Integrated Care System (ICS) Data Strategy

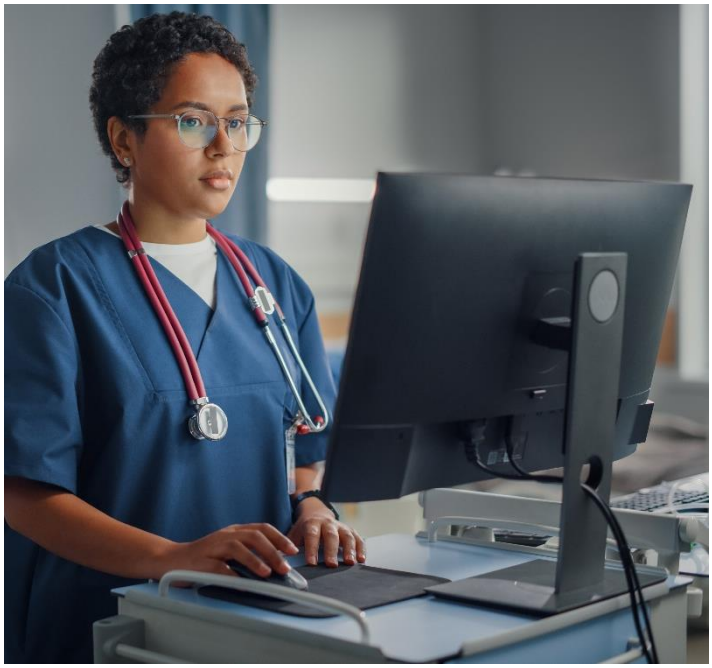
An introduction for how Integrated Care Systems can leverage the power of data, supported by the AWS Cloud, to deliver enhanced citizen and patient care.

AWS in healthcare

The Amazon Web Services (AWS) healthcare mission is to enable access and delivery of person-centred care in order to improve outcomes and lower costs by accelerating the digitisation and utilisation of healthcare data. Our aim is to help the National Health Service (NHS) and its partners develop cloud strategies to achieve more with less, modernise technology, and digitally transform back office and clinical services.

How AWS technology can support Integrated Care Systems (ICS) to leverage their data

Technology is at the heart of the NHS Long Term Plan and supported by the Data Saves Lives strategy, which describes key priorities for using NHS data to transform the way in which the NHS looks after its citizens and patients.



Integrated Care System's (ICS) are focused on the clinical delivery of care, planning for future service delivery, population health management initiatives, and research and innovation. Across each of these themes, AWS cloud technology can support ICSs to:

- Converge data across the ICS
- Maximise existing assets in the ICS's constituent organisations
- Curate datasets available across the ICS
- Analyse and interpret data for onward use

By working with AWS cloud technology across these four areas, ICSs can deliver improved outcomes, improved experience for citizens and staff, and more efficient use of resources.

