



2T Solutions Limited

Service Definition

G-Cloud 15

Service Definition – 2T-Spirit Health Information Exchange (HIE) Platform

1. Service Overview

2T-Spirit provides standards-based healthcare interoperability software enabling secure, governed data exchange between disparate systems across health and care communities. The platform supports safer, more efficient care delivery while enforcing information governance and reducing overall costs.

2. Core Capabilities

The service includes a Clinical Data Repository, Enterprise Master Patient Index, XCA gateways, consent and policy management, audit services, provider directories, terminology services, and web portals for clinicians and citizens, all built on IHE, FHIR, HL7, and XDS standards.

3. Hosting and Deployment

The service may be deployed in UK-based cloud or on-premise environments provided by the customer, their AMS partner, or by 2T where contractually agreed.

4. Security and Governance

Security is governed through an ISO 27001-aligned ISMS and NHS DSPT compliance. Controls include federated identity, TLS encryption, SAML/JWT authentication, role-based access, consent enforcement, and comprehensive audit logging.

5. Backup, DR, and Resilience

Backup and disaster recovery integrate with the underlying hosting environment. Recovery objectives are agreed per deployment.

6. Service Levels

Typical availability target is 99% excluding planned maintenance. Support arrangements and escalation paths are contractually defined.

7. Onboarding and Offboarding

Structured onboarding and secure offboarding are provided, including data extraction, access revocation, and secure data sanitisation.

8. Audit and Monitoring

All transactions are audited using IHE ATNA. Logs are retained for at least 12 months and made available through controlled support processes.

9. Commercial Model

The service is offered via a low-cost annual subscription model scalable across organisations, supporting CCS and NHS procurement frameworks.

10. Ethos

2T's Spirit is to ensure citizens' medical data is available, accessible, comprehensive and accurate at the point of clinical care, while ensuring security and governance are at the forefront of everything we do.

Service Definition

2T Solutions Health Information Exchange (HIE) Platform

1. Service Overview – What the Service Is

2T Solutions specialises in delivering **standards-based healthcare interoperability software** that enables secure, governed data exchange between disparate clinical and care systems. The 2T Health Information Exchange (HIE) allows healthcare providers, local authorities, private providers, and citizens to access relevant health and care information across organisational boundaries, supporting safer, more efficient, and better-coordinated care across the full patient pathway.

The service enforces strong information governance controls, consent management, and auditing while significantly reducing capital and operating costs by integrating existing systems rather than requiring replacement. The platform is vendor-agnostic, scalable, and designed to integrate seamlessly with existing workflows with minimal disruption.

2T Solutions has a global footprint with extensive UK deployments and holds **over 120 IHE actor/profile certifications**, making it one of the most comprehensive standards-based clinical document and imaging exchange solutions available.

2. Service Architecture and Core Components

The 2T Solutions HIE is an IHE-compliant platform composed of the following core components:

Clinical Data Repository

A standards-based (FHIR, XDS) repository that stores, indexes, and enables retrieval of structured and unstructured clinical data for care delivery and analytics.

Enterprise Master Patient Index (EMPI / PIX Manager)

Ensures unique patient identification across the HIE, cross-referencing local and regional identifiers and identifying where patient data exists across participating organisations.

Grouped Responding Gateway (XCA)

An IHE Cross-Community Access Responding Gateway enabling record discovery and retrieval across local, regional, national, and international communities.

Policy Administration Point (PAP)

Provides global and patient-specific policy management interfaces and works with the Security Token Service to enforce authorisation decisions.

Consent Registry / Repository

IHE-based XDS Registry and Repository used to manage patient consent using the IHE Basic Patient Privacy Consents (BPPC) profile.

Aggregated Audit Record Repository (A-ARR)

Aggregates audit events from all HIE participants using IHE ATNA, enabling centralised, patient-specific access reporting and oversight.

Healthcare Provider Directory

Implements the IHE Healthcare Provider Directory Profile to manage and query healthcare organisation and professional information.

Access Control System (ACS)

Intercepts every IHE transaction and enforces access decisions using SAML or JWT assertions, XACML policy evaluation, and consent rules.

XDS / XDS-I Registry and Repository

Provides document registration, discovery, and retrieval services supporting any clinical content type, including CDA, FHIR, PDF, DICOM, and other structured or unstructured formats.

