

Scottish Radiology Transformation Programme



Reporting Radiographers Interest Group Scotland
5 March 2022

Adam Pinner



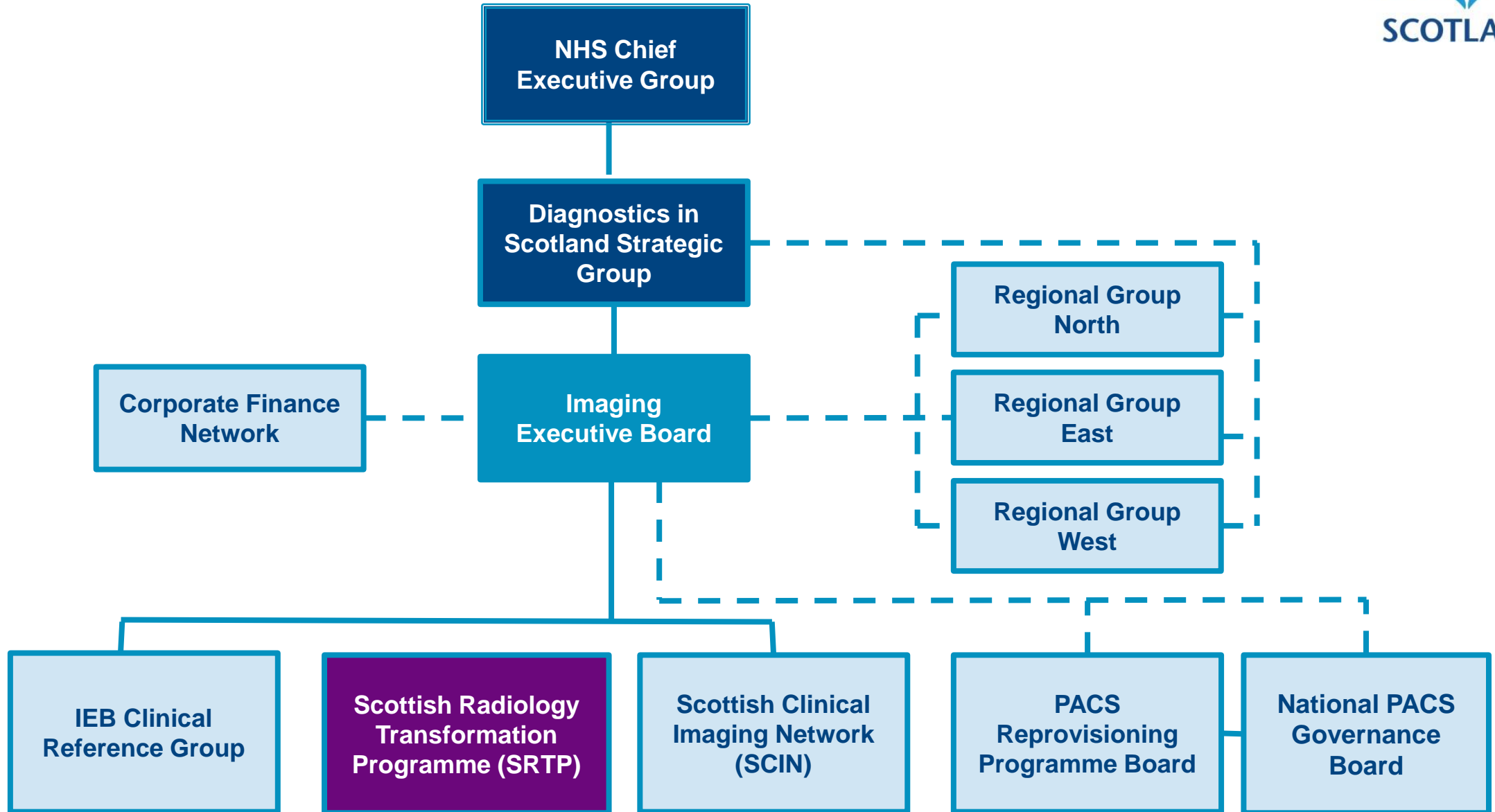
Scottish Radiology Transformation Programme



Supporting the delivery of a world class,
person-centred sustainable radiology
service that continually improves the health
and wellbeing of the people of Scotland.



Governance



The Case for Change

Current Radiology Services are Unsustainable

- **Insufficient capacity** to meet demand
- **Demand is increasing** – 3.4% per year = £1.2m per year.
- **Waiting times are increasing** – 70% increase in patients waiting over six weeks (rise from 6,700 in Dec 2018, to 11,300 in Dec 2019).
- **Costs are increasing** – Reporting outsourcing costs of £11.6m, net cost 2015/16 = £221m, 2019/20 = £244m.

Risk that radiology services will fail...

...impacting patient diagnosis and treatment in acute and primary care.



Transforming Radiology Services

- The Programme is looking at areas spanning workforce, technology & innovation and service models.
- Phase One laid the foundations to support the delivery of the vision for Radiology in Scotland.
- Phase Two is building on this.



Overarching Vision and TOM




1. Vision

What kind of service do we aspire to?

2. Current Operating Model

What does the service look like today?

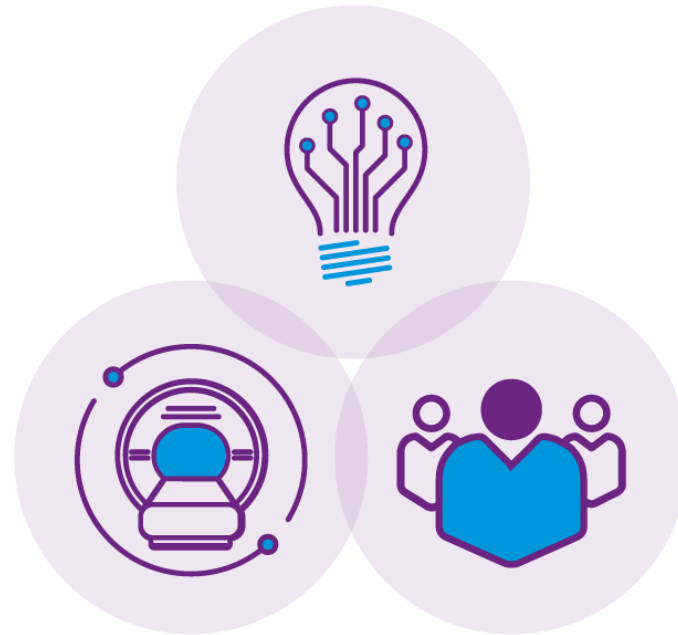


3. Target Operating Model

What could the service to deliver the vision look like?

