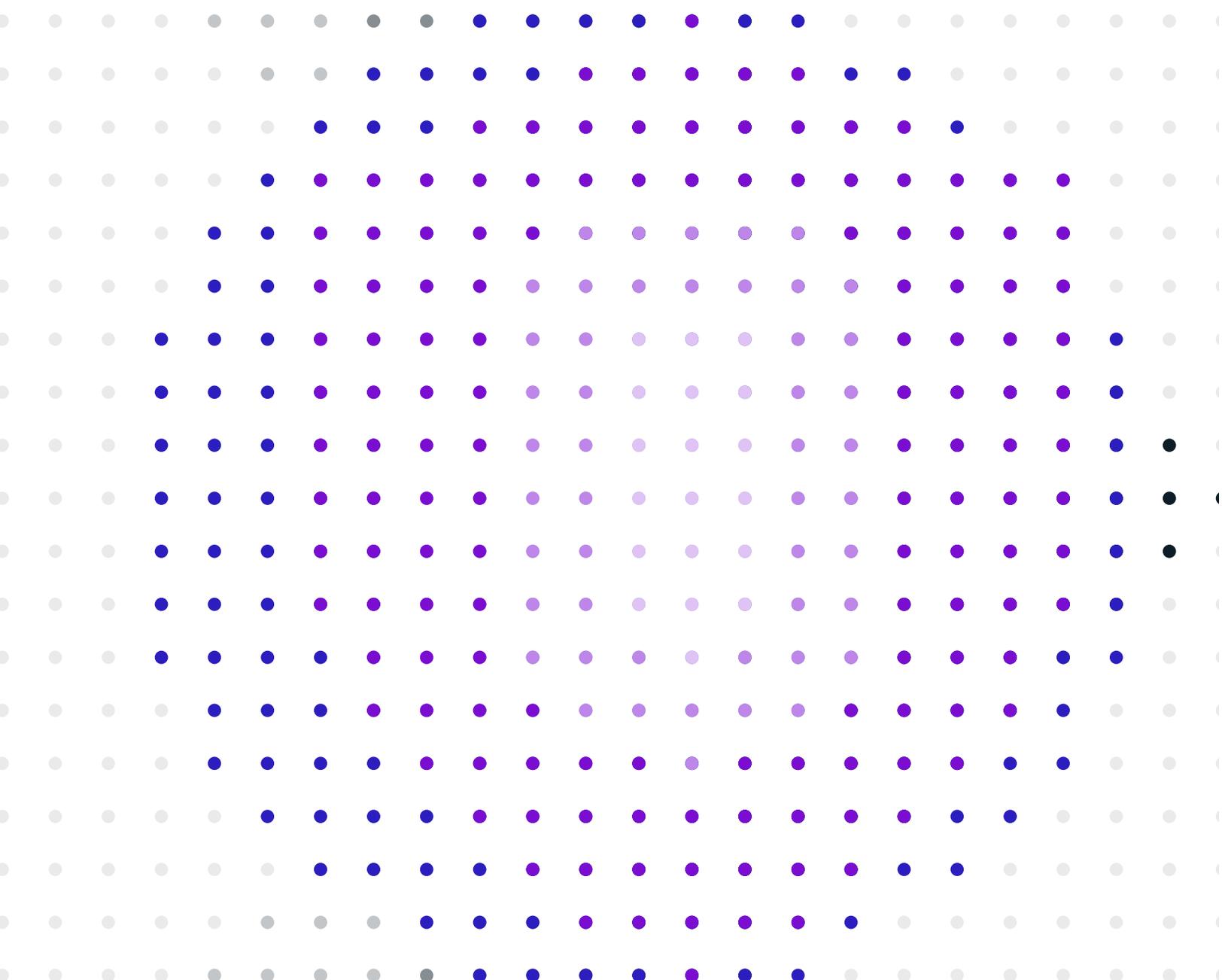**NHS Digital**

# Unlocking Siloed Data For the NHS

## Leveraging the Full Power of Sensitive Healthcare Data

**PRIVITAR**

## The Customer

The UK's National Health Service (NHS) is the world's largest single payer healthcare system, serving over a million patients every 36 hours.

NHS Digital provides information and technology services for the healthcare system in England. The organization has a team of information analysis, technology, and project management experts who create, deliver, and manage the crucial digital systems, services, products, and standards upon which healthcare professionals and citizens depend.

NHS Digital's vision is to harness the power of information and technology to improve both health and healthcare of English citizens.

## The Challenge

The NHS have an incredible corpus of data from tens of millions of English citizens. They wanted to unlock the power of this data to bring benefits to their patients —identifying ways to decrease waiting times, increase the quality of care, and contribute to medical breakthroughs.

