# Principal Integration Engineer

**Location:** Remote with occasional travel

**Reports to:** Head of Architecture

**Working with:** IT Team, Executive Stakeholders, Shared Services, External Suppliers, Senior Operations Leaders, People Managers, Clinical and Operational Staff

## Introduction:

InHealth is the largest provider of diagnostic and healthcare specialist services in the UK, with over 3,500 employees and more than 4 million patient interactions annually across 800+ locations. Our mission is to **Make Healthcare Better** through collaborative partnerships with the NHS and other healthcare providers, delivering a diverse portfolio of diagnostic and screening services.

We rely on secure, efficient data exchange to ensure that clinicians and operational teams can provide timely and accurate patient care. As a **Principal Integration Engineer**, you will develop, manage, and optimise these data flows, anchored by **Mirth Connect** as our primary integration engine, along with industry protocols such as **HL7** and **DICOM**. Proficiency in **JavaScript** for Mirth channel development is essential, while familiarity with **XML**, **JSON**, **FHIR**, and experience with radiology systems (e.g. RIS/PACS) are advantageous.

Healthcare integrations require detailed knowledge of clinical workflows, technical standards, and regulatory compliance. In this senior technical role, you will be hands-on in configuring, scripting, and troubleshooting integrations—primarily using **Mirth Connect**—while also collaborating with solution architects, clinicians, and operational teams. You will coordinate data flows across a wide range of diagnostic services, ensuring systems interoperate seamlessly to enhance patient outcomes and service efficiency.

Through **JavaScript**-driven transformations in Mirth Connect, you will enable accurate, timely data sharing throughout our clinical ecosystem. You will also support and guide other engineers on best practices for HL7, DICOM, and potentially FHIR-based workflows. Experience in radiology integrations (e.g. RIS/PACS) is particularly beneficial, though not mandatory.

## What you will do:

In this pivotal role, you will design, maintain, and enhance the integrations that connect multiple clinical systems, ensuring patient data is shared accurately and efficiently. Key tasks include:

1.  **Lead Engineering Delivery**

    o   Oversee the technical implementation of robust integration solutions using **Mirth Connect**, focusing on HL7, DICOM, and optionally FHIR.

    o   Script and customise Mirth channels in **JavaScript** for data transformation, validation, and error handling.

2.  **Collaborate on Solution Architecture**

    o   Translate high-level designs into concrete integration tasks, aligning with standards such as HL7, DICOM, and (where beneficial) FHIR.

    o   Contribute to the design and upkeep of data exchange models, making effective use of **XML**/**JSON** schemas.

3.  **Perform Complex Problem-Solving**

    o   Diagnose and resolve intricate data flow issues.

    o   Optimise channel performance for minimal latency and robust error handling, supporting reliable throughput in clinical environments.

4.  **Drive Quality Assurance**

    o   Champion rigorous testing and documentation protocols, employing CI/CD pipelines and version control (Git) to maintain a consistently high standard of delivery.

    o   Validate data security and reliability, ensuring compliance with all relevant healthcare regulations.

5.  **Champion Continuous Improvement**

    o   Regularly review existing integrations, identifying opportunities to refine HL7 message structures, DICOM workflows, and overall performance.

    o   Engage with clinical, operational, and IT colleagues to gather feedback, adapting integrations and incorporating emerging standards like FHIR where appropriate.

## What you are responsible for:

As a **Principal Integration Engineer**, you will shape how patient and clinical data flows between our core diagnostic and screening systems. Specifically, you will:

- **Implement Integration Roadmaps**

  o Collaborate with senior leadership to plan and deliver integration initiatives across diverse diagnostic services, ensuring alignment with clinical needs and organisational goals.

- **Develop and Maintain Core Interfaces**

  o Own the full lifecycle of Mirth Connect channels, coding JavaScript-based transformations for HL7, DICOM, and potentially FHIR data.

  o Ensure all data exchanges meet privacy, security, and compliance obligations.