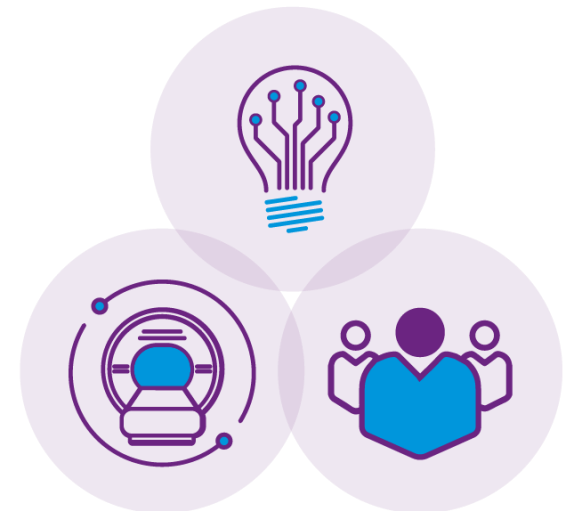
4. Roadmap

What are the steps to bridge the gap between today and the future?



Radiology Vision and Principles

[Download the full TOM Radiology Vision and Target Operating Model – Scottish Radiology Transformation Programme](#)



1. Examinations that **add value** to the patient journey with no detriment. (Realistic Radiology)

2. **Equitable access to imaging services** including **expert opinion available** regardless of patient location.

3. Image acquisition as **close to home** as practically possible.

10. **Investment in our people** to ensure they have the skills to deliver the needs of the service.

A world class, person-centred sustainable radiology service that continually improves the health and wellbeing of the people of Scotland

4. **Timely access** to investigations and their results.

9. A **great place to work** where the team is valued, motivated and multi-disciplinary.

5. **Information to patients** to make sure they are clear about their journey, options and results.

8. An **innovative** service that continually strives to improve, and benefits from emerging technologies and learning from similar services across the world.

7. A **locally delivered** service, informed by local needs, supported by **regional and national coordination and collaboration** where this adds value, resilience and sustainability.

6. **Patient-centred** services using fully **integrated data and technology** to deliver the right test at the right time.

Collective Recommendations



Workforce, Demand and Culture

- Resilient, sustainable and flexible workforce
- Radiology vacancies are marketed widely
- Rural hospital posts provide equal career opportunities to large hospital posts
- Rural posts are supported by communities of practice with enhanced multi professional teams
- All departments can access appropriate equipment housed within appropriate estate
- Nationally coordinated approach to maintenance and procurement of radiology equipment

Digital Technology

- Fully integrated IT systems
- National picture archiving communication system
- Functionally national radiology information system
- Appropriate IT support for 24/7 working
- Radiology requesting using order communications supported by clinical decision support software
- Artificial intelligence to enable enhanced working
- Patient access to book their own appointment slot for agreed imaging
- Remote access to radiology expertise if unavailable locally

Business Information and Data

- Nationally standardised data sets
- Transparent business information
- Access to all radiology data across the Scottish radiology service
- National quality standards based on patient feedback, workforce data and service improvement goals

Organisation of Radiology Services

- Locally managed services with regional and national links
- Regional and national services where required
- Border free patient services
- Sufficient funding to support services
- Regional workforce planning with national oversight
- Subspecialty delivery commissioned nationally and provided locally

Education and Training

- Clearly defined training pathways
- Adapted apprenticeship methodology delivering appropriate skills across the radiology team
- Urban and rural placements
- Specialisation within the radiology team
- Attractive and rewarding career paths
- Blended education using virtual, 'on the job' and formal training routes

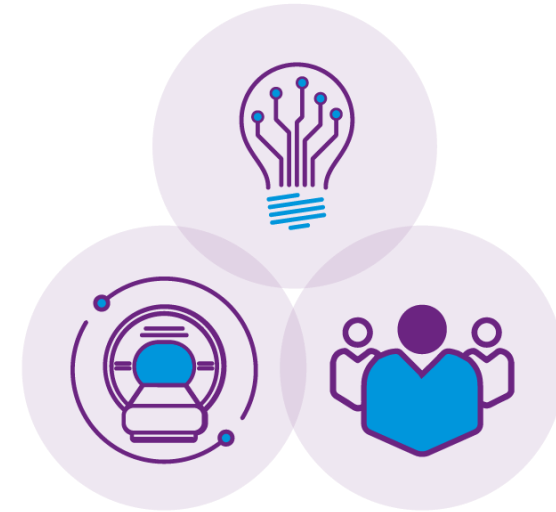
Processes

- Radiology services will employ 'Realistic Radiology principles'
- Standardised protocols for imaging of common conditions
- National image reporting available where required
- IT equipment and infrastructure to support home based working including radiology reporting where appropriate
- Non-medical prescribing to improve efficiency
- Nationally agreed guidelines to support MDTs and other collaborative working
- Radiology is a recognised core component of all clinical service developments

TOM Roadmap

The roadmap mirrors the following key areas:

- Workforce, demand and culture
- Digital technology
- Organisation of radiology services
- Business information and data
- Education and training
- Processes.



The roadmap defines how the service gets from the current to the future state. Against each collective recommendation, the following information is set out:

- A description of the key initiative(s) that will deliver the collective recommendation
- Enabling Partner(s) who will support the delivery of the initiatives
- Approximate timescales for delivery.

S RTP Projects 2022/23



IT Connectivity

Alan Fleming
Programme Manager

Scottish National Radiology Reporting Service (SNRRS) Other Opportunities

Dr Shalini Datta
Clinical Lead

Mo McGurk - Service Implementation Manager

Jen Robertson - Project Manager

Advancing Practice

Clint Heseltine
Clinical Lead

Dr Simon McGurk
Steering Group Chair

Adam Pinner
Project Manager

National Data

Dr Raj Burgul
Clinical Lead

Laura Dodds
Programme Manager

Saira Thomson
Project Manager

Workforce Planning

Clint Heseltine
Clinical Lead

Amy Currie & Adam Pinner
Project Managers

Artificial Intelligence

Dr Mark Hall
Clinical Lead

Sarah Walkinshaw
Project Manager

Overview of SRTTP Projects



IT Connectivity Project: Implement a Cross Board National Radiology Reporting solution to automatically and manually assign local studies for clinical reporting anywhere in Scotland.

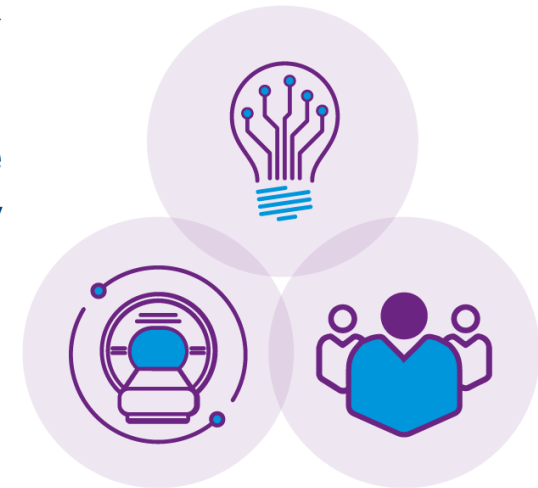
National Data, and National Radiology Information & Intelligence Platform (NRIIP): Facilitate the ability to collate, analyse and share national radiology data through the National Radiology Dashboards.

