

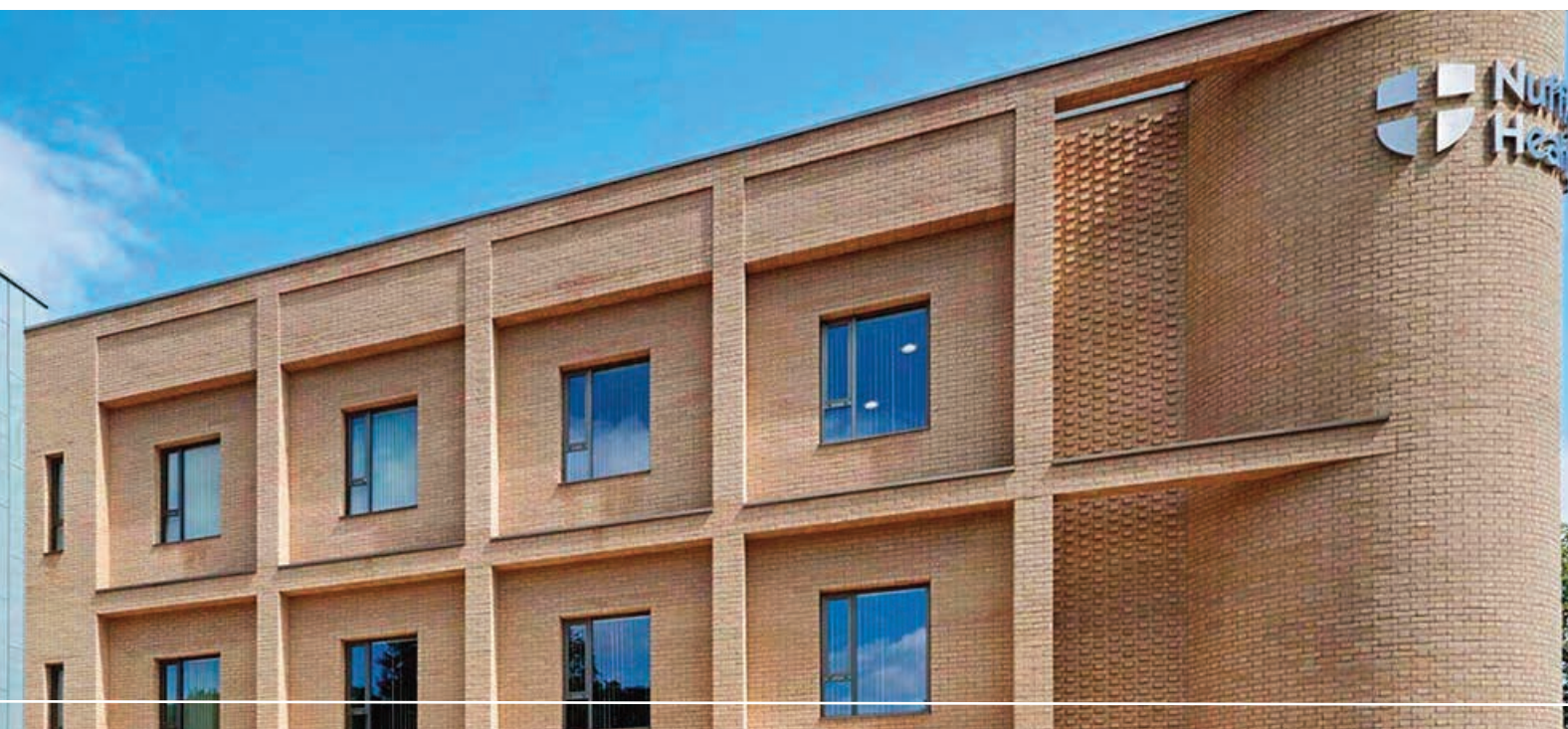
# Continuous Remote Monitoring in Large Healthcare Estates

Nuffield Health is the largest not-for-profit healthcare provider in the United Kingdom. Established in 1957 the charity operates 31 Nuffield Health Hospitals. Its objectives are to advance, promote and maintain health and healthcare of all descriptions and to prevent, relieve and cure sickness and ill health of any kind, all for the public benefit.

In order to fully comply with regulatory compliance and to provide the ultimate levels in continuity of service, it is required by the Nuffield Hospitals Pathology Laboratories and Pharmacy departments to fully monitor their cold chain storage and processes.

Patient's samples, blood, human tissue, drugs, vaccines, and many other costly and highly sensitive inventory are stored in temperature-controlled environments, such as fridges and cold-rooms, throughout the 31 hospital locations, where the environmental condition of this inventory is paramount to the operation of the departments.