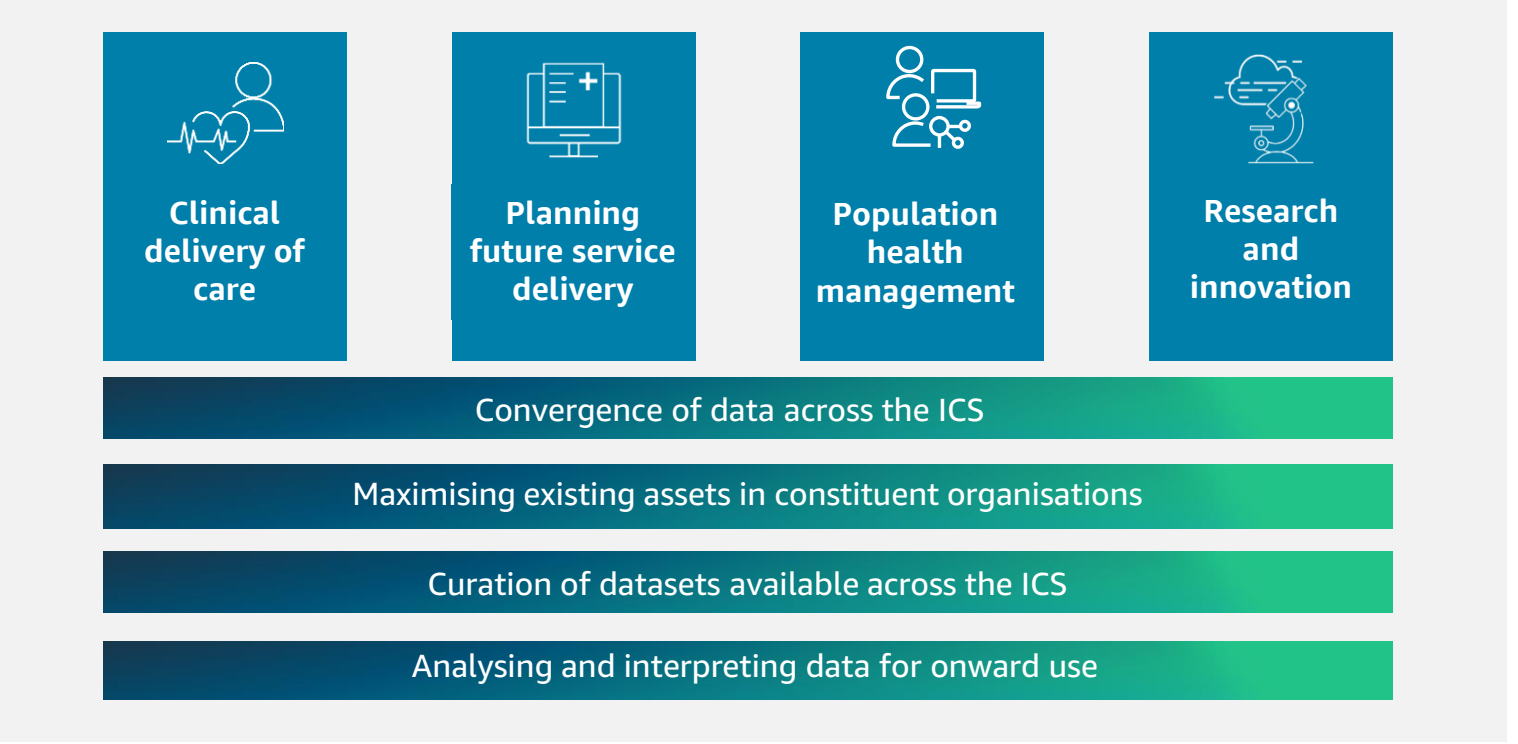
"Without immediate access [to patient records], our clinicians were unlikely to have complete information about a patient at any given time. Clinicians can use the Fortrus solution on AWS to access complete and indexed patient records in seconds, instead of spending valuable clinical time sorting through paper documents. With the right data at the right time, in the right format, they can make better, faster decisions about patient care. Ultimately, this means more time spent with patients, enabling better health outcomes."

Jaki Allen-Free
Program Director, Liverpool Women's NHS Foundation Trust

Convergence of data across the ICS

Constituent organisations within an ICS have their own datasets, data systems, vendors, and physical locations where data is stored. These datasets often exist in silos, with no single institution having a complete record of an individual citizen's health and care, resulting in limited convergence between clinical and data systems which can make accessing holistic data challenging.

To make sense of large volumes of health data, purpose-built machine learning services like Amazon Comprehend Medical and Amazon Transcribe Medical quickly and accurately structure medical data. To derive actionable insights, Amazon HealthLake normalises, indexes, and structures data using the Fast Healthcare Interoperability Resources (FHIR) standard to bring together a complete view of a patient's medical history. These technologies can be combined with machine learning tools to securely locate and assimilate records across the ICS. ICSs can also leverage cloud technologies to create a 'data mesh' or converged data environment, providing a decentralised mechanism to organise and securely share access to data across the ICS.



Maximising existing assets in constituent organisations

The constituent organisations within an ICS will hold some form of record on the citizens they serve, electronically or in paper format (or a combination of the two). By leveraging cloud-based technology, ICSs can maximise the capabilities existing within their current electronic data capture systems to transform paper-based records to electronic data. This transformation allows data to be interpreted and shared across the ICS more effectively.

Cloud technologies and partners can provide cost-effective tools to manage data, regardless of the format and location it is collected and stored in. In addition, many of the leading Electronic Health Record (EHR) vendors are using cloud-based technology to store their data and manage their applications. AWS cloud technology can also be used to digitise paper-based records. For example, services such as Amazon Textract allow users to extract text and structured data (such as tables and forms) from documents using artificial intelligence. This service can be combined with Amazon Comprehend Medical, which extracts clinical information from unstructured and structured text, identifying relationships between extracted information and allowing automation of coding and processing.

