Information integration is one of the key objectives in healthcare organisations today. By making disparate systems more accessible and productive across departments, IT teams can make real progress in improving patient outcomes. Importantly, they can also create breakthrough innovations that can be replicated to the benefit of other organisations.

Northern Lincolnshire and Goole NHS Foundation Trust achieved these benefits in full when it integrated systems across its three hospitals and five specialist laboratory services.

"The successful completion of the project has only been possible because of the incredible speed and performance we were able to introduce with InterSystems Caché." Robin Howes, Client Services Technical Manager, Northern Lincolnshire and Goole NHS Foundation Trust

Caché’s speed and performance help achieve wide-ranging business results

“The project first started when we wanted to speed up the availability of lab test results on wards,” explains Robin Howes, Client Services Technical Manager for Northern Lincolnshire and Goole NHS Foundation Trust. “We knew we had to bring our various systems together to make them more accessible to clinical staff.”

Howes and his team met this challenge by using InterSystems Caché®, the world’s most widely used database system for healthcare solutions, to develop an in-house clinical portal they named WebV. “We evaluated the integration capability we had internally prior to commencement but we found that none of our existing systems were fit for the purpose of this task,” says Howes. “The successful completion
of the project has only been possible because of the incredible speed and performance we were able to introduce with Caché."

The WebV system currently provides pathology and radiology requests and full order communications. These are coupled with clinical alerting and observations with a feed from the patient administration system (PAS), which includes future and past outpatient appointments. Other modules on the portal include venous thrombosis and embolism (VTE) assessments, Web-based ward management and a bed status system.

Clinicians and ward staff benefit because they use one login process to access data from disparate systems, producing timely clinical information. Overall, the new portal is also helping Northern Lincolnshire and Goole to achieve:

- Better patient outcomes through quicker and more timely diagnoses
- Reduced risk of infection spreading through availability of real-time test result alerts
- More efficient bed management through the addition of the integrated ward management module
- More effective collaboration with specialists in other NHS trusts through Web-based portal access

**Fresh data is the key to improving patient outcomes**

Quicker diagnoses are being achieved because all the data on the new portal system is current. For example, as soon as a result is released on an analyser in the haematology laboratory, the clinician can view it immediately. Grossly abnormal reports are highlighted to create alerts, enabling clinicians to act upon the information on a timely basis.

As the portal is Web-based it is simple to access on mobile devices at or near the bedside or it can be viewed remotely, even by an authorised user in another hospital or distant location. This has also led the Trust to make the decision to stop printing paper diagnostic (pathology in the first instance) reports and remove old ones from the notes. A move that will have a considerable impact on releasing resources to the Trust. This is especially useful when a second clinical opinion is considered helpful during diagnosis or care planning.

"The benefits of the portal using InterSystems Caché mean we are already seeing improvements in results that are measurable," says Howes. "For example, introducing an online VTE assessment audit as a module of WebV enabled us to hit the required standard of returning 90% of the assessments within a month."

**Integration with administration systems improves communication and efficiency**

Communication with ward staff has also been improved by using the rapid application development capability of Caché to develop a ward administration module linked to patient observations. Ward staff can now view a topographical display of the ward, see which beds are occupied and view special requirements of a patient in a specific bed.

This is linked to diagnostic reports and observations for easy access. If an at-risk patient generates an abnormal National Early Warning Score (NEWS) then the ‘bed’ will change colour. If the patient presents an infection risk, available from the real-time links to the microbiology/infection control systems, the system will also produce an alert.
The whole ward status can be displayed on a large screen, just like the whiteboards used on many wards. The overall current status of the hospital can also be reviewed at any time, so enabling more effective acute bed management.

“The difference between this and many other systems is that the information is fully integrated and is built around the needs of patients,” says Howes. The Trust has now gone live on all the surgical wards with the NEWS scoring at Grimsby (Diana, Princess of Wales Hospital) and Scunthorpe – making a significantly positive contribution to the overall management process.

**Innovation that can be replicated**

The Trust is currently developing a further module to help it go ‘paper light’ by ensuring that all clinical investigations are available securely and reliably on the system. This module will also provide a system that mandates all reports produced are viewed, so reducing printed waste and improving the accuracy of decision-making.

The Trust believes that the modules it is developing can be replicated by other NHS trusts, particularly the ward management system.

“The ward management module is a one-stop summary display that could be of great benefit in other environments,” Howes explains. “Aside from delivering functionality that benefits patients, we have also been able to provide a proof-of-concept that demonstrates how simplified integration using Caché can reduce costs.”

Northern Lincolnshire and Goole NHS Foundation Trust's WebV is an excellent example of how Caché facilitates the delivery of timely patient care. We are extremely pleased that the Trust has used its in-house development skills to produce this excellent portal. Caché is the core technology for all of InterSystems’ healthcare offerings, including the InterSystems HealthShare® strategic healthcare informatics platform and InterSystems Ensemble® rapid integration platform, enabling our customers to capture, share, understand and act upon all of their data in real time.

According to Jonathan Selby, Country Manager UK & Ireland at InterSystems, this sums up perfectly the value of the work that Robin Howes and his team have been able to achieve. “Northern Lincolnshire and Goole NHS Foundation Trust was established as a combined hospital and community Trust on 1st April 2001 and achieved Foundation Status on 1st May 2007. It was formed by the merger of North East Lincolnshire NHS Trust and Scunthorpe and Goole Hospitals NHS Trust and operates all NHS hospitals in Scunthorpe, Grimsby and Goole. Its name reflects the wider geographical area in which the Trust is a major provider of health care.

The Trust works in partnership with the Hull York Medical School and Sheffield Medical School providing comprehensive undergraduate teaching for Year 3, 4 and 5 medical students.

Running three hospitals, separated by considerable distances, poses a significant service delivery challenge, but also allows the Trust to serve a wider population. NLAG also provides a range of services delivered outside of hospital settings.

Our core business can be defined as:

- Delivering a full range of emergency secondary healthcare services, including intensive and high dependency care
- Maintaining a comprehensive range of planned services, in an environment of patient choice and contestability
- Ensuring a full range of secondary care diagnostic services are available locally.