

Scottish Medical Imaging (SMI) Service

eDRIS

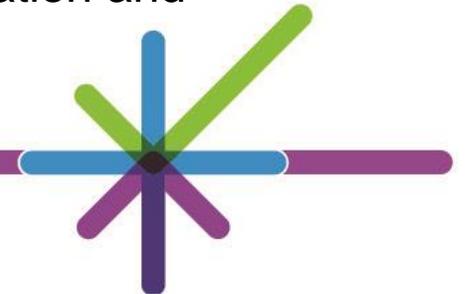


Electronic Data Research and Innovation Service (eDRIS)

“eDRIS is a Public Health Scotland service providing coordination and expert advice to support researchers wishing to work with health, social and administrative data to make research more efficient, easier, save time and encourage better research.”

In addition to supporting research projects, eDRIS also works on:

- Creating a research ready data environment
- Investigating and/or building new data sources e.g. national imaging dataset
- Collaborating on innovative projects such as machine learning, biomarker evaluation and development and natural language programming



eDRIS Key Stakeholders

Working with key partners including...

- **Public Health Scotland** – Research coordination, data provisioning and data analysis services
- **NRS (National Records Scotland) Indexing** - Provides data linkage services
- **Research Data Scotland (RDS)** - partnership between Scottish Government, Scotland's leading academic institutions and public bodies to facilitate insight from data Scotland
- **Edinburgh University** - Provides the IT environment for the National Safe Haven

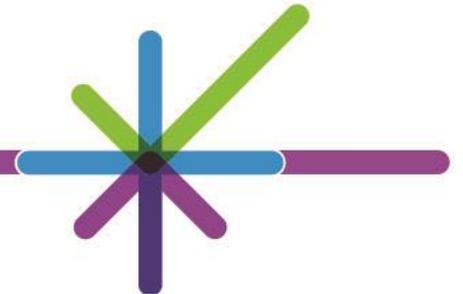
Supporting key customer groups including...

- **Scottish Government** - An initiative to encourage the use of data linkage and analysis to inform policy and support improved service delivery. Recently resources have been pivoted to support COVID response for Scottish and UK Governments
- **Health Data Research UK**- collaborative network of universities who wish to harness health data for patient and public benefit, charities ,and public sector organisations
- **Administrative Data Research** - Economic and social research to improve knowledge and understanding of the society we live in



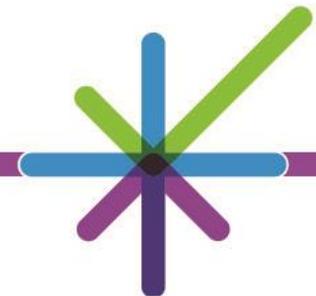
Medical Imaging Taken for Routine Care

- Each year millions of clinical images such as X-rays, CT, and MRI are generated in the NHS in Scotland and stored in the national imaging database.
- While such images contain important clinical information they also contain a great deal of potential information about the health of the individual which is currently not made use of in health care.
- The SMI Service has been set-up to declutter imaging data access in Scotland by providing a single user journey, regardless of the type of imaging data being requested. Providing:
 - information about the imaging data landscape and how to access the data,
 - what timescales are likely to be encountered
 - the information that a researcher needs to provide to gain access to the data sets



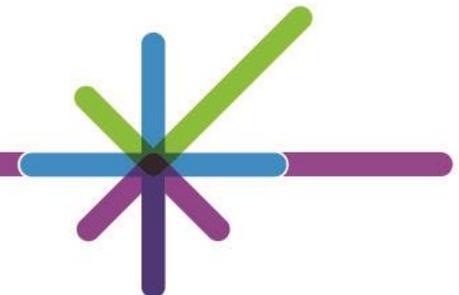
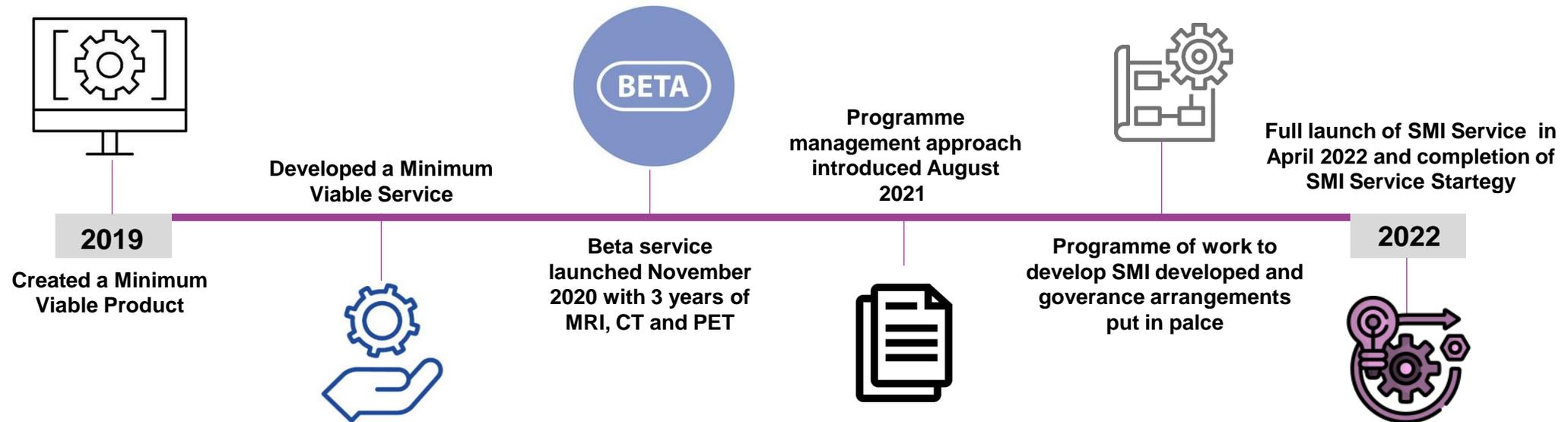
SMI Overview