Scottish National Radiology Reporting Service (SNRRS): Service to maximise the potential of IT connectivity. This will include a bank, a model for speciality networks and a means to facilitate local work and local networks.

Workforce Planning: Delivering a national workforce plan for radiology in Scotland, based on data and professional judgement and building on the recommendations within the Radiology Service Target Operating Model.

Advancing Practice: Expand and maximise capability and expertise of existing workforce to increase capacity, reduce costs and make the profession more attractive to new talent.

Artificial Intelligence: Scope emerging technology to bridge the gap between service capacity and demand, alongside expanding workforce capabilities and expertise.



Artificial Intelligence



Artificial Intelligence

Aim

With Artificial Intelligence (AI) becoming more prevalent in radiology, and with growing interest in this type of technology and its' potential, the aim of the AI project is to put in place a structured, nationally co-ordinated approach to help ensure maximum benefit and avoid duplication of effort.

Objectives

- To investigate how AI could help address service demand and capacity issues.
- To identify the clinical areas where AI might deliver best value.
- To identify the potential challenges and constraints of AI.
- To set up a national AI group for radiology in Scotland.



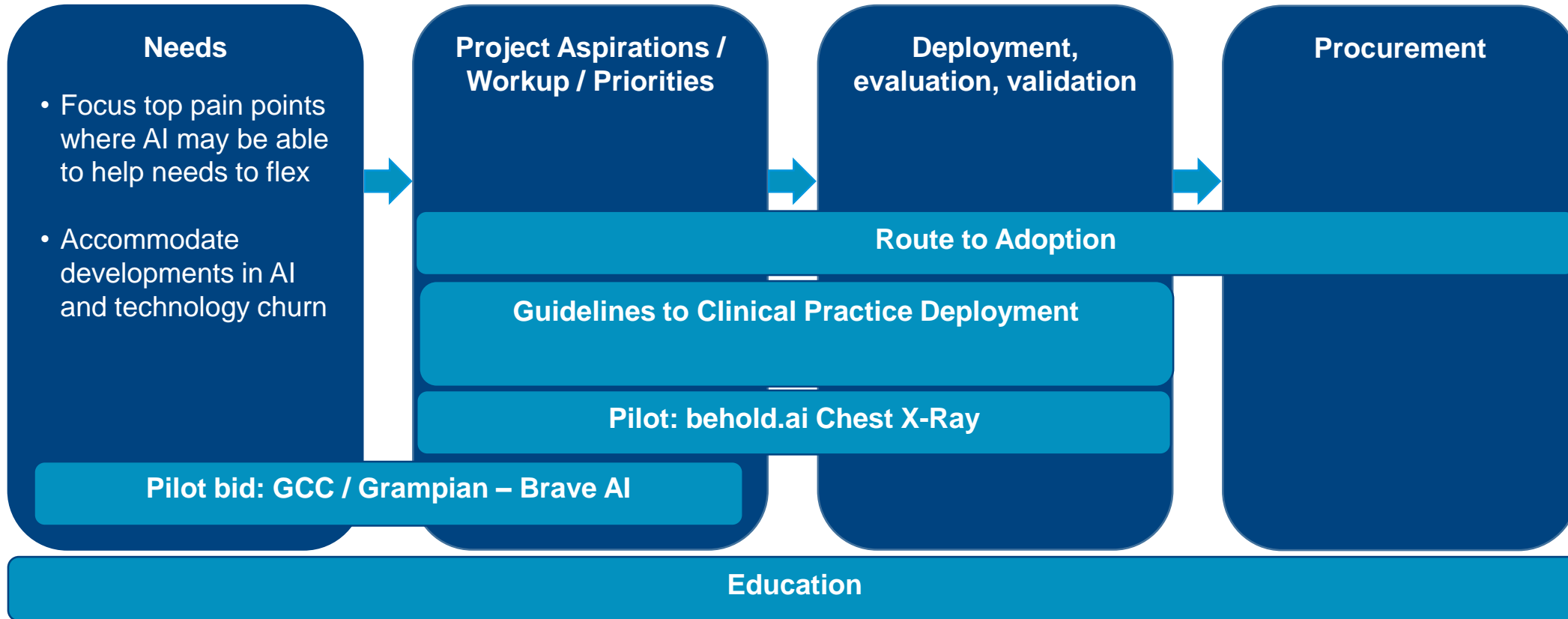
AI - National Registry



Project Title	Project Purpose	Health Board	AI Developer	Start Date	Type of Project	Stage of Project	Governance Review	Imaging Modality	Responsible Radiologist
LungPrint	COVID CXR analysis	NHS GG&C	Blackford	27/04/2020	Proof of Concept	Preclinical Evaluation	Approved	CT	Mark Hall
Small Bowel Motility in Crohn's	Quantification of Crohn's disease	NHS GG&C	Motilent	22/08/2020	Proof of Concept	Validation	Approved	MRI	Stuart Ballantyne
Brainiomix	Assessment of Stroke Package	NHS GG&C	Brainiomix	04/01/2019	Clinical	Clinical Evaluation	Approved	CT	Paul Armstrong
RapidAI	Assessment of Stroke Package	NHS GG&C	RapidAI	08/01/2019	Clinical	Clinical Evaluation	Approved	CT	Paul Armstrong
OPTIMAL	Osteoporosis Diagnosis and Quantification	NHS GG&C	Zebra/Storm	15/2/2020	Clinical	AI development	Approved	CT	Mark Hall
Autonomous CXR reporting and Red Dot	Lung cancer detection on CXR and high confidence normal auto reporting	NHS GG&C	Behold.AI	14/07/2021	Clinical	Network Integration	Applied	CXR	Mark Hall
Real-world Independent Testing of e-ASPECTS Software (RITeS)	Testing using research data held within universities	N/A	Brainiomix	01/03/2020	Research	Clinical Evaluation	Approved	CT	Dr Grant Mair
Brave AI	CXR diagnostic support	TBC	Bering	05/10/2021	Clinical	Awaiting NHSx Approval	Not Applied	CXR	Rishi Ramaesh
GRACE (Grampian Radiology Assisted CXR Evaluation)	CXR diagnostic support	NHS Grampian	Annalise.AI	01/12/2021	Clinical	Clinical Evaluation	Approved	Chest XR	Struan Wilkie
Aidence - CT lung nodule analysis	CT lung nodule analysis	NHS Lothian	Aidence	26/10/2021	Clinical	Network Integration	Approved	CT	Edwin Van Beek
WARBLER - Natural Language Processing	Whole population analysis of NLP in brain imaging reports	National	Edinburgh Clinical NLP Group	03/11/2021	Research	Preclinical Evaluation	Applied	CT and MRI	Grant Mair



AI - National Strategy



AI - Needs

Acquisition Needs

- DEXA
- Outpatient whole body CT
- MRI Brain, Spine and Paediatrics
- Outpatient Ultrasound
- CT Colon