Any deviation from this environment (temperature, gas, power) must be reported and reacted to 24/7, 365 days per year. Early warning of any potential storage condition failure is key to safeguarding all inventory and compliance with MHRA, UKAS and HTA requirements.



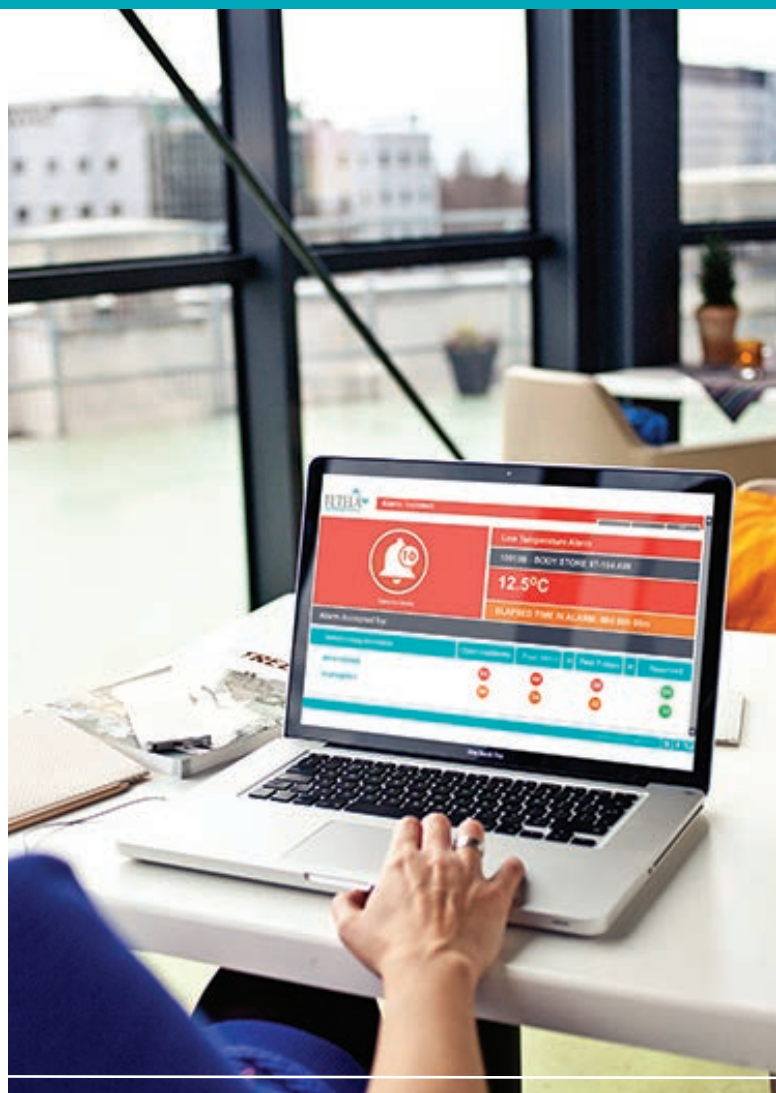
## Meeting the Tightest Requirements

Tutela were approached as a potential supplier for a nationwide monitoring system to provide standardisation across the hospital portfolio in both Pharmacy and the Pathology Laboratories.

Nuffield were operating their existing system where a large number of independent probes across the estate relied on manually recording of results; a poor use of skilled resource and open to the potential of human error. It was important for Nuffield to have a reliable 24 hour temperature monitoring system, backed by an ongoing service and maintenance schedule to reduce individual site costs, and to provide uniformity in their approach to reporting and managing cold chain failures.

Tutela were perfectly placed for this project with a wealth of experience and track record in monitoring hardware, data gathering and analysis, and remote alarming and was chosen as the sole provider of these services to Nuffield Hospitals.

Tutela Genesis 3 hardware was introduced into all 31 sites across the United Kingdom and now monitor, safeguard and alarm on over 1200 probes across the entire Nuffield Hospitals estate. The system monitors all Pharmacy and Pathology departments and all medical Laboratory disciplines including Category 3 containment.



## The 10 Key Factors Driving the Tutela Decision

Although there were a mixture of systems in place, Nuffield found a more comprehensive, hosted and supported solution in the Tutela temperature monitoring system, which delivered greater functionality, greater integration at a cost that met their budget parameters.

