

Advancing scale, quality, and throughput to a global level with end-to-end automation

How Automata worked with a virology testing laboratory to scale throughput and reduce manual interaction with a fully automated ELISA workflow

80–95.25%

REDUCTION IN
MANUAL INTERACTION

UP TO
530

MICROPLATES
PER DAY THROUGHPUT

REDUCED

RISK OF
MANUAL ERRORS

OVERVIEW

A virology contract research organisation (CRO) worked with Automata to take its lab automation to the next level by fully automating their ELISA process. Automata's partnership will result in a reduction in manual interactions, a substantial increase in throughput, and associated cost savings.

THE BRIEF

The CRO needed to scale up their service due to increasing demand from the biopharmaceutical community. To boost throughput without needing substantial increases in staffing levels, which could have a detrimental impact on quality, the CRO approached Automata to discuss fully automating their ELISA process.

Automata were asked to design a single automated ELISA process, optimised for their most frequent assays, that would:

- Improve utilisation of the CRO team
- Bring scale on a global level
- Increase quality and reproducibility
- Increase throughput
- Fit into the lab space available
- Maintain uptime and allow global servicing

THE CHALLENGE

Data integrity and contamination risk were key factors for this solution.

Part of the CRO's work involves virology testing for clinical trials. The critical importance of this work meant that data integrity was a key factor for their ELISA process. It was vital that the process was robust, avoided contamination, and was orchestrated by software with built-in redundancy.

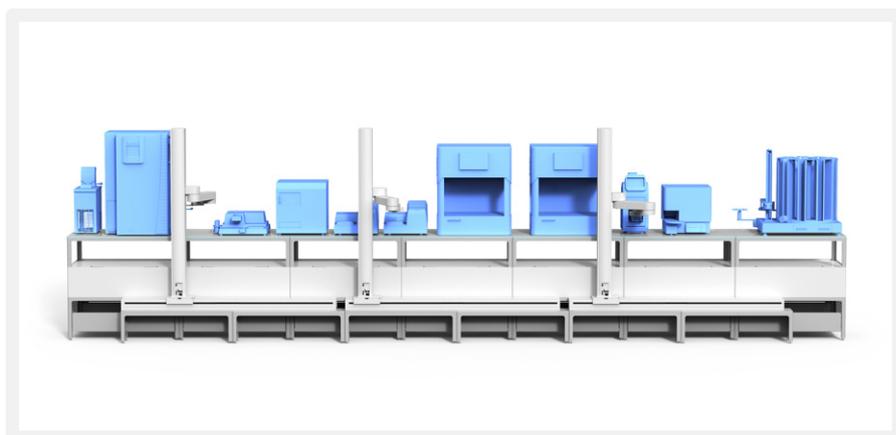
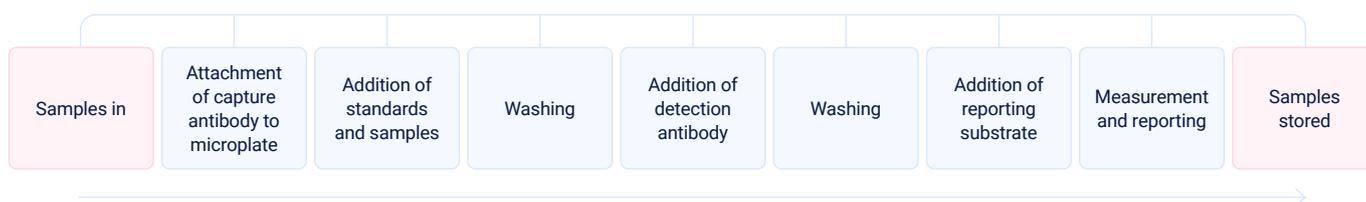
Due to the cutting-edge nature of the work, integration of the right equipment was essential to achieve the required throughput while minimising the risk of contamination. Automata worked closely with the CRO to make sure the solution met these goals.