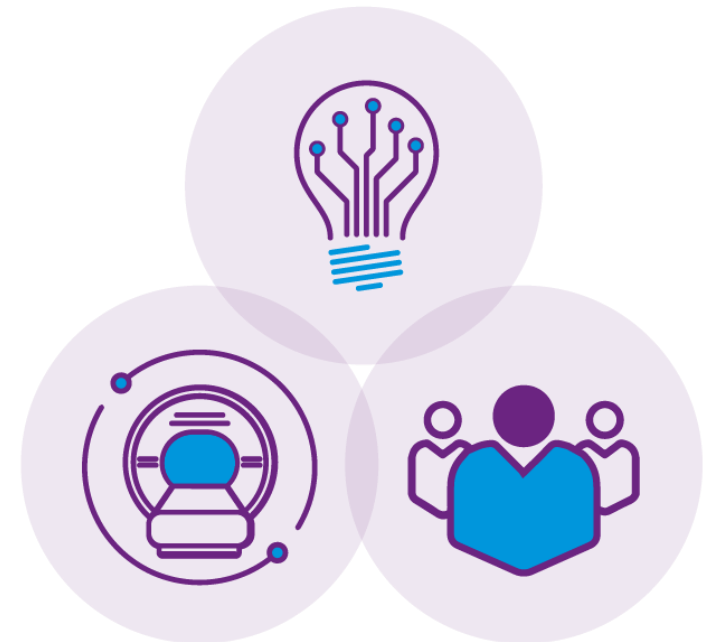
Reporting Needs

- MRI Prostate and MSK
- Outpatient whole Body CT
- CT/MRI Enterography and
- Plain Film Outpatient

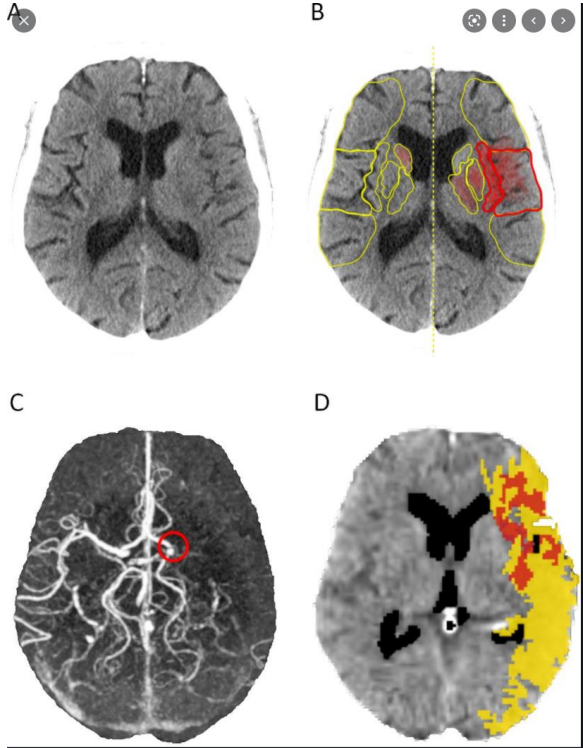


AI – Education Event

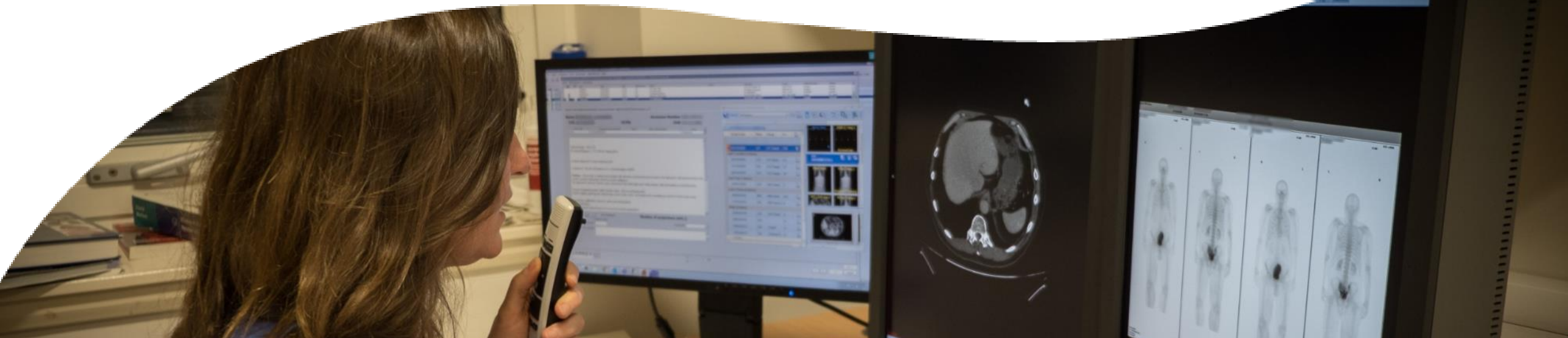
- **Monday 9 May 2022**
- **Half Day event (9am – 1pm)**
- Topics will include:
 - AI In Stroke
 - Can AI solve osteoporosis and the DEXA backlog?
 - AI in Chest X-ray
 - AI to enable person-centred healthcare
 - Is my AI sexist?
 - AI Hub
 - Panel Discussion/ Q&A



AI – The Big Three



Scottish National Radiology Reporting Service (SNRRS)



