

Data Architecture for Healthcare

Service Category: Cloud Migration Planning, Cloud Support Services

About Our Service

We design interoperable, standards-based data models and architectures for UK health and social care, ensuring compliance with NHS policies, FHIR UK Core, SNOMED CT, and GDPR. Includes data auditing, quality assurance, metadata catalogues, geospatial integration, and secure transformation workflows to enable safe data-sharing, analytics, and future-state migration across care systems.



Service Features

**Standards-based
data models aligned
with NHS Data
Model**

**Ontology and
semantic modelling
using RDF, OWL,
SPARQL**

**Integration with UK
Core FHIR and open
standards**

**Data auditing and
quality assurance
for NHS compliance**

**Metadata
catalogues using
Dublin Core, ebRIM,
Gemini 2**

**Geospatial data
architecture using
OGC standards and
UPRN**

**Secure workflows
for data
transformation and
migration**

**Enterprise
architecture
alignment with
TOGAF, UML,
ArchiMate**

**Privacy and security
controls for GDPR
and DSPT**

**Clear visual
artefacts including
data flows and
lineage**

Service Benefits

Improved interoperability across NHS and social care systems

Compliance with UK health standards and regulations

Enhanced data quality for clinical and operational use

Future-proof architecture supporting integrated care delivery

Reduced vendor lock-in through open standards adoption

Safe migration to modern platforms and shared records

Greater transparency through metadata and catalogue services

Better support for analytics and population health initiatives

Strong security and privacy protecting patient information

Clear artefacts enabling stakeholder engagement and delivery alignment

Detailed Service Definition

Frazer-Nash's specialist Health Data Architecture service maximises the value of UK health and social care data by delivering standards-based, interoperable architectures that are safe, secure and aligned to NHS England policies and information standards.

We combine advanced information and data modelling (including semantic/ontology modelling), data auditing and quality assurance, data transformation, and metadata management to enable better care outcomes, operational efficiency, and trustworthy data re-use.

Detailed Service Definition (continued)

We Deliver:

Information and Data Modelling

- Conceptual, logical and physical models aligned to NHS clinical and operational workflows and the NHS Data Model and Dictionary.
- Requirements-driven relational modelling and canonical models for integration across Trusts, ICSs/ICBs and local authorities.
- Ontology and semantic modelling (graph) using RDF, OWL and SPARQL to represent complex clinical and social care concepts and relationships.
- Mapping and harmonisation to terminologies and national identifiers (SNOMED CT, NHS Number, dm+d, ICD-10, OPCS-4).

Enterprise Architecture and Data Viewpoints

- Data Viewpoint development using TOGAF, UML and ArchiMate; integrated with wider enterprise and reference architectures for strategic coherence.
- Architectural Data Views that address storage, retrieval, processing, archiving, and security; supported by data flow diagrams, lineage and other visual artefacts.
- Consultants experienced in TOGAF and ArchiMate notation; active members of The Open Group.

Detailed Service Definition (continued)

Interoperability by Design

- Adoption of UK Core FHIR profiles and implementation guidance for APIs and messaging across Shared Care Records, EPRs, community and social care.
- Support for open standards including HL7 FHIR, openEHR and IHE where appropriate to programme and supplier landscapes.
- API/microservice patterns, event streaming and canonical data services to decouple systems and reduce vendor lock-in.

Data Audit and Data Quality

- Formal data audits to assess business value, quality, provenance and fitness-for-purpose of datasets, aligned to NHS Information Governance expectations.
- Data quality frameworks, rules and dashboards covering completeness, validity, timeliness, consistency and uniqueness; issue triage and remediation playbooks.

Metadata, Catalogues and Data Discovery

- Enterprise metadata services and searchable catalogues/registries to improve findability and governance of data assets.
- Application of catalogue and metadata standards including Dublin Core, ebRIM and Gemini 2, with practical patterns for NHS and local authority contexts.
- Business, technical and semantic lineage to support transparency and safe secondary use.

Detailed Service Definition (continued)

Geospatial Data Architectures

- Spatial data architectures and SDIs leveraging OGC web standards; location integration into care pathways, population health and estates.
- Adoption of the Unique Property Reference Number (UPRN) and other national geospatial identifiers to improve matching and linkage across care settings.

