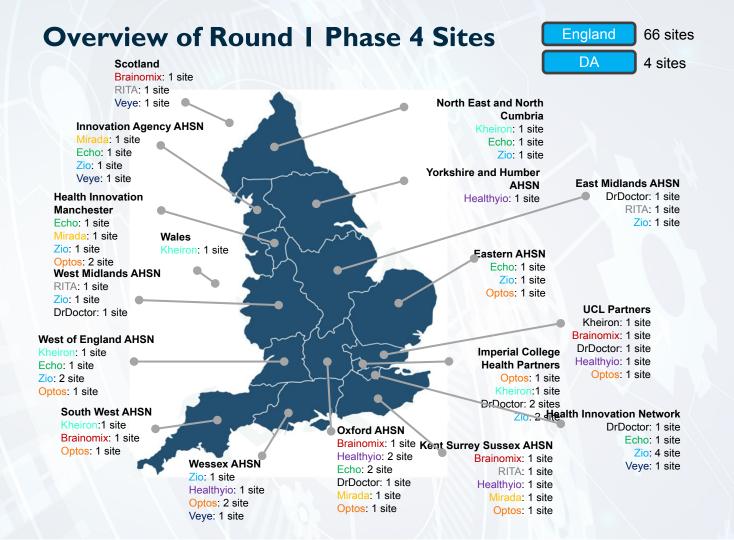
The Next Round of the Award is open from 3rd Nov-8th Dec 2020. For Phases 3 and 4 we particularly encourage applications in the following focus areas: triage, imaging, screening, and intelligent operational automation.

Full information can be found on the AAC's website

https://www.england.nhs.uk/aac/what-we-do/how-can-the-aac-help-me/ai-award/round-2-ai-in-health-and-care-awards/

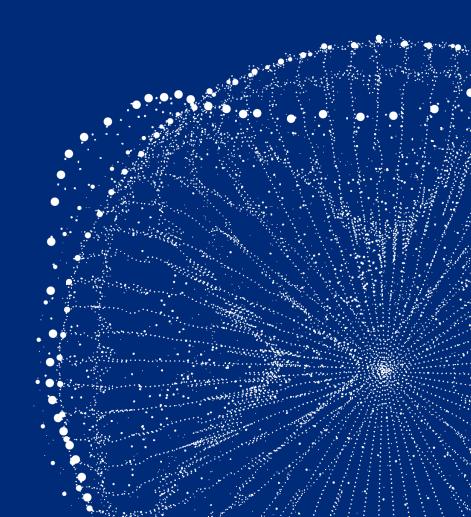
>>>>>>> RI Phase 4 Winners >>>>>>>>

Theme	Name	Description	Company
Imaging	Optos Al	Machine learning algorithm to analyse images of the back of the eye for the presence/severity of any diabetic retinopathy, and then advises if referral to an eye care specialist is needed (based on the local clinical pathway).	Optos Public Limited Company
Imaging	Mia	Deep learning software that has been developed to solve critical challenges in the NHS Breast Screening Programme (NHSBSP), including reducing missed cancers, tackling the escalating shortage of radiologists and improving delays that put women's lives at risk.	Kheiron Medical Technologies
Imaging	e-Stroke Suite	A set of tools that uses AI methods to interpret acute stroke brain scans, and helps doctors make the right choices about treatment and the need for specialist transfer of patients with confidence. It also provides a platform for doctors to share information between hospitals in real-time, avoiding the delays that can occur.	Brainomix Limited
Imaging	Veye	An Al platform to optimise oncology pathways, which can be integrated into existing software systems. Veye Chest, the first clinical application, is unique in its ability to currently automate early lung cancer detection, and soon also support treatment response assessment	Aidence
Treatment Planning	DLCExpert	Automation of the time-consuming and skill-intensive task of contouring healthy organs on medical images for radiotherapy planning so that they are not irradiated during treatment.	Mirada Medical Limited
Operational Efficiency	DrDr	Al to ensure attendance is as high as possible by using past appointment attendance and demographic data to predict those less likely to attend in the future and customises communication with these demographics accordingly.	ICNH LTD
Operational Efficiency	Referral Intelligence and Triage Automation	RITA is an AI solution to automate the triage of GP referrals – assessing the urgency and next step for the referral and sending through directly to the next step in the process. In addition the solution includes a virtual assistant that supports clinicians in writing letters back to GPs, significantly speeding up this process.	Deloitte
Triage	Healthy.io	Using a home test kit and mobile app, Healthy.io's solution empowers patients to self-test at home with clinical grade results. Fully integrated to the Electronic Medical Record (EMR), real-time results are available for clinician review and follow-up. Shifting testing to the home increases uptake, improves quality, reduces workload in primary care, and creates savings.	Healthy.io (UK) Ltd
Triage	EchoGo Pro	A fully automated and scalable application for quantification and interpretation of stress echocardiograms that autonomously processes "real world" echocardiographic image studies to predict prognostically significant cardiac disease.	Ultromics Limited
Triage	Zio	A complete and clinically proven ambulatory ECG monitoring service, utilising powerful Al-led processing and analysis to support clinical workflows and improve the diagnostic yield and timeliness of cardiac monitoring.	iRhythm Technologies Ltd.