SNRRS



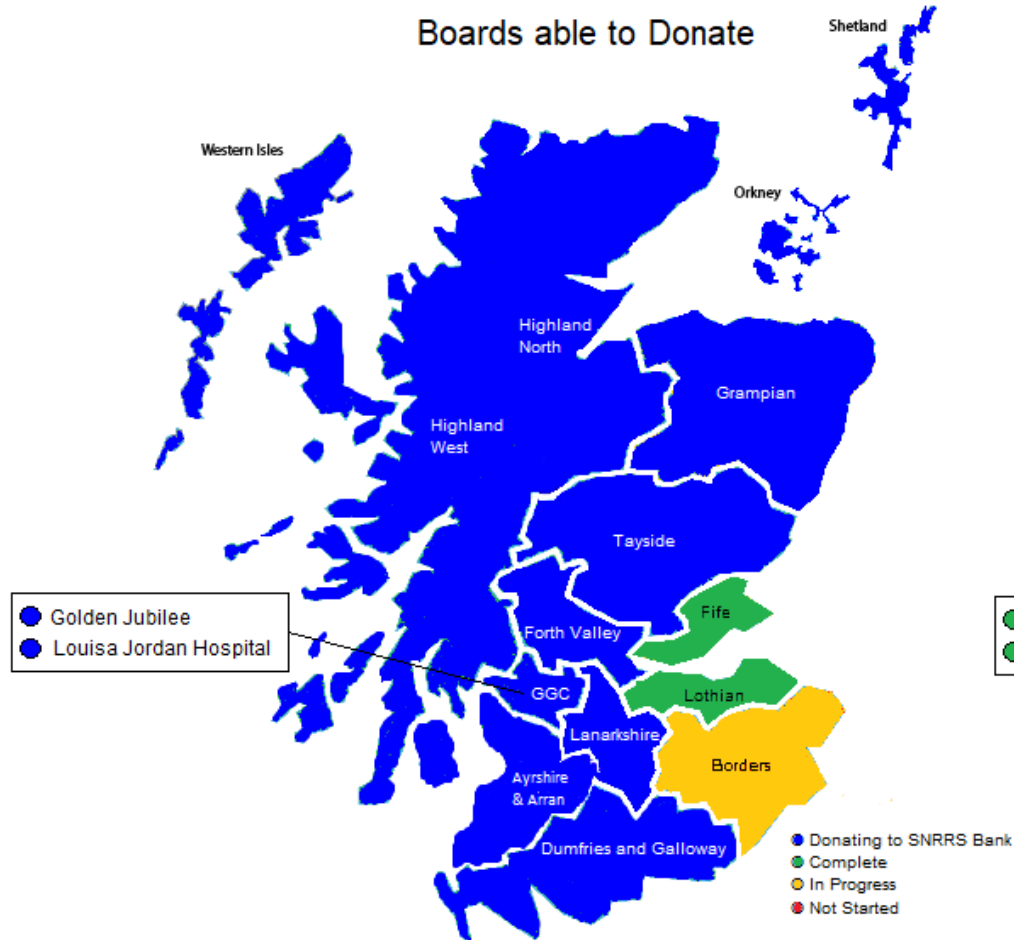
- The SNRRS was established with the aim of **maximising the potential of the IT connectivity solution** linking radiology systems across NHSScotland and **enabling cross boundary reporting of exams** for the first time.
- The **Soliton Share+** Reporting system was chosen to provide the IT Connectivity required to enable cross boundary reporting.
- Currently, **12 NHS Boards** in Scotland send their examinations weekly to the SNRRS for reporting. These Boards are referred to as **Donating Boards**.
- To enable reporting, access to exams is granted through the **Share+** client downloaded onto a workstation.



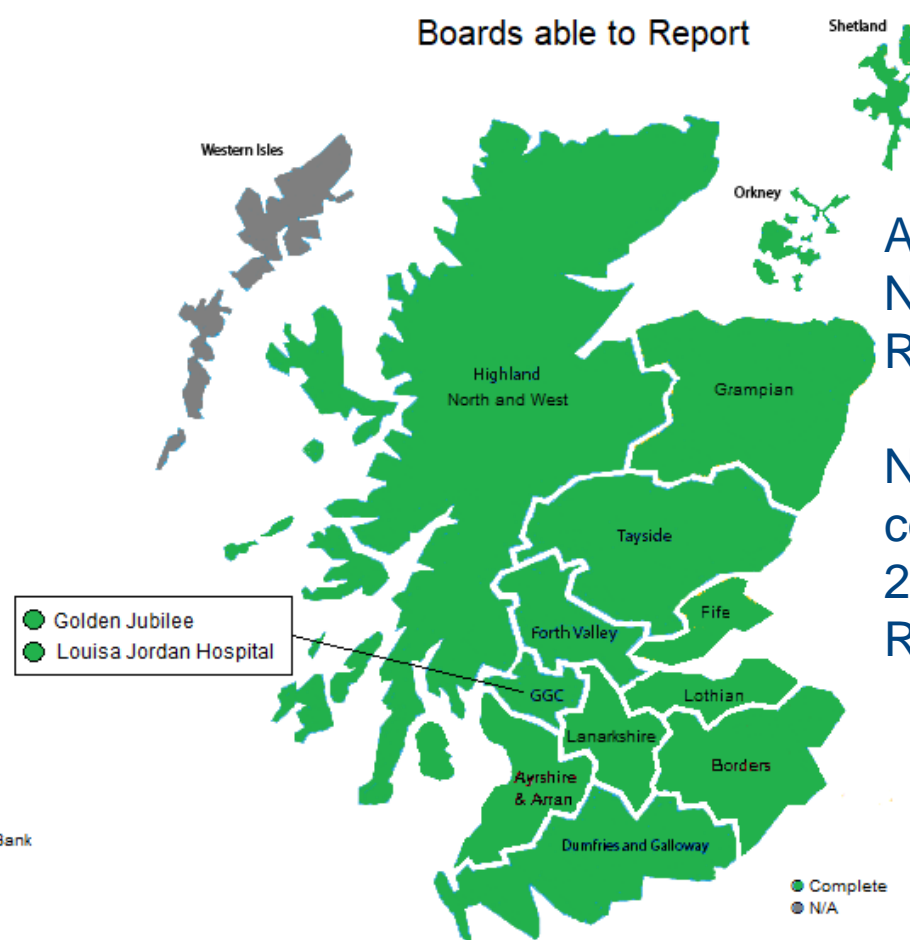
SNRRS - IT Connectivity

Progress at Board Level

Boards able to Donate



Boards able to Report



All NHS Boards, except for NHS Borders, now able to Report.

NHS Borders scheduled to come on stream in June 2022 (dependent on local RIS implementation).

SNRRS

Objectives

Provide an effective alternative to outsourcing radiology exams for health boards (SNRRS Bank)

Provide a flexible reporting model for additional work (SNRRS Bank)