Data Transformation, Migration and Big Data

- Design and orchestration of transformation pipelines and quality management workflows for migration to future-state architectures.
- Patterns for high-velocity, high-volume data (streaming, batch and near-real-time) to support analytics, population health and operational intelligence.
- Safe migration approaches for legacy EPR/LIMS/PAS and social care systems, including reconciliation and parallel-run strategies.

Security, Privacy and Governance

- Data architectures that embed privacy-by-design and security-by-design, aligned to UK GDPR and the Data Protection Act 2018.
- Controls supporting the National Data Guardian's 10 Data Security Standards and NHS DSPT compliance; role-based access, pseudonymisation and minimisation.
- Primary/secondary use segregation, with patterns for Secure Data Environments/Trusted Research Environments and safe data access.
- Records lifecycle management aligned to the Records Management Code of Practice for Health and Social Care (retention, archiving and disposal).

Detailed Service Definition (continued)

How we work:

- Co-design with clinical, operational, social care and informatics stakeholders; structured engagement methods for ontology/graph modelling.
- Architecture artefacts that are implementation-ready and consumable by delivery teams and suppliers.
- Vendor-neutral advice with pragmatic adoption of open standards and UK NHS conventions.

UK policies, standards and conventions we work to:

Regulation and Information Governance

- UK GDPR and Data Protection Act 2018
- ICO Data Sharing Code of Practice and Anonymisation/Pseudonymisation guidance
- Caldicott Principles (including the duty to share for direct care)
- National Data Guardian's 10 Data Security Standards; NHS Data Security and Protection Toolkit (DSPT)

Detailed Service Definition (continued)

Clinical Safety and Risk

- DCB0129 (manufacturer) and DCB0160 (health organisation) Clinical Risk Management standards for health IT systems.

Records and Retention

- Records Management Code of Practice for Health and Social Care (retention and archiving)
- NHS Confidentiality and Data Protection policies and secure handling conventions

Interoperability, Identifiers and Terminology

- HL7 FHIR UK Core and NHS England interoperability guidance (including GP Connect and Shared Care Record patterns)
- SNOMED CT (national terminology), dm+d (medicines), NHS Number (unique patient identifier)
- ICD-10 and OPCS-4 for secondary uses/coding; PRSB information standards (e.g., Core Information, Discharge, Medications) adopted by the Data Alliance Partnership
- OpenEHR archetypes/templates where used by local programmes and suppliers

Detailed Service Definition (continued)

Enterprise and Modelling Standards

- TOGAF (architecture method and viewpoints), ArchiMate (modelling notation), UML (modelling).
- Data modelling conventions for relational, document and graph stores; RDF/OWL/SPARQL for semantic models.

Metadata, Catalogues and Geospatial

- Dublin Core, ebRIM, Gemini 2 for catalogues and metadata
- OGC web standards (WMS/WFS/WCS/WMTS) for spatial services; UPRN/USRN for address and asset referencing

Assurance and Transparency

- Alignment with NHS England Information Standards (via the Data Alliance Partnership Board), NHS Data Model and Dictionary definitions, and local ICS/ICB governance.

Detailed Service Definition (continued)

Optional Deliverables

- Current- and target-state Data Architecture, standards register and conformance roadmap.
- Data audit and remediation plan; data quality rules catalogue.
- Metadata operating model and catalogue configuration blueprints.
- Interoperability/API specification pack (FHIR profiles, mappings, test cases).
- Migration design, cutover plan and reconciliation framework.
- Security, privacy and clinical safety controls mapped to DSPT and DCB0129/0160.

By embedding these UK-specific policies, standards and conventions, Frazer-Nash ensures data architectures that are interoperable, regulator-ready and designed for safe, effective care across the NHS and local government social care landscape.

Why Frazer-Nash Consultancy?

Frazer-Nash Consultancy is an independent engineering and technology consultancy with over 35 years' experience delivering high-quality digital and cloud-enabled solutions. We support organisations operating in complex and regulated environments through our collaborative approach and deep expertise in digital engineering, software development and systems integration.