- eDRIS, the Health Informatics Centre (HIC) (University of Dundee) and the Edinburgh Parallel Computing Centre (EPCC at the University of Edinburgh) have collaborated on creating a research-ready copy of the National Clinical PACS database of radiological images taken from the whole Scottish population from 2010. This dataset is hosted within the Scottish National Safe Haven (NSH). The creation of this new national data resource was approved by PBPP which has delegated authority from NHS Chief Executives.
- The SMI Service has been developed to manage this data and enable linkage of images to other health datasets. Subsets of data can be extracted and anonymised from the PACS copy and made available for research within the NSH environment, with appropriate data governance and PBPP approval. There are capabilities in the NSH to support training and developing algorithms.
- The Programme's overall aim is to *provide linkable, population based, "research-ready" real-world medical images for researchers to develop or validate AI algorithms within the Scottish National Safe Haven.*



SMI progress from 2019

History of SMI



Service Catalogue

Time Range: Years 2010 to 2017 (Over 2 Petabytes of data)

Modalities: Computerised Tomography (CT), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), Structured Reports (SRs) - development of NLP to redact and catalogue

Data Analytics Environment

- Windows
- R + Stata + SPSS + SAS
- CRAN repository
- MS Word + Excel
- microDICOM viewer

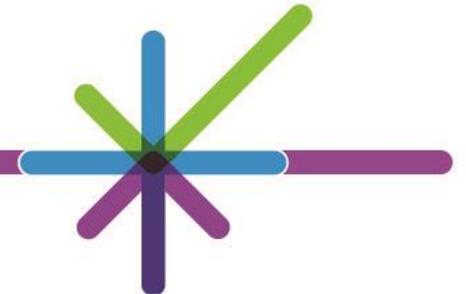
Data Science Environment (PPZ)

- Linux
- R + Python
- Access to advanced DICOM viewers
- GPU
- Software ingress during build phase
 - Researchers can install their own code
 - Software installed requires license

Coming Soon:

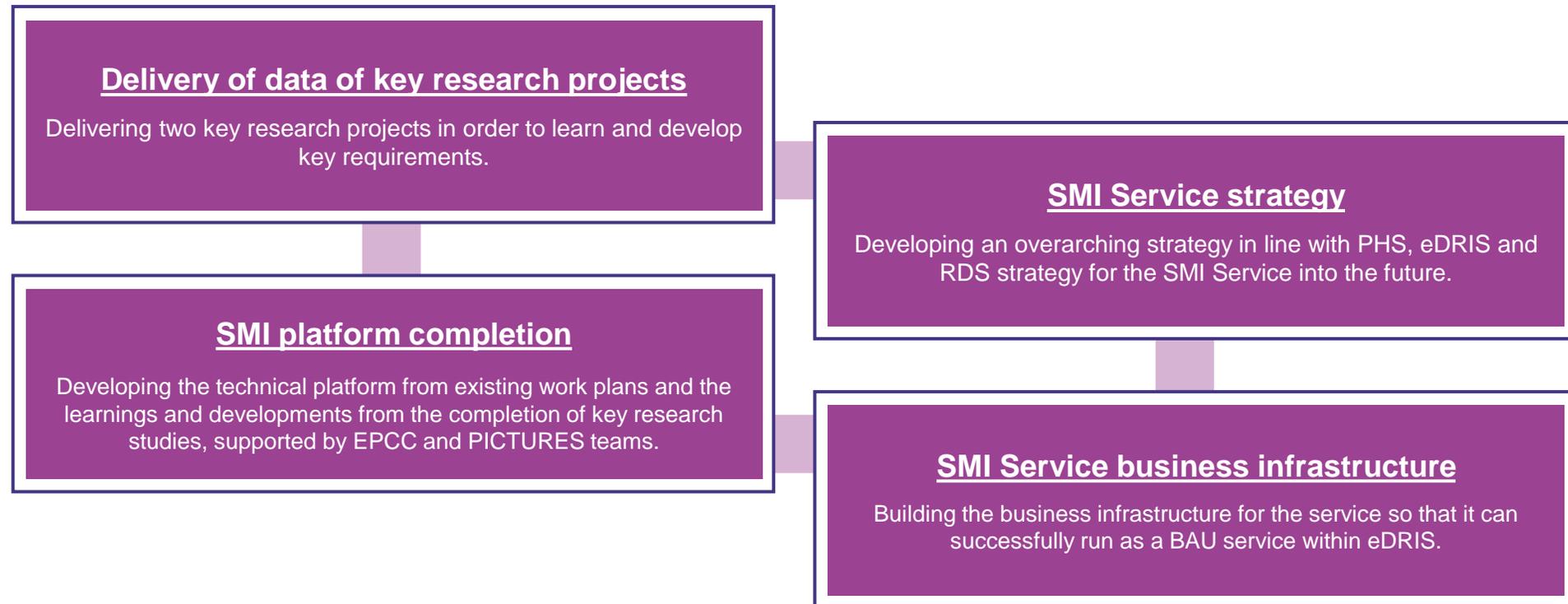
Ongoing ingest of (near) live image data

Additional Modalities – Digital Radiographs (Panoramic and Intra-oral)



Development of SMI into a fully operational service

The SMI Programme is focusing on developing the existing SMI platform into a fully operational service. In order to do this, four work streams containing multiple projects have been created to define what needs to be done. These four work streams define what is and what is not in scope of the programme.



Thank you