### Key factors in the decision process included:

- 1 24-hour 365 day a year system with alarm call centre (manned telephone, text and email).
- 2 Remote support and diagnostics capability.
- 3 User friendly web interface with intuitive remote system control.
- 4 Multi-site data collection to a single user interface (global capability).
- 5 Tutela Alarm Dashboard functionality.
- 6 Ultimate flexibility in the setup of the alarm notification. Targeted and specific delivery.
- 7 Built in 7-hour Battery back up on the WARP controller (wireless alarm receiver panel).
- 8 7-day onboard data back up on each individual transmitter with automatic backfilling of data.
- 9 Full hardware functionality alarming (AC power failure, network outage, transmission fault, system component failure, battery warning etc.).
- 10 WARP data storage capacity (up to 60 years).



## Secure web-based data gathering, monitoring & alarming

The powerful data gathering and manipulation tools developed by Tutela drive intuitive web-based interfaces that allow Nuffield to gain access to, review and download their monitoring data for each unit, room, department and across the whole estate, in real time.

Web based, the Tutela system meets the highest level of record security to its customers being fully compliant with FDA CFR 21 part 11 – a key requirement for this regulated industry, and allows comprehensive access to data at anytime, anywhere through the use of Smartphone, Tablet or Laptop or any device able to support a web browser.

## Estate-wide project delivery & roll out

The Nuffield project covered a property estate of 31 Hospital locations across the United Kingdom. The installation, ISO17025 calibration, commissioning and QQ validation was carried out by the Tutela projects team and training to 300 key staff was conducted for each site by a Tutela specialist. The Tutela site schedule detailed the complete system specification plan containing all the information needed by the project team and are were supported by annotated floor plans for each site and photographs of the site locations where appropriate.

The Tutela project delivery team follows an evolved and tested quality process to deliver all site installation works efficiently and accurately. The process is controlled under our ISO9001:2008 QMS and this quality process is applied to all installation and implementation projects undertaken by Tutela.



## The Benefits of IP and Ethernet based Monitoring Solutions

The Tutela hardware system is actually wireless and was delivered to sites pre-configured to minimise disruption to the Nuffield departments during the installation phase. Being IP based, installation required minimal involvement of IT resources and the dedicated Tutela IT technical specialists managed the process in partnership with Nuffield IT projects teams.

The monitoring hardware is connected to the Tutela servers via dedicated, secure IPSEC to IPSEC VPN tunnels where temperature data and alarm data traffic is transferred. The two-way communications mean that Tutela Support can remotely administer requested alterations and run diagnostics where necessary.

It also means that Nuffield have complete control of their data and highly sophisticated functionality (such as: isolating alarms, changing alarm call details, SMS lists, altering setpoint parameters, applying user comments to the alarm audit trails etc.)

Because all data collected is fed to a single source server within the Tutela data centre, the display of data back to Nuffield Health can be tailored and presented in any format on interfaces. This matches both the global management needs originally specified, as well as individual operational units – all accessed through one simply suite of web-based interfaces.



## Empowering Preventative Maintenance

Nuffield Health's monitoring service contract includes remote preventative maintenance, data storage 30 years, telephone and email support, web user interface hosting, website maintenance, availability to any website upgrades, alarm dashboards, automatic audit trails, annual recalibration, call centre for unlimited calls, text messages and emails.

Calibration to annual single point ISO17025 is delivered on site by Tutela who are accredited to the standard.

The wealth of accurate data harvested over time from the Nuffield estate allows precision benchmarking at a variety of levels of granularity – fridge supplier, department, location. Only this level of granularity can empower a truly preventative maintenance programme where potential failures are predicted and acted upon, before they incur cost or elicit non-compliance.



## Delivering Compliance & Financial Security

The Tutela monitoring system delivers 100% compliance with the strict regulatory requirements regarding continuous monitoring in the laboratory. Both Laboratory and QA teams have adapted easily to the web based interface, and are delighted that they can also remotely log in and view alarms and corrective actions with full traceability at any time. This has enabled prompter reporting of non-conformances from the laboratory team, improving efficiency and compliance.

In addition, the reliability and stability of the monitoring system from Tutela has generated greater confidence within the laboratory team, that optimum environmental conditions are maintained for their inventory.

### Summary

- 24 hour automated monitoring removes potential for error and is better use of skilled resources.
- Remote alarming by real people is crucial for maximum inventory protection.
- Web-based operation over secure IP allows remote activation and assessment.
- Secure web access to the user interface allows isolated units to be addressed.
- Specialist providers offer more focussed solutions.
- The importance of a calibrated system to meet MHRA and UKAS compliance.

**“We had a large number of manual probes across the estate which relied on manually recording of results. The ability to have 24 hour monitoring with no manual recording was a huge driver for us.”**

**Steve Rickard**  
Operations Lead - Pathology