AUTOMATA'S SOLUTION

Automata worked with the CRO to design a fully automated ELISA system, which maximised throughput, provided robust data management, and significantly reduced manual interaction.

Automata is a lab automation platform that combines specialised lab benches with open, integrated orchestration software. This turns labour-intensive workflows into streamlined automated systems, providing true 'walkaway' time for staff. Automata's solutions are achieved through combined robotic and digital integration of multiple devices, many of which a lab may already have.

Automata worked with the CRO to review their specific protocols and build their manual procedures into an automated workflow. The new workflow aimed to improve efficiency and enable automation.



The Automata LINQ system used to fully automate the ELISA workflow

AUTOMATA'S SOLUTION (CONTINUED)

Built on the Automata LINQ robotic lab bench, the new ELISA system could be expanded or adapted over time, with the addition of new lab equipment, or by adding further LINQ modules.

Automata's cloud-based laboratory orchestrator was used to provide a software platform that seamlessly connected each activity in the ELISA workflow, providing full traceability for each sample, and adding test data to the lab's laboratory information management system (LIMS). Barcode scanners on each LINQ module and within the instruments themselves provided tracking for each sample, right down to its position within each microplate.

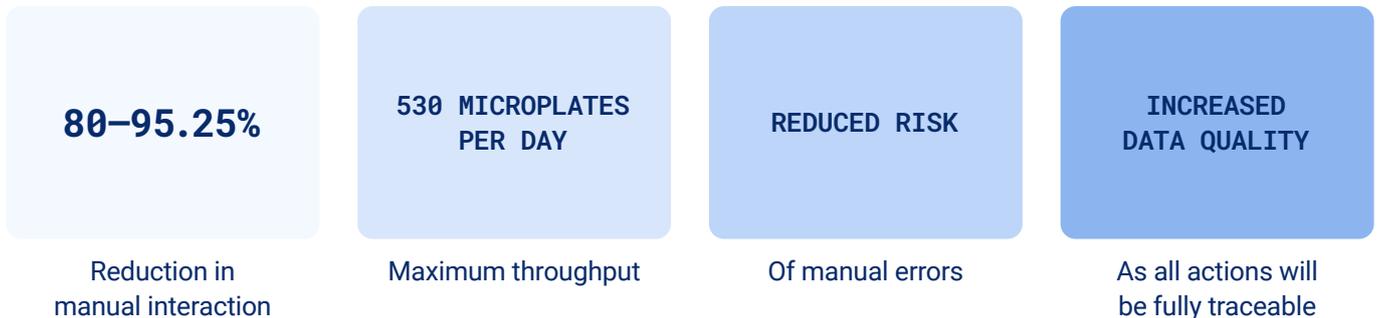
With pieces of equipment able to operate concurrently, the CRO was able to parallelise activity, maximising capacity.

The following equipment was integrated into the system:

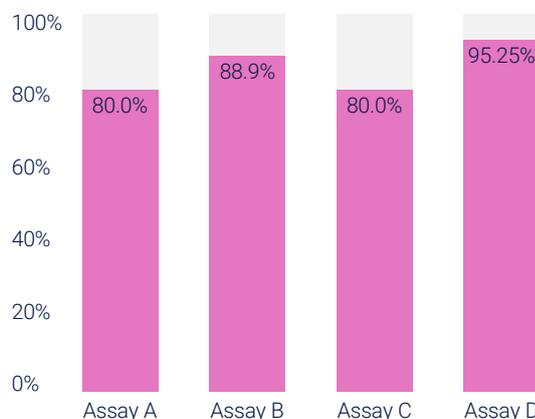
- Microplate hotel
- Microplate washers
- Barcode scanners
- Microplate incubators
- Microplate readers
- Automata LINQ modules
- Liquid handlers
- Microplate sealers and peelers
- Automata Scara Robots

ESTIMATED IMPACT