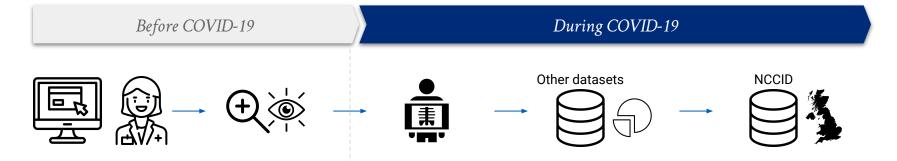




Al in Imaging



The National Covid-19 Chest Imaging Database

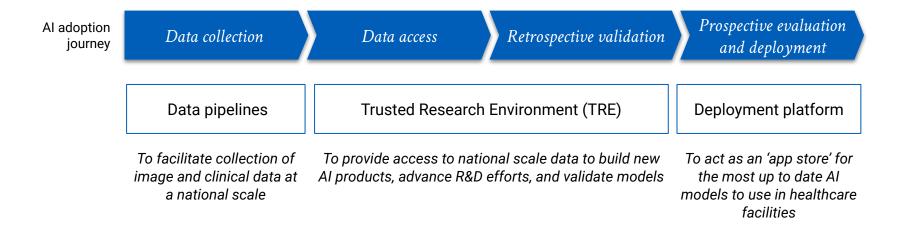


Technology advances led to computer tools that can examine medical images (e.g. chest radiographs and computed tomography (CT) scans)

These AI tools can determine type / extent / severity on medical images, and identify additional features to the human eye - potential for new insights

During COVID-19, these AI tools are being widely applied to evaluate images of COVID-19 patients to help clinicians with the patient care pathway The AI tools may have been developed and trained to recognise disease in a different population to that seen in the UK, for example with different ethnic / gender balances NCCID collects data from a wide variety of COVID-19 patients across the UK. AI tools can therefore be trained and robustly validated on this data and applied for use on the UK population

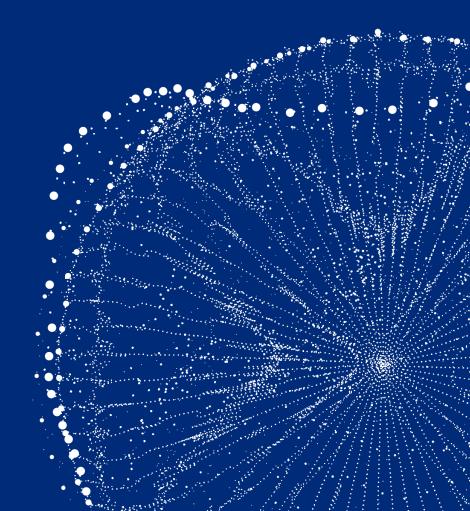
What is next for AI in Imaging



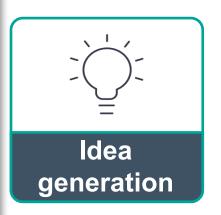
The NHS AI Lab is now investigating building a national medical imaging platform. A discovery exercise is starting in November 2020.



Al Skunkworks



Helping the health and care system define and explore their problems and opportunities where AI could help







Scope of Al Lab Skunkworks projects





Contributes to the wider knowledge base on AI in health and care

Be in early stages of development

Have a clearly defined problem or use case meeting a need in the health and care system

The data exists, is accessible, and has a data controller*

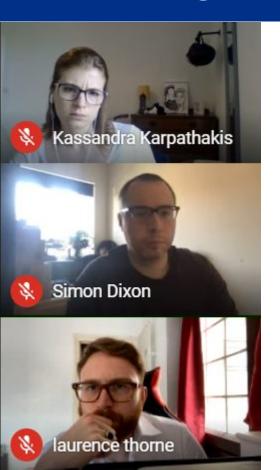
Has reasonable timescales and can be delivered in phases