- **Provide Transparency and Reporting**

  o Provide regular updates on integration milestones, challenges, and timelines, offering clear technical justifications for decisions.

  o Communicate effectively with multiple stakeholders, from clinicians to executive teams.

- **Mentor and Elevate the Team**

  o Set the standard for coding, testing, and interface design, sharing knowledge on HL7, DICOM, JavaScript, and Mirth Connect best practices.

  o Encourage collaborative approaches, maintaining a culture of continuous learning.

- **Enforce Compliance and Governance**

  o Embed data protection and confidentiality protocols in all integration efforts, proactively safeguarding patient information.

  o Adhere to and refine governance frameworks, ensuring no compromise to data integrity or clinical safety.

- **Maintain Comprehensive Documentation**

  o Produce clear, detailed records of HL7 mappings, DICOM workflows, channel logic, and troubleshooting procedures.

  o Maintain well-structured repositories to aid onboarding, upgrades, and knowledge sharing.

## What people see in you:

Across InHealth, you are recognised as a trusted authority on healthcare integration technologies and standards, particularly Mirth Connect, HL7, and DICOM. You:

- **Demonstrate Deep Technical Expertise**

    o Understand HL7 segments, DICOM workflows, and JavaScript-based transformations at an expert level, applying them effectively in Mirth Connect.

- **Focus on User Needs**

    o Prioritise front-line clinical requirements, ensuring your technical solutions enhance workflows and improve patient care.

- **Communicate with Clarity**

    o Convey complex mapping logic and clinical terminology in a way that resonates with both technical and non-technical audiences.

- **Encourage Team Growth**

    o Guide and motivate colleagues, sharing insights on integration design, data validation, and emerging standards like FHIR.

- **Adapt to Change**

    o Remain flexible as clinical demands evolve, consistently delivering robust, high-quality integrations under shifting conditions.

## You will:

Reflect InHealth's mission by delivering secure and innovative healthcare solutions. In doing so, you should:

- Devote yourself to improving patient care through reliable and efficient data sharing.

- Uphold high professional standards, balancing technical expertise with ethical integrity.

- Collaborate openly with staff at all levels, seeking collective solutions to complex challenges.

- Use balanced judgement, respecting the urgency of clinical requirements alongside data complexity.

- Embrace continuous improvement, refining integrations to support better care outcomes.

# You have experience of:

Your success in this role is supported by significant technical and leadership expertise in healthcare or a similarly regulated sector. You likely have:

- **Extensive Integration Engineering Background**

  o A proven history of configuring and optimising **Mirth Connect** channels, employing **JavaScript** for HL7, DICOM, and potentially FHIR transformations.

  o Familiarity with **XML/JSON** for message validation and data handling; experience with radiology systems (e.g. RIS/PACS) is a bonus.

- **Modern Engineering Practices**

  o Proficiency in scripting languages (e.g. JavaScript, Python), agile methodologies, CI/CD pipelines, and version control (Git).

  o Experience with RESTful APIs is desirable, facilitating broader interoperability where needed.

- **High-Performance & Reliable Data Flows**

  o Expertise in scaling solutions for large DICOM images or high-volume HL7 traffic, minimising disruption to clinical services.

- **Cross-Functional Collaboration**

  o A track record of working effectively with clinical, architectural, and operational teams, integrating diverse insights into your designs.

- **Mentorship & Coaching**

  o Demonstrable aptitude for guiding other engineers, offering best-practice code reviews and strategic advice on data mappings and interface structure.

- **Security & Governance Awareness**

  o A solid understanding of healthcare data protection regulations, patient confidentiality standards, and how these impact system integrations.

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This job description outlines the key accountabilities and responsibilities of the role. You may be asked to perform other tasks that align with your skills. All colleagues are expected to take part in performance reviews, professional development, and any requisite statutory or mandatory training.