

St Helens and Knowsley Teaching Hospitals NHS Trust Supercharges Health Data Exchange with Mirth Connect

THE CHALLENGE

An inflexible and costly integration engine

As a 900-inpatient bed and 4,000-staff hospital connected to more than 180 healthcare sites and between 7,000-10,000 client desktops, an efficient and cost-effective health information exchange is critical for St Helens and Knowsley Teaching Hospitals NHS (National Health Service) Trust.

However, IT staff had to work with an integration engine managed by a third-party supplier based on Java CAPS, a Java Composite Application Platform Suite from Oracle. One particular pain point was the high cost that comes with creating new interfaces. The integration footprint was also small with only eight systems downstream. As this engine was nearing end-of-life, the Trust searched for a more cost-effective integration engine to avoid a costly migration to Oracle's service-oriented architecture.

"The system was quite basic in terms of what it could support, and unfortunately, what we wanted to do either took too long or our existing patient administration systems (PAS) wasn't capable of supporting certain types of messaging standards," said Daniel Dryhurst, senior digital solutions delivery engineer at St Helens and Knowsley Teaching Hospitals NHS Trust.

THE SOLUTION

Going to California

While searching for a new integration engine, Dryhurst was discouraged by high costs that exceeded St Helen's budget. Recalling that HSS, the company that supported the radiology system, CRIS, and some other radiology sites use Mirth Connect, he inquired about this solution.

"Believe it or not, it was more affordable to get the staff Mirth Connect certified, do the entire migration from the old system, and send staff to California for training than it was to license another interface engine, so that's what we did," said Dryhurst. "Migration to Mirth Connect was completed in about three months."

IT staff burdened with older systems found relief, as Mirth Connect helped them resolve issues caused by legacy systems that were held together by various scripts and orchestration tasks that were all fragile.

CLIENT PROFILE

St Helens and Knowsley Teaching Hospitals NHS Trust

Location: Whiston, Merseyside, UK

Background: Provides a full range of acute in-patient, out-patient, day case, and emergency services to the local communities of St Helens, Knowsley, parts of Halton and Liverpool, extending to the whole of Cheshire, Merseyside, North Wales, and the Isle of Man with the Regional Plastic Surgery and Burns Unit. Responsible for more than 2,000 trainee specialty doctors based in hospitals and primary care physician practice placements throughout Merseyside and Cheshire.

NEXTGEN HEALTHCARE SOLUTION

- Mirth® Connect by NextGen Healthcare

HIGHLIGHTS



Completed migration in **3 months**



Improved access to clinical information in systems and removed paper transcription



Certified staff on Mirth Connect cost-effectively



Supported projects to improve care quality



Made patient discharge processes **more efficient**



Improved health data exchange during the pandemic

“We moved the full production applications to work directly with Mirth Connect itself and decommissioned old web front ends. This led to a massive improvement in dynamically updating applications/systems instead of relying on manual data entry,” said Dryhurst.

The switch to Mirth Connect made the discharge processes more efficient and elevated health data exchange to a more prominent role in ensuring care quality. “In all honesty, the hospital ops teams and services don’t know much about it; they just know it works,” said Dryhurst.

THE RESULTS

Flexibility to advance health data exchange to improve clinical outcomes

Shortly after the migration of the integration engine, the Trust procured a new PAS (Patient Administration System). This replaced the legacy PAS and, as a result, received a much richer set of HL7 messaging. They have expanded to support approximately 60 downstream systems, which helps clinicians access the health data they need to do their jobs. This encompasses live API alerting, clinical document transfer, dynamic patient event systems (e.g., AKI), and integration with the NHS open API services, all secured over VPN and SSL via the mirth appliance.

“Mirth Connect helped enhance our order communication systems (OCS) to support laboratory and radiology systems—we can map values back into those systems about antibiotics and clinical questions that were now coming out of the system,” said Dryhurst. “Mirth Connect enabled us to easily modify those and send them on.”

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New projects supported by Mirth Connect

The hospital initiated several projects as part of NHS England's Integrated Care Systems (ICS), which are partnerships of organizations that come together to plan and deliver health services and improve people's lives. Mirth Connect is at the forefront of helping their IT staff complete these projects to support maternity delivery discharges, maturity assessments, and document creation.

"The improved connectivity helps elevate efficiency and ensures data flows to where they're supposed to go," said Dryhurst. "Mirth Connect is going to be a critical part of the Trust's medium and long-term future as we pursue HIMMS accreditation to the highest level."

"We are stretching the full range of capabilities of what Mirth Connect can do," he added.

Ease of use and host of efficiencies

"Mirth Connect is so user-friendly you could sit with someone for a couple of hours and get them up and running," said Dryhurst. "In the old system, it would take specialist training on the Integrated Development Environment (IDE) and technology. Whereas, due to the simplicity of the scripting, it opened up the skillset to web developers, script administrators, and others."

The IT team has used all the Mirth Connect functions and has not met any significant challenge they could not overcome—particularly edge cases such as ASTM, query/response, medical procedure CSV files, and coded data transfer (ECDS, CDS, MSDS).

Matthew Brown, technical project manager at Mid Mersey Digital Alliance, noted how Mirth Connect has helped increase the rheumatology monitoring system's efficiency and organize how clinicians receive blood results.

"We used Mirth Connect to import results generated through crystal reporting. PDFs are created and emailed to clinicians before popping out of Mirth Connect as print jobs using Common Unix Printing System (CUPS). And we can send these to any printers in the hospital," said Brown.

Brown also developed interfaces for post-maternity discharge documents and diagnostic cost group (DCG) reports. Reports and electrocardiogram (ECG) information from clinicians are merged through a command line tool called from within the Mirth Connect Destination connector.

The data in these reports go through a quality check to ensure accuracy. Clinicians receive an alert if a submission fails, prompting them to review, amend, and reprocess the information.

Another use case involving Mirth Connect is integration with a government service called Gov Notify, an application programming interface (API) used for sending text messages to patients. Several templates have been developed for the clinician to easily send these messages to the API, allowing quick and standardized data exchange. As of date, more than 50,000 messages have been sent. This was used recently to help the Trust quickly and efficiently contact relevant patients for the national My Planned Care NHS project—a resource to help them prepare for hospital visits.

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Harmony in a chaotic time

“When the full brunt of COVID-19 struck, Mirth Connect was a godsend for us because it allowed us to harmonize volumes of input from different and difficult systems and keep patient records updated,” said Dryhurst.

During the pandemic, an infected patient could go to their general practitioner, go straight to the hospital, or seek care through a different system. Through Mirth Connect, the IT staff could leverage configurable APIs to increase the effectiveness of health information exchange and alerts between patients, healthcare clinicians, and organizations.

“We could take inputs from the infection control system’s extensible markup language (XML) outputs and add real-time alerts to those most vulnerable,” said Dryhurst. “The setup was done at the height of the pandemic and managed thousands upon thousands of alerts.”

Many patients at that time came to the hospital through the emergency department. Alerts informed clinicians and staff of the patients who were COVID-19 susceptible or carrying. They were then isolated to reduce the chances of infecting others in the waiting rooms.

Another case developed with Mirth Connect lets patients know how long they expect to wait for an appointment with a specialist. This helps those who had procedures or operations canceled during the pandemic get back on schedule.

“There are literally tons of cases like these that were solved with Mirth Connect,” said Dryhurst.

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Senior Digital Solutions Delivery Engineer
St Helens and Knowsley Teaching Hospitals NHS Trust

HOW CAN WE HELP?

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