Has a clear roadmap and commitment from product owner and team/organisation

Preference for novel or innovative uses of data

The Dragon's Den

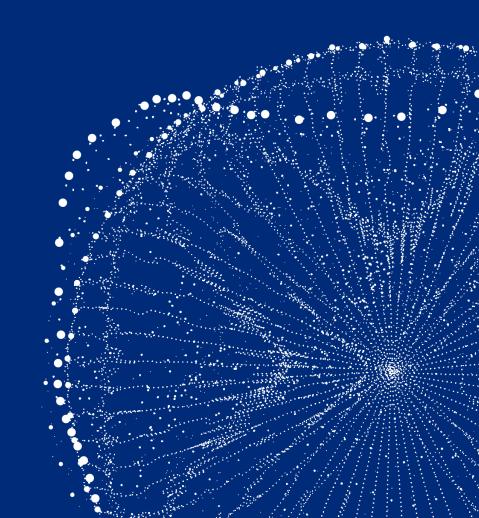




- We listened to and explored a variety of ideas from across NHSX, NHS E/I and DHSC
- The Dragon's heard **five** creative pitchers
- One pitch was successfully recommended to the NHS Al Lab Board
- We helped set-up and procure a supplier to deliver the Proof of Concept with the successful NHSX team
- We have kicked off Data Lens creating the ability to search metadata across disparate data sets



Al Regulation programmes



Overview of programmes

Multi-agency advice service: a joint service between HRA, MHRA, NICE and CQC that offers support, information and guidance on regulation and evaluation of AI and digital health technologies

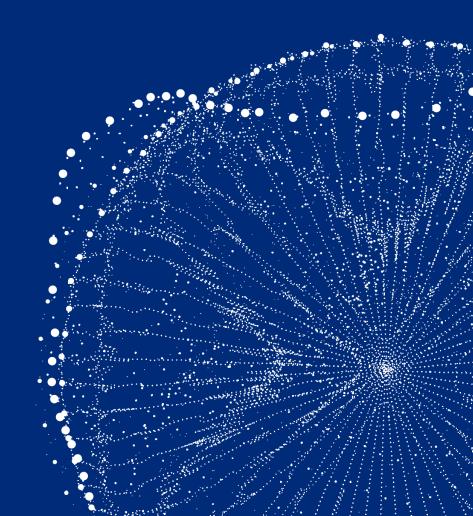
Streamlined technology review: speed up the process of reviewing application for CAG and medical devices between HRA/MHRA

Technology Vigilance (yellow card): enhanced Yellow Card system, spanning all incident types (including technology) and provide research into novel AI signal detection techniques across medicines and devices

Synthetic data: continue MHRA's existing work (funded by the Regulators' Pioneer Fund) to develop synthetic datasets that can be used to validate algorithms, including Al algorithms, in medical devices



Thought leadership and supporting the system



Recent Al resources

Resources to help developers and commissioners understand, develop and adopt AI for health and care

- A Buyer's Guide to AI in Health and Social Care
- Use case for AI in social care
- A Guide to Good Practice for Digital and Data-Driven Health Technologies - an update to the current Code of Conduct. Coming soon

A Buyer's Guide to AI in Health and Care 10 questions for making well-informed procurement decisions about products that use Al

https://www.nhsx.nhs.uk/ai-lab/explore-all-resources/

How might we influence and contribute to international policy and governance for Al in healthcare?

The NHS AI Lab was commissioned by the Global Digital Health Partnership to understand the current use of AI technologies, and supporting policies and regulations.

The NHS AI Lab identified policy gaps and opportunities.

Derived from the experience and insight of the Global Digital Health Partnership, the white paper addresses four areas:

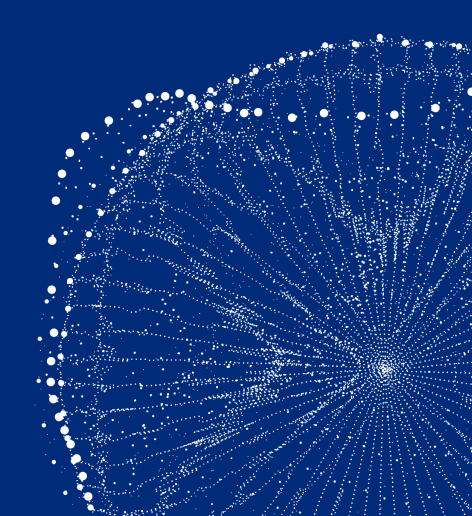
- 1. Leadership and oversight
- 2. Ecosystem
- 3. Standards and regulation
- 4. Engagement