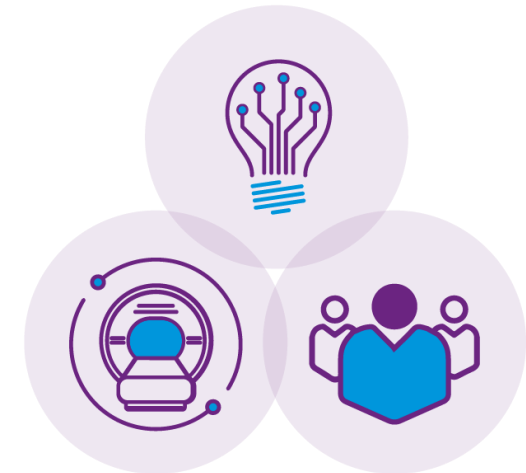
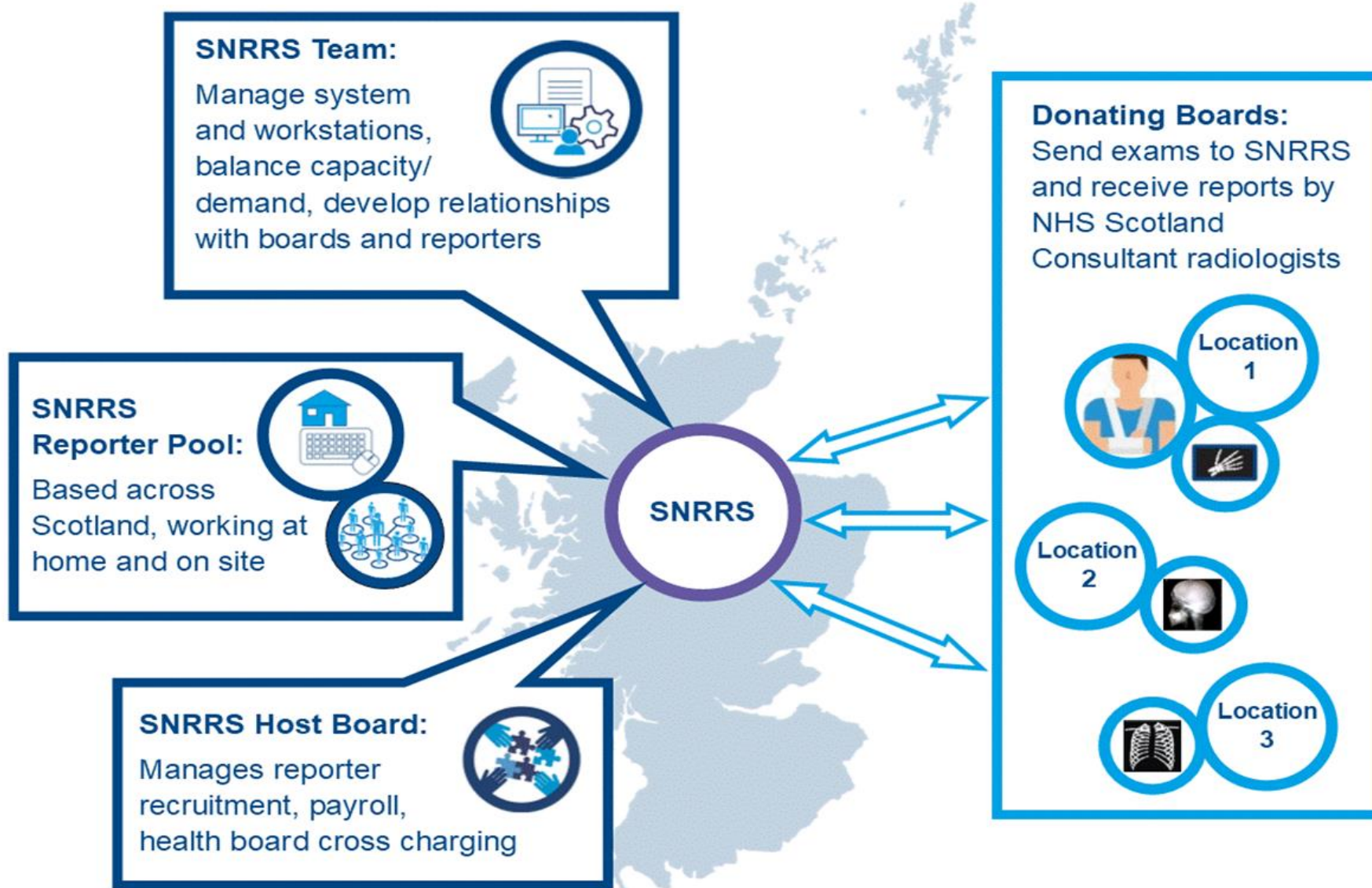
Utilise existing reporting capacity across Scotland

Enable consultant radiologists to report from home

Explore ways to create subspecialty networks



SNRRS Bank



SNRRS Successes (Jul 2020 – Jan 2022)

115,000



national exams reported

! that's 20,000 hours of work



£972,000



cost avoidance for radiology departments

99%

exams reported within 5 working days



12 health boards actively donating exams

Ayrshire and Arran
Dumfries & Galloway
Forth Valley
Golden Jubilee
Grampian
Greater Glasgow and Clyde
Lanarkshire
Highland Argyll & Bute
Highland North
Shetland
Tayside
Western Isles

donating board satisfaction

90%

- ★ SNRRS team interactions
- ★ type & quantity of exams that can be reported
- ★ cost of exams



9/10

consultant radiologists are satisfied with their experience with the SNRRS



63

home workstations deployed to consultant radiologists



74

consultant radiologists across NHS Scotland working for SNRRS



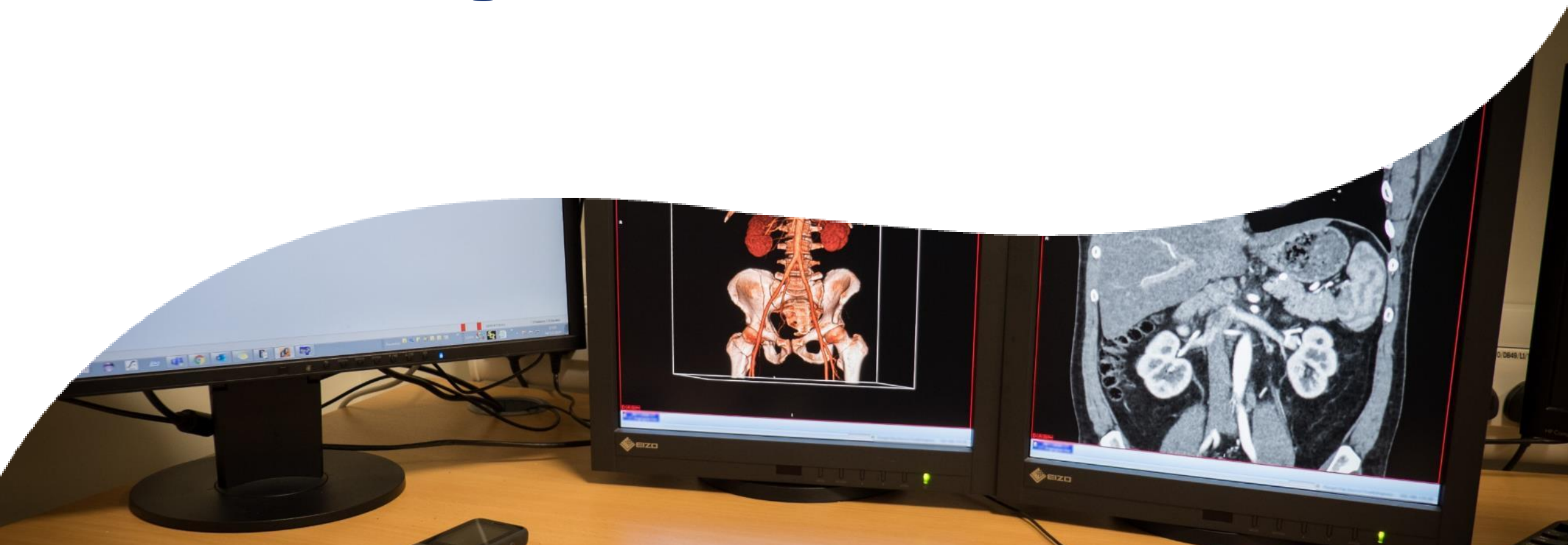
What's next for the SNRRS?

