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NHS Tayside Realizes Vision through Siemens' Aptio Automation

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Siemens and Tayside—developing the plan

“We were clear about our vision. To translate that vision into specific solutions for increasing throughput, freeing staff time, and deploying instrumentation, we looked for a partner who could help us deliver this.”

Tejinder Chima
Tayside's Clinical Service Manager

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Excellent patient care. Fiscal responsibility. Many organizations fear these goals conflict. Not NHS Tayside. The healthcare professionals at this UK health board see patient-centric care, clinical effectiveness, and cost utility as interwoven parts of a holistic vision. To make that vision a reality, Tayside is introducing strategic innovations, including an integrated Blood Sciences Laboratory (BSL) designed to “reduce waste, variation, and harm.”

“Waste can be anything from inappropriate testing to not using a person's knowledge and skills effectively or not getting results back fast enough to treat the patient as quickly as possible,” says Dr. Bill Bartlett, Joint Clinical Director of Diagnostics at Tayside, one of 14 National Health Service regions of Scotland. “Redesigning the system to reduce waste, variation, and to prevent harm to patients is an ethical imperative for us.”

Created through the merger of Tayside's Biochemical Medicine, Immunology and Hematology services, BSL is the first laboratory in northern Europe to deploy Aptio™ Automation from Siemens Healthcare Diagnostics. Aptio, by running multidisciplinary tests along a single track, provides the enabling technology for lab integration. In addition, Tayside's Managed Pathology Services™ (MPS) contract with Siemens encompasses services and strategic consulting for process engineering.

“Our close working relationship with Siemens allows us to provide a state-of-the-art service that aligns the lab function with Tayside's overall goals for organizational sustainability and improved patient outcomes,” says Dr. Bartlett.

“By crossing traditional disciplinary boundaries to streamline workflows and improve customer service, we're transforming lab services typically considered as an expensive cost center to services valued as an investment in the healthcare economy.”

A vision of change: Meet rising demand, optimize resource usage

Headquartered at Ninewells Hospital, Dundee, NHS Tayside serves a population of approximately 400,000 with a staff of more than 14,000, providing a comprehensive range of primary, community-based, and acute hospital services. There are a total of 91 health care facilities, including large acute hospitals, small local hospitals, and other facilities, alongside 69 general practice sites across an area of 3,800 square miles. The new Blood Sciences Laboratory automated facility is located in Dundee's Ninewells Hospital, which also is home to the highly respected University of Dundee Medical School. BSL serves a population of 400,000 and processes close to 6,000 tubes a day—55 percent generated at Tayside hospitals and 45 percent from tests ordered by general practitioners located in Tayside and northeast of neighboring NHS Fife. A second lab, at Perth Royal Infirmary (PRI), serves that 335-bed hospital.

Demand for Tayside lab services has been increasing almost 5 percent a year, driven largely by aging patient populations and protocol-driven rises in test volumes to meet national health outcome and preventive-care goals. Meanwhile, the existing lab equipment was aging; hospital officials foresaw that it would be unable to meet rising demand. With budgets always tight, Tayside set out

to do more with less. Specific goals were to optimize use of staff knowledge and skills; rapidly translate technological developments and medical evidence into practice; and provide the resilience and flexibility to meet ever-changing healthcare needs.

“We were clear about our vision,” says Tejinder Chima, Tayside's Clinical Service Manager. “To translate that vision into specific solutions for increasing throughput, freeing staff time, and deploying instrumentation, we looked for a partner who could help us deliver this.”

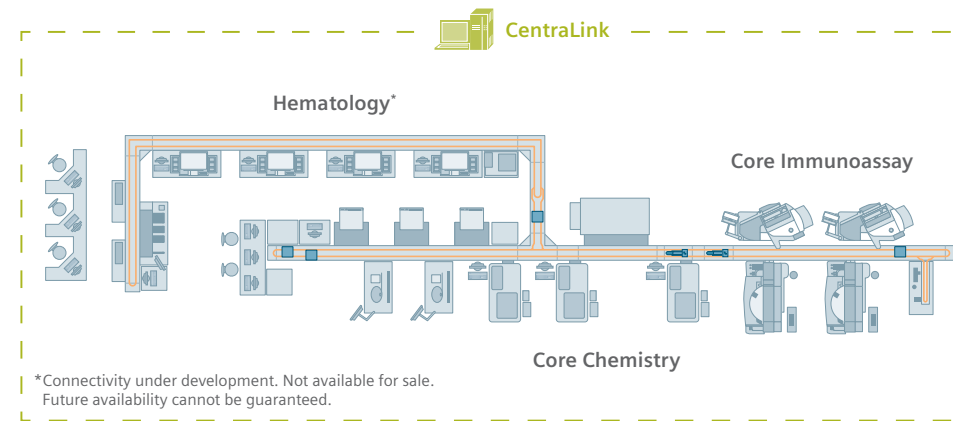
Holistic Siemens relationship transfers risk, enables innovation

Tayside evaluated a number of vendors in a tender process, choosing Siemens for its kindred vision and comprehensive solutions portfolio. “We presented a scenario that said, ‘This is what we want to do,’ and Siemens proposed a complete solution whose multi-disciplinary approach fit perfectly with our model,” Dr. Bartlett recalls. “The MPS contract transfers the risk of delivering a state-of-the-art lab service from Tayside to Siemens.”

As part of its lab restructuring, Tayside is reconfiguring workloads geographically, moving microbiology and community GP orders from PRI to Ninewells. At the heart of the Ninewells BSL, Aptio Automation will provide a full complement of pre- and post-analytical sample processing modules, along with comprehensive analytics, and effective IT middleware. Aptio Automation will encompass multidisciplines of chemistry, hematology, serology, and immunology. (See sidebar for component details.) CentralLink™ Data Management System provides a central software platform for automating workflows and consolidating lab data and instruments.