We are **solution and technology-agnostic**. We assess our clients' requirements and provide impartial advice and design solutions based solely on their needs. This independence enables us to select the most appropriate cloud technologies and architectures to deliver secure, resilient and value-for-money outcomes.

Our cloud solutions are informed by experience gained across multiple platforms, sectors and use cases. We combine proven engineering discipline with a strong understanding of integration and whole-system design to support and enable cloud adoption while managing risk and ensuring long-term sustainability.

Our Commitment to Quality

Frazer-Nash is committed to delivering consistently high-quality services and outputs that **often exceed customer expectations**. Quality is embedded throughout our ways of working, from engagement and communication through to delivery and assurance.

We actively monitor progress using our robust, proportionate controls, ensuring key decisions are subject to appropriate challenge. Each project is allocated a dedicated Project Manager, a Project Supervisor who independently reviews and approves monthly reports, and a Project Auditor for ongoing quality assurance.

We ensure accuracy and suitability for purpose of all deliverables, with independent verification by two reviewers. Our Quality Management System is certified to **ISO 9001 and TickITplus** (for software development), providing customers with confidence that our quality standards are externally assured and continuously maintained.

Our Security

Frazer-Nash operates robust security processes and controls suitable for handling sensitive and classified information **above OFFICIAL** up to and including **Top Secret**. Security is embedded across our people, processes and systems, ensuring information is protected throughout delivery.

We support sensitive and critical programmes across government and national infrastructure by applying strict information-segregation controls, including team separation to address security, or conflict-of-interest considerations

All 1500 staff hold **BPSS clearance as a minimum**, with the majority cleared to **SC** and over 225 consultants holding **DV clearance**.

Our IT systems are certified to **ISO 27001 and Cyber Essentials Plus**, providing assurance that information security risks are proactively managed in line with recognised industry standards.

Our Approach to Subcontracting

Frazer-Nash primarily delivers services through our large base of permanent staff, supplementing this capability where required with trusted partner organisations to provide additional flexibility, specialist expertise and scale while retaining full delivery control.

We are experienced in engaging and managing subcontractors across the full project lifecycle, ranging from sole traders to large multinational organisations. Our structured approach ensures the right supplier is selected for each requirement and integrated effectively into the delivery team.

Our subcontracting processes focus on robust supplier identification and assessment, clear definition of scope, appropriate flow-down of contractual terms and conditions, and proactive risk management. All subcontractors are subject to proportionate commercial and technical due diligence to ensure they meet our standards for security, quality and delivery, enabling us to deliver outcomes on time, within budget and to the required quality.



Resourcing

Frazer-Nash employs over **1,500 technical specialists** across all grades, from **Follow to Set Strategy**, providing depth, continuity and scalability across a wide range of disciplines, backgrounds and experience levels.

To support agile and flexible delivery, our people are organised into defined **technical delivery areas** (including Information Systems, Cyber, Modelling and Software), which are deployed across multiple sectors such as central and local government, policing, health and energy. This structure, combined with strong portfolio, programme and project management (P3M), enables us to actively monitor demand and adapt resourcing throughout the project lifecycle.

We deliver complex requirements efficiently, consistently and at pace by forming tailored, multi-disciplinary teams led by a single accountable Project Manager.

Our consultants regularly work across different sectors, enabling us to cross-pollinate ideas, tools and best practice between domains. Drawing on in-house expertise, such as information security and human factors, we ensure effective and responsive delivery for every client.



Our Commercial Approach

Frazer-Nash adopts a flexible and transparent commercial approach to ensure best value and a model that aligns to each client's specific requirements. We collaborate with customers to clearly define the scope of services and agree a commercial structure that is predictable, proportionate and aligned to your required outcomes and effective delivery.

Depending on the requirement, this may include a **fixed-price model for clearly defined scopes**, or **time and materials using agreed day rates** where flexibility is required to accommodate evolving needs.

For longer-term or ongoing service requirements, and where we have control over resource flexibility, we can also offer a **single blended day rate** covering a range of grades. This provides simplicity, transparency and ease of management while maintaining access to the appropriate skills at the right time.

Next Steps

To discuss your requirements in more detail or request an order for services, please contact ccs@fnc.co.uk