White paper launching at the GDHP Summit in December





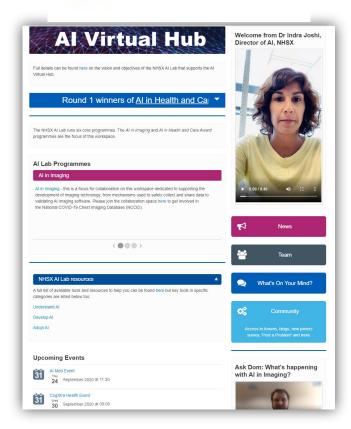
Al Virtual Hub



Al Virtual Hub

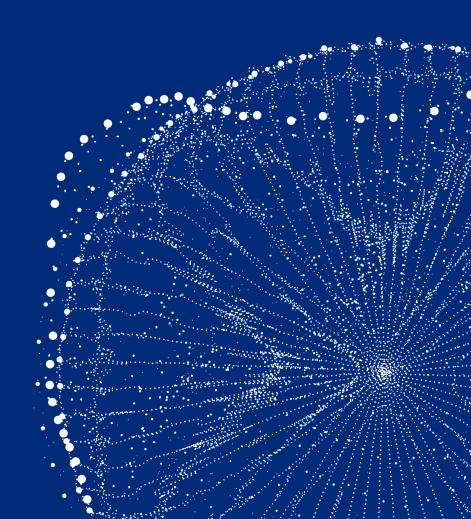
- A space for people in the NHS to come together around AI.
- Get involved by joining the discussion forums. Share your knowledge, experiences, ideas, questions and solutions with other like minded people in the Al community.
- This group supports the mission of 'getting it right' as we look to accelerate the deployment of safe, ethical and effective AI in health and care.
- In the coming months we will be theming some specific conversations:
 - Future rounds of the AI in health and care award
 - Exploring popular use cases for AI
 - Exploring platforms for Al in imaging







Wider context for Al and Data



AI CANCER NHS AI LAB RESEARCH CENTRES: Sector ESTABLISHED THE NEW LAUNCHED DELIVERED THE E50M FUNDING BOOST Place REVIEW OF PUBLIC TO ACCELERATE THE SAFE AND BAYES CENTRE IN **TECHNATION'S APPLIED A** TO SUPPORT LONG-TERM Adoption EFFECTIVE ADOPTION OF SECTOR AI ADOPTION **EDINBURGH** GROWTH PROGRAMME RESPONSE TO COVID-19 ALIN HEALTH AND CARE R&D £337M FUNDING UP TO £79M FOR FOR ISCF CHALLENGE: £3M FUNDING FOR AI PROGRAMMES SCIENCE £20M FUNDING FOR **UK-KOREA HEALTH** £100M FUNDING FOR TO TRANSFORM RESEARCH PROJECTS ON FROM DATA TO EARLY ISCF CHALLENGE: NEXT SCIENCES 5 NEW AI CANCER AND TECH SERVICE SECTOR ENGINEERING, URBAN DIAGNOSIS AND COLLABORATION GENERATION SERVICES RESEARCH CENTRES ADOPTION PLANNING AND PRECISION HEALTHCARE MEDICINE 1,000 AI **OVER 100** Mid-level UP TO 2,500 PLACES SCHOLARSHIPS INDUSTRY-FUNDING **NEW TURING** Advanced FOR AI AND DATA FOR PEOPLE FROM FOR NEW AI MASTERS 16 AI CENTRES FOR AI FELLOWSHIPS SCIENCE CONVERSION UNDER REPRESENTED DOCTORAL TRAINING PLACES ACROSS skills Al skills 13 UNIVERSITIES COURSES BACKGROUNDS ESTABLISHED THE THOUGHT DEMIS HASSABIS, FOUNDING MEMBER OF JAPAN MOUS WITH THE AI COUNCIL AND THE **EXPLORING DATA TRUSTS** INTERNATIONAL ADVISOR TO THE THE GLOBAL PARTNERSHIP ALAN TURING INSTITUTE LEADERSHIP CENTRE FOR DATA ETHICS WITH THE ODI OFFICE FOR AI ON AL **LEADERSHIP** AND INNOVATION



A Data Strategy for Health and Social Care

- Empowering staff and system leaders to be confident to handle data through simplified information governance;
- Continuing to build public trust and be transparent in our use of data;
- Sharing data to join up care across the sector, while understanding the differing levels of maturity in different areas;
- Utilising data to plan and commission health and care services effectively;
- And adopting safe, effective and ethical data-driven technologies such as AI
 to improve health outcomes where appropriate.

Any questions?