At PRI, the instrumentation meeting that hospital's demand includes the Dimension® EXL™ 200 Integrated Chemistry System;

The outcomes achieved by the Siemens' customer described herein were achieved in the customer's unique setting. Since there is no “typical” laboratory and many variables exist, there can be no guarantee that others will achieve the same results.



Ninewells Solution:

- CentralLink™ Data Management System
- Aptio™ Automation with:
 - ADVIA Centaur® XP Immunoassay System
 - ADVIA® 2120i Hematology System with Autoslide*
 - ADVIA® 2400 Chemistry System
 - Dimension Vista® 1500 Intelligent Lab System
- IMMULITE® 2000 XPI Immunoassay System in specialist laboratory
- ADVIA 2120i Hematology System in clinic

Perth Royal Infirmary Instrumentation:

- Dimension® EXL™ 200 Integrated Chemistry System
- Dimension® EXL™ with LM Integrated Chemistry System
- ADVIA® 2120i Hematology System with Hematek

Dimension® EXL™ with LM Integrated Chemistry System; and ADVIA® 2120i Hematology System with Autoslide.

The MPS contract also delivers FAST (Freedom, Availability, Saving Time) order and delivery management for reagents and consumables. FAST passes to Siemens, in conjunction with a specialist logistics provider, the responsibility for stock-checking, ordering, receipting, backorder management, unpacking, stock rotation, and removal of unwanted packaging. “The service frees Tayside staff time while reducing inventories and ensuring product is available where and when needed,” Dr. Bartlett says.

Aptio Automation revolutionizes adaptability

The new lab environment provides Tayside with numerous benefits. The ability to run cross-disciplinary tests along the Aptio track enables faster, more-comprehensive results reporting with less human intervention. The CentralLink system can be configured with rules-based programming to send alerts and run additional tests triggered by pre-defined results parameters. The track's multi-instrument flexibility gives Tayside the capacity to meet its large variety of testing needs, as well as to handle changing demands and add new tests the health system chooses to include in its roster of capabilities. “Aptio Automation represents both an evolution of our automation design philosophy and a revolution in adaptability,” Dr. Bartlett says.

Tayside patients likely will never know how the lab has changed; they'll just know to expect fast, accurate results that aid effective treatment. Tayside clinicians will experience the speed and accuracy, plus more direct collaboration with lab staff regarding individual patient care, as well as improving care processes. Lab staff will experience directly how the BSL transformation supports Tayside's goals to “reduce waste, variation, and harm in the delivery of laboratory service.”

“The fact that we'll be able to have hematology,* chemistry, serology—a range of tests—on a single track provides fantastic opportunities to standardize and streamline testing, and to re-deploy our staff for more value-added service,” Dr. Bartlett says.

To support this transformation, Tayside is building staff cross-disciplinary skills and up-leveling responsibilities so that biomedical and clinical scientists registered with the Health Professions Council (HPC) are less involved in day-to-day throughput and more involved with quality issues and clinical-pathways development.

“Automation isn't about disinvestment, it's about re-deployment,” Dr. Bartlett says. “We need to redistribute the knowledge and skills of our people to get out of the lab and focus on healthcare delivery. We also need to give laboratory professionals the time to digest recent medical developments and to consider putting them into practice to the benefit of patient care.”

The reason we're moving with the Siemens approach and Aptio Automation is that it can handle increasing workloads while enabling us to use our staff better to achieve these goals.”

Preparing for changing roles in lab staffing

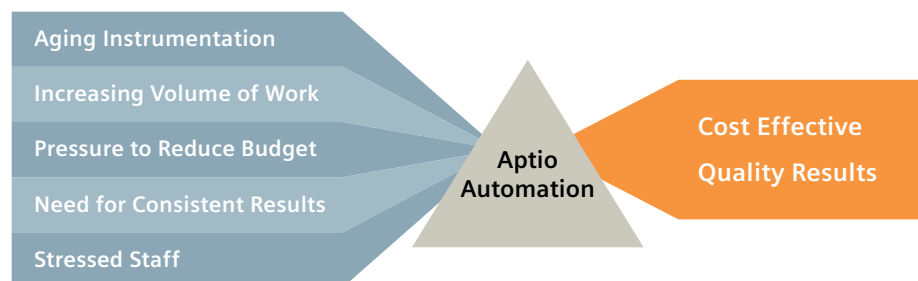
Change, even if beneficial, brings disruption. Tayside is managing the process strategically to minimize staff anxiety, foster cooperation, and build future-ready skills.

“In creating the Blood Sciences department, we are combining three historically separate disciplines, each with quite different cultures and work practices relating to non-bench activities, workflow, tasking, and skill mix,” explains Anne Serman, BSL Clinical Laboratory Manager. “Now with a single track implementation, the lab staff are reinventing how we work together, and creating new processes to better optimize the workflow.”

Siemens supports change management, Ms. Serman says, with continuing-education services delivered wherever and whenever needed. “They have been enormously supportive in reaching everyone from the grand-idea people to the technically oriented ones who want to know every detail of how an analyzer or system works.”

Over the coming months, Tayside will gather metrics on turnaround time and other measures of care-delivery value. Hospital systems throughout the UK and beyond are watching. Success at Tayside represents predictive patient results delivery.

“In the face of rising demand and limited resources, we're working smarter,” Dr. Bartlett says. “With these changes, we can focus on an improvement agenda in support of our commitment to ‘reduce waste, variation, and harm’—all in the service of excellent patient care.”



Tayside: Realizing the vision



Implementing Aptio Automation

*Connectivity under development. Not available for sale. Future availability cannot be guaranteed.