

Secure Data Environments for Radiology AI Research: Experiences from a Driver Project

Authors Afagh Garjani¹, Alan Bagnall², Mark Walsh³, Hils Poole⁴, Anna Beattie²

Purpose

The RCR-NHS Global AI Conference 2025 roundtable highlighted the challenges of using Secure Data Environments (SDEs) for AI research. In response, this study aims to capture the experiences and insights of a team in developing and deploying a radiology AI project within the NHS SDE Network and to identify lessons learned.

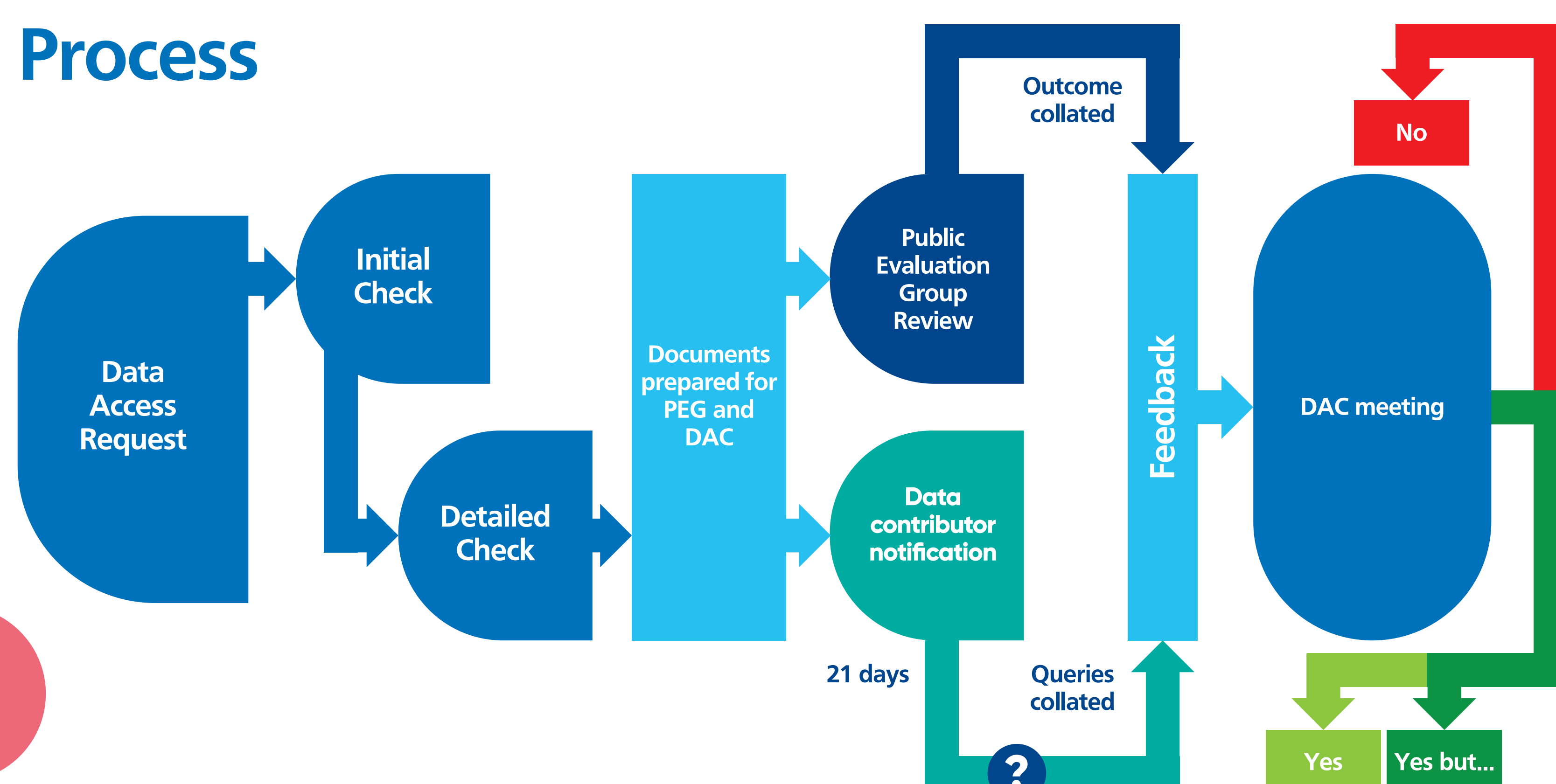
Methods and materials

In this autoethnographic study, data included content from documents, emails, and interviews related to a driver project for refining and validating an AI algorithm for automated aortic measurements on chest computed tomography scans. The principal aim of the driver project was to develop the logistical and technical capabilities of North East and North Cumbria SDE to accommodate and handle multimodal data including Digital Imaging and Communications in Medicine (DICOM) files.

Results

The overarching theme was that external governance processes and interpretations, rather than workflow or technical functionalities of the SDE, shaped the project pace and scope. The major challenge was obtaining sponsorship and signed data-sharing agreements. This was, however, related to the nature and aim of the specific driver project and for most projects would routinely be in place upfront. Inconsistent IG policies across stakeholder organisations and differing interpretations of regulations were identified as primary barriers to federation of data between SDEs. Federation of data and/or algorithms will be important if SDEs are to provide the most comprehensive platform for radiology AI projects and are dependent on resolving these multiple challenges.

DAC Process



Conclusion

SDEs can offer considerable opportunities for developing, training and validating AI algorithms along with performing impact assessments. Maximising the potential of SDEs requires aligned network-wide policies that are broad enough to accommodate diverse projects yet robust enough to ensure data security, regulatory compliance, and clarity of responsibilities.

NENC SDE currently has data sharing agreements with 10/11 acute provider Trusts and 260 GP practices of which 110 are flowing data.