Web Portals

- **Healthcare Provider Portal:** Enables authorised clinicians and staff to access and manage patient information.
- **Citizen Portal:** Allows citizens to manage consent, view records, request updates, and review access history.

Terminology Services (Spirit CodeSystem)

Provides XML-based terminology lookup, translation, and mapping across coding systems.

3. Hosting Options and Locations

- The platform is typically delivered as a **cloud-hosted software deployment**, but can also be deployed in:
 - NHS or customer-owned data centres
 - Public or private cloud environments operated by the customer or their AMS provider
- Hosting locations are fully disclosed and typically UK-based for NHS deployments.
- Infrastructure resilience (for example multi-AZ or multi-site) is dependent on the hosting environment selected by the customer.

4. Security Model and Federated Trust

2T Solutions delivers **federated security**, ensuring trusted relationships exist between human users, organisations, and systems before access to Protected Health Information (PHI) is granted.

Identity, Authentication, and Authorisation

- Transport security via **TLS**
- Authentication and authorisation using **SAML assertions or JWTs**
- Tokens issued by a trusted Security Token Service (STS) or integrated external Identity Providers
- Fine-grained access control enforced using **XACML**
- Access decisions performed as close as possible to the data source

Consent and Policy Enforcement

- Patient consent recorded using **IHE BPPC**
- Consent can be granted to organisations, roles, or individuals
- Default policies apply where no BPPC document exists
- Every transaction generates an XACML request to enforce policy

5. Audit, Monitoring, and Accountability

Auditing is based on the **IHE Audit Trail and Node Authentication (ATNA) profile**.

- Every IHE transaction is audited
- Audit data conforms to **RFC 3881**
- Secure audit transport via **RFC 5424/5425 (Syslog over TLS)**
- Central Aggregated Audit Record Repository (A-ARR)
- Audits include patient identifiers, user/system identifiers, IP address, event type, and source
- Audit data retained for a minimum of **12 months**

Authorised System Administrators, Security Officers, and Information Governance teams can:

- Search and filter audit records
- Generate patient-specific access reports
- Be notified of predefined “interesting” or anomalous events

6. Operational Security and Hardening

All systems are hardened in line with industry best practice and audit tooling, including:

- Lynis security auditing
- SELinux enabled and configured
- FirewallID configured
- Kernel hardening via sysctl
- Intrusion detection using AIDE
- Antivirus (ClamAV)
- Password policies (strength and age)
- Disabled unused services and interfaces
- Controlled software updates using package management automation

- Continuous remediation of CVEs

7. Backup, Restore, and Disaster Recovery

- Backup and disaster recovery integrate with the underlying hosting environment
- Supports regular backups, point-in-time recovery, and restoration testing
- Business continuity and disaster recovery plans are agreed per deployment
- Recovery objectives are dependent on the chosen hosting architecture

8. Availability and Service Levels

- Typical availability target: **99%**, excluding planned maintenance
- Designed for near real-time data exchange
- Supports resilient deployment patterns and restartable services
- Service levels, support hours, and escalation paths are contractually defined

9. Onboarding and Offboarding

Onboarding

Includes architecture design, integration configuration, security setup, testing, documentation, and go-live support.

Offboarding

Includes secure data extraction, handover support, access revocation, and secure data sanitisation.

10. Outage and Maintenance Management

- ITIL-aligned incident management
- Planned maintenance communicated in advance
- Emergency maintenance performed where required for security or stability
- Post-incident reports available on request

11. Access to Data Upon Exit

- Customers retain full ownership of data
- Data provided in agreed, standard formats
- Audit trails available for data access and extraction

12. Commercial Model

2T operates a **low-cost annual subscription model**, scalable by participating organisations. GP practices are grouped under commissioning bodies to minimise cost exposure, providing transparent and predictable budgeting aligned with NHS financial constraints.

13. Governance and Assurance

- Board-level accountability for security and service governance

- ISO 27001-aligned ISMS
- NHS DSPT aligned
- Clear separation of responsibilities between software supplier and hosting authority

14. Service Ethos

“2T’s Spirit is to ensure citizens’ medical data is available, accessible, comprehensive and accurate at the point of clinical care, while ensuring security and governance are at the forefront of everything we do.”