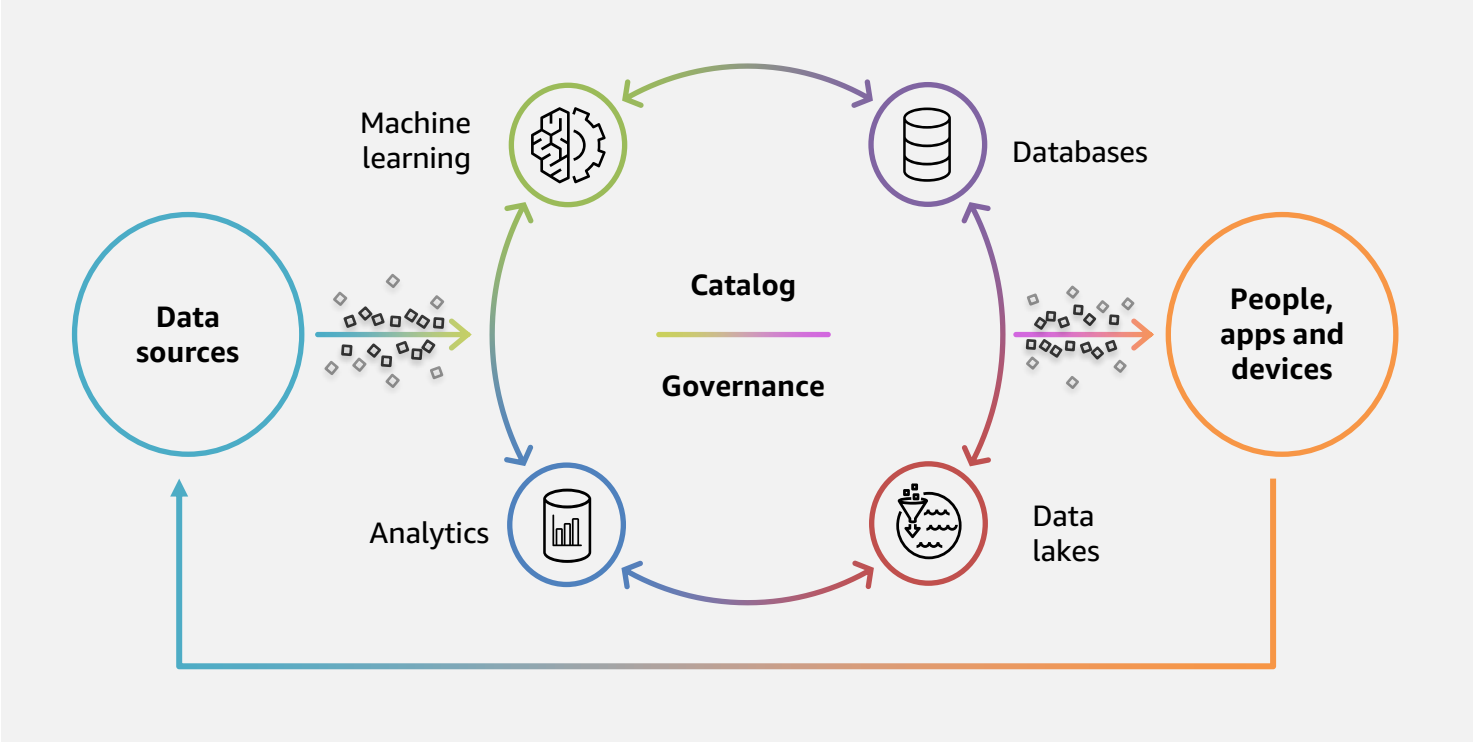
Curation of datasets available across the ICS

The proliferation of datasets available across the ICS can make it challenging to find the data needed at the right moment. Datasets also vary in their quality and completeness. ICSs can benefit from a simplified way of assessing available datasets to help them identify potential data quality issues or missing data and to catalogue existing information to prevent duplication and support usage.

The AWS cloud can support by simplifying the process of cataloguing datasets across the ICS and providing tools to support with bespoke curation. For example, systems that proactively seek and assimilate new information as it's generated and tools to help spot potential missing datasets or data quality issues..

Analysing and interpreting data for onward use

The AWS cloud can help clinicians and leaders at the ICS level and across its constituent organisations to make decisions based in data, to help identify the 'next best action' for the individual they are treating and for populations at scale. There's a huge range of analytical tools, including options to build and deploy machine learning models to spot trends and make predictions. With the flexibility of the AWS Cloud, you can choose the right tool for the right job, meaning you can analyse data cost-effectively and at speed without compromising performance or functionality. AWS has a range of purpose-built services for querying datasets, using natural language processing, spotting trends, and making predictions.



Get started

To get started contact your AWS account team to learn more on how we can:

- Understand the priorities of your ICS for leveraging your data
- Connect you with partners with relevant expertise
- Support you on your cloud journey
- Understand your technical landscape
- Identify quick wins and initial opportunities for transformation with data across your ICS

AWS resources

- AWS for Health
- Healthcare Solutions on AWS
- Data Lakes and Analytics on AWS
- AWS Healthcare Competency Partners

Get in touch

Email: aws-uk-healthcare@amazon.com