Expanding the scope of the SNRRS by:

- Exploring recruitment of **reporting radiographers** to SNRRS bank under AfC rates
- Exploring a simplified process for recruitment of **retired radiologists**
- Exploring desire for and creation of national/ regional radiology networks (e.g. paed, neuro)
- Exploring options for future funding and ownership of SNRRS workstations.



Advancing Practice



Advancing Practice



Aim

- The aim of the Advancing Practice project is to **increase capacity of the radiology service through expanding and optimising the capability and expertise** of various roles within Radiology.

Objectives

- To assess the role of Advancing Practice in **addressing capacity issues** in the Scottish Radiology service.
- To achieve a **nationally agreed approach** to the promotion and implementation of Advancing Practice across the Scottish Radiology service.
- To develop a delivery plan for how to achieve an increase in the use of Advancing Practice in Radiology in Scotland to **meet the recommendations set out in the national Target Operating Model and Roadmap**.



Key achievements so far...



- **Eight MSK trainees successfully completed course** from the first cohort of trainees.
- One trainee doing a two-year extended course and due to complete training in summer this year.
- **Seven trainees started training** across five different boards in MSK, GI studies & reporting and Chest X-ray reporting (second cohort - September 2021).
- **11 assistant Practitioner trainees started training** to extend their practice (second cohort - Sep 2021).
- Imaging Executive Board approved proposal to support **Reporting Radiographer Chest X-Ray** reporting.
- Pilot set up to **mentor Chest X-Ray trainees remotely** via SNRRS using Share+ system.
- **Ultrasound DCAQ data analysis** to identify national service needs and help with imaging recovery plan.
- **Identified key priorities** nationally.

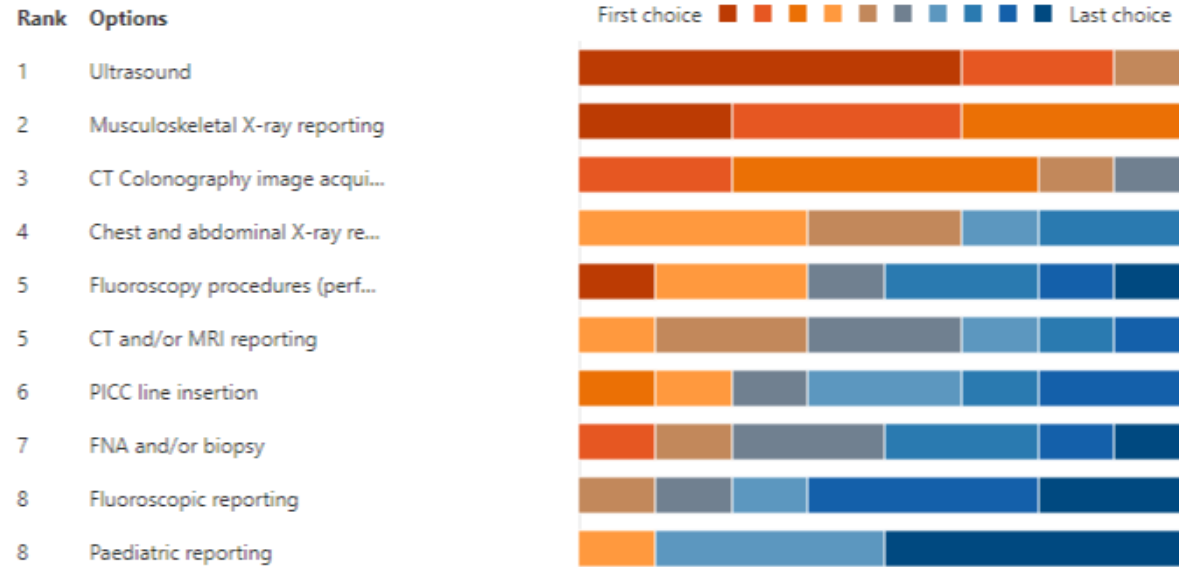


Advancing Practice Initial Survey Results (1)

- Responses from nine Boards.
- Below are some of the questions we asked to identify year two priorities:

Which of the following areas of radiographer role extension is the most important to your Health Board *currently*?

[More Details](#)



5. Are there any other areas of role extension that are important to your Health Board currently?

3 Responses

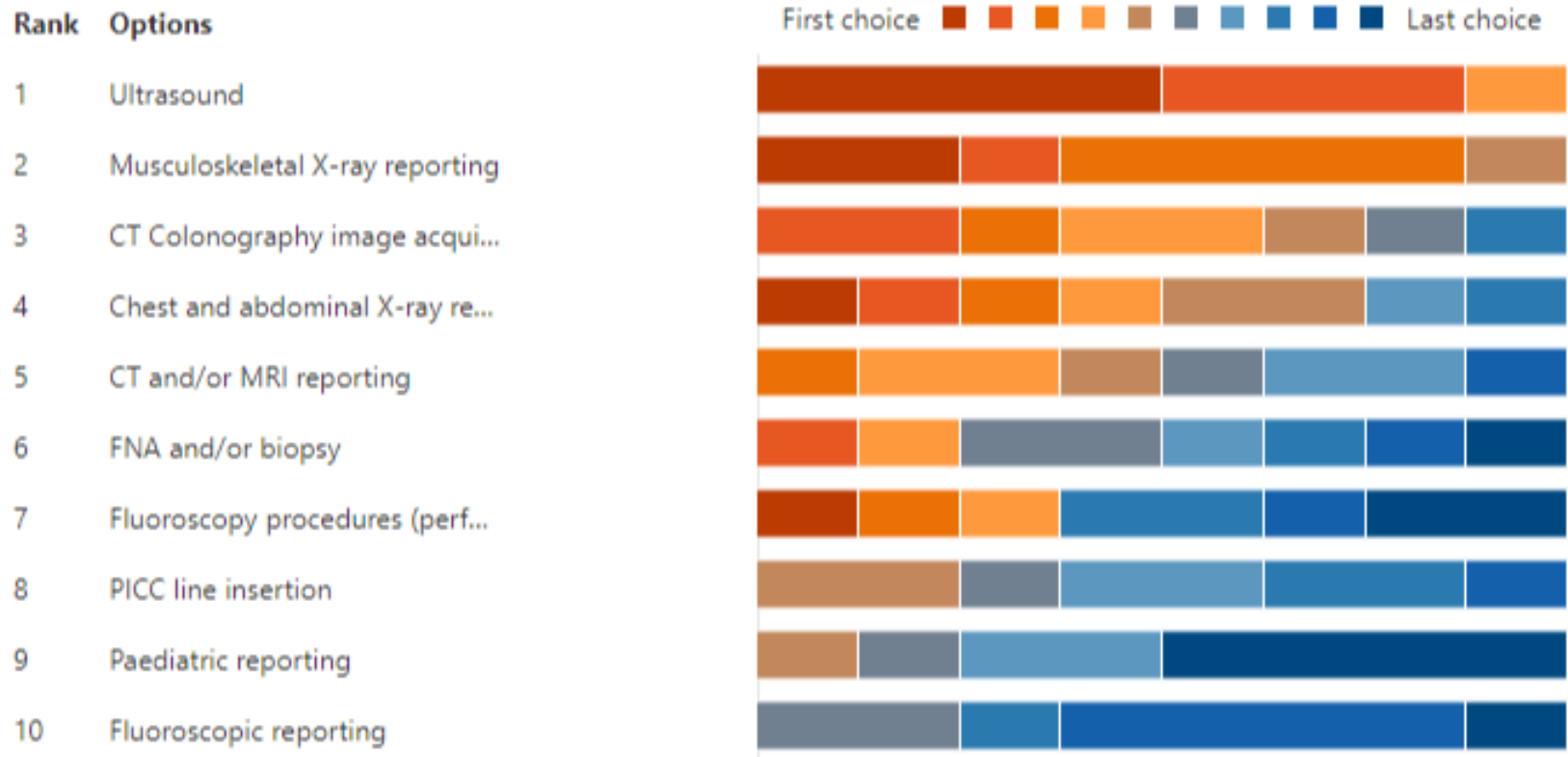
ID ↑	Name	Responses
1	anonymous	DEXA acquisition and reporting
2	anonymous	DEXA reporting, Mammo reporting, breast US stereoetactic biopsy
3	anonymous	Highly Advanced Breast Radiographers, Breast Imaging Assistant Practitioner, DXA Reporters, Assistant Practitioners