Obviously, this data is incredibly sensitive. Without meaningful de-identification, it would be a violation of patient privacy to share this information with third-party researchers. But in the hands of researchers and scientists, it can be used for breakthrough insights that would improve treatments and standards of care, not only in the UK, but worldwide.

The data the NHS holds is also siloed. The NHS is a federated organization; hundreds of trusts hold data on the patients they serve and are unable to share this with one another. Yet it is only with shared data that researchers and data scientists can build the models and identify the patterns that lead to improved patient experience.

Clearly, these needs cannot be met with simple masking and encryption. The NHS needed to take advantage of the most sophisticated tools available on the market, including:

- Safe pooling of data from multiple contributors using partially homomorphic encryption
- Protecting sensitive data attributes within datasets to enable sharing with third parties
- Ensuring consistency to conduct meaningful pattern analysis on safe data
- Providing enhanced data traceability to improve governance and deter misuse.

## Why Privitar?

NHS Digital chose Privitar to protect the privacy of their patients and citizens, to ensure their trusts maintain control of their data, and to track and trace the de-identified datasets they produce. With Privitar, the NHS can use their data to improve the patient experience, increase the quality of care and contribute to medical breakthroughs.

Given the federated organization of the NHS, it was of paramount importance for each of the trusts to contribute data to a shared pool without being identified as the contributor. That's why Privitar SecureLink™ is so important. Privitar's advanced multiorganization sharing and collaboration technology uses NHS number, in an encrypted form, to link datasets. With no ability to decrypt or discover the common identifier used to link them, the risk of reidentifying individuals in the combined dataset is removed. This means that every trust can contribute their previously siloed data safely and privately—supporting better health planning and commissioning, public health, and research.

Once the data is in use by researchers, NHS Digital can use Privitar's sophisticated tracking and compliance capabilities. Protected Data Domains ensure that datasets that should stay separate cannot be linked together, preventing analysts from creating bigger datasets than those permitted by their access privileges.

Importantly, each Protected Data Domain can have a unique watermark—a signal in the noise added by de-identification—that records a description of the dataset, its purpose and its recipients. This means that

it's easy for compliance and security teams to trace the source of unauthorized copies of data from a Protected Data Domain. This also acts as a powerful deterrent against data misuse.

Of course, all of this security and traceability is for naught if the data is not useful to analysts and researchers. That's where Privitar's sophisticated de-identification technologies come into their own, appropriately de-identifying sensitive personal information while preserving the patterns and referential integrity that make data useful.

## Benefits

NHS Digital uses safe, powerful data to improve patient outcomes in the UK and beyond—improving patient experiences, increasing quality of care and contributing to breakthroughs in medical science. To unlock the power of this data, analysts and researchers need to be able to access safe data from multiple sources.

Without Privitar, this is impossible; data is siloed within the trusts that generate it, and there's no way to join these disparate data sources for the insight that only a complete dataset can provide.

With Privitar's SecureLink technology, each of the trusts can contribute their data safely and privately; and analysts and researchers can use the new, richer dataset to make a meaningful difference to healthcare outcomes.

Protecting patient privacy is paramount to NHS Digital. That's why the data that they provide to their analysts, as well as external researchers, is de-identified using Privitar's sophisticated technology. This technology preserves the patterns that make the data useful for improving patient care, experience and outcomes, while obscuring the data that would uniquely identify a specific patient.

The benefits to the NHS are clear. They respect their patients and their trusts, while using the power of their data run an efficient, modern healthcare system. This benefit, in turn, is passed on to their patients, who enjoy shorter waiting times and better outcomes from their treatment.

But it doesn't stop there. The data the NHS holds has the potential to revolutionize healthcare far beyond national borders, equipping scientists and researchers to improve medical outcomes the world over thanks to the power of safe data.

## Privitar and AWS

Data-driven organizations are increasingly looking to use cloud services to drive growth and innovation. Amazon Web Services (AWS), as the recognized leader in the space, were an obvious choice for the NHS. The cloud gives the NHS the advantages of elastic storage and compute, while mitigating the costs of acquiring and maintaining on-premises infrastructure. AWS's comprehensive, secure, scalable, and cost-effective portfolio of services enables the NHS to get maximum value from their data by building in the cloud.

NHS Digital can support a huge increase in data volume by relying on a cloud-based system. "We need to process 10 times the amount of our largest data collections, and our on-premises systems are running out of compute capacity to support that," said Stuart Gunson, Senior Project Manager for NHS Digital. "We now have the scalability and on-demand processing power we need to handle this volume, as well as meet future growth."

It is this safe, powerful data that NHS Digital uses to improve patient experience and outcomes, in the UK and beyond.

## About Privitar

Privitar empowers organizations to use their data safely and ethically. Our modern data provisioning solution builds collaborative workflows and policy-based data protection into data operations. Only Privitar has the right combination of technology, domain expertise, and best practices to support data-driven innovation while navigating regulations and protecting customer trust.

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