Advancing Practice Initial Survey Results (2)

Which of the following areas of radiographer role extension do you think will be most important to your Health Board *in the future (3-5 years)*?

[More Details](#)



Work currently progressing...



- **CT Colonography** national framework and training package in review and to be rolled out nationally.
- Working with the Boards to **organise 2022/23 training places** to meet the Scottish Government's initial commitment of 30 reporting radiographers by 2023.
- **Working with the Scottish Government to understand funding flexibility** to fund additional training places.
- **Chest X-ray reporting by radiographers framework** document drafted and in review.
- **Ultrasound standard job descriptions** developed and **national vision document** in review.
- Developing **Assistant Practitioners national vision and plan**.
- Developing **MSK workstream scope**.
- Preparing proposal to secure **ongoing funding support** after 2022/23 financial year.
- Identifying **links to national Workforce Planning** work once first iteration is complete.



Advancing Practice Workstreams



- **Ultrasound**
 - Support recovery planning work and national academy
 - National job descriptions
 - Ultrasound National Vision document
- **Chest X-Ray reporting by radiographers**
 - Chest X-ray reporting by radiographers framework
 - Chest X-ray mentoring pilot via SNRRS
- **CT Colonography**
 - National framework and training package
 - Gain endorsements and accreditation for standard training module
- **Assistant Practitioners workstream**
 - National job descriptions and framework
 - Extend scope of practice
 - Education – progression to radiography more accessible for assistants
- **MSK**
 - Work out scope and plan once new workstream lead in place.



Advancing Practice Training Update



- Jean Wright (Recovery planning) has agreed to cover funding for Assistant Practitioners and Ultrasound training. We are working in collaboration with them, sharing information.
- Meeting with Scottish Government on Thursday 10 March to discuss funding.
- Application deadlines for HEIs around July/ Mid August.



Workforce Planning



Workforce Planning

Deliver a **national workforce plan** for the radiology service in Scotland

- Based on **data** and **professional judgement**
- Using the recognised **Six Steps** approach
service model > demand and supply > gap analysis > implement solutions >>
- High-level **first iteration** of a multi-disciplinary holistic view of service workforce, on a national scale
- Building on the recommendations within the recent Radiology Service Target Operating Model
- Close **collaboration** essential.



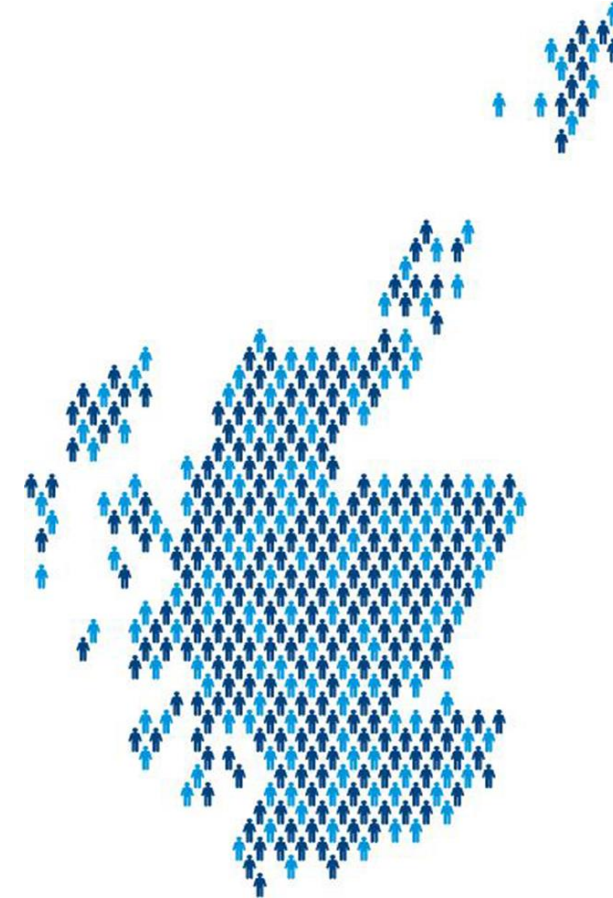
Workforce Planning

Workforce Scope

- Clinical Radiologists and Interventional Radiologists
- Healthcare Support Workers
- Assistant Practitioners
- Diagnostic Radiographers
- Advanced Practitioner Radiographers
- Sonographers (*non-obstetric*)

Planned Steps

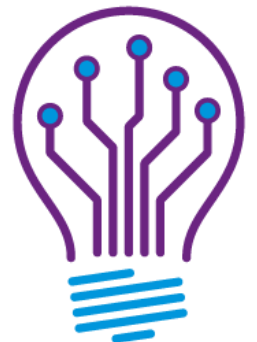
- Map **current** state of radiology workforce and supply
- Project **future** demand from data and scenario modelling
- Identify **required** workforce to meet that demand
- Solutions/ ideas to fill gap
- **Remote & Rural** recruitment and retention recommendations.



Any Questions?

www.radiology.scot.nhs.uk/

[Email: NSS.S.R.T.P@NHS.SCOT](mailto:NSS.S.R.T.P@NHS.SCOT)



Advancing Practice Training 2021



Course	Course provider	Number of candidates	Board coverage
Assistant Practitioners	Robert Gordon University	11	Forth Valley (1), Greater Glasgow & Clyde (6), Highland (2), Tayside (1), Golden Jubilee (1)
CXR Reporting	University of Salford	4	Ayrshire & Arran (1), Highland (1), Shetland (1), Tayside (1)
GI Studies & Reporting	University of Salford	2	Ayrshire & Arran (2)
MSK Reporting	Glasgow Caledonian University	2	Grampian (1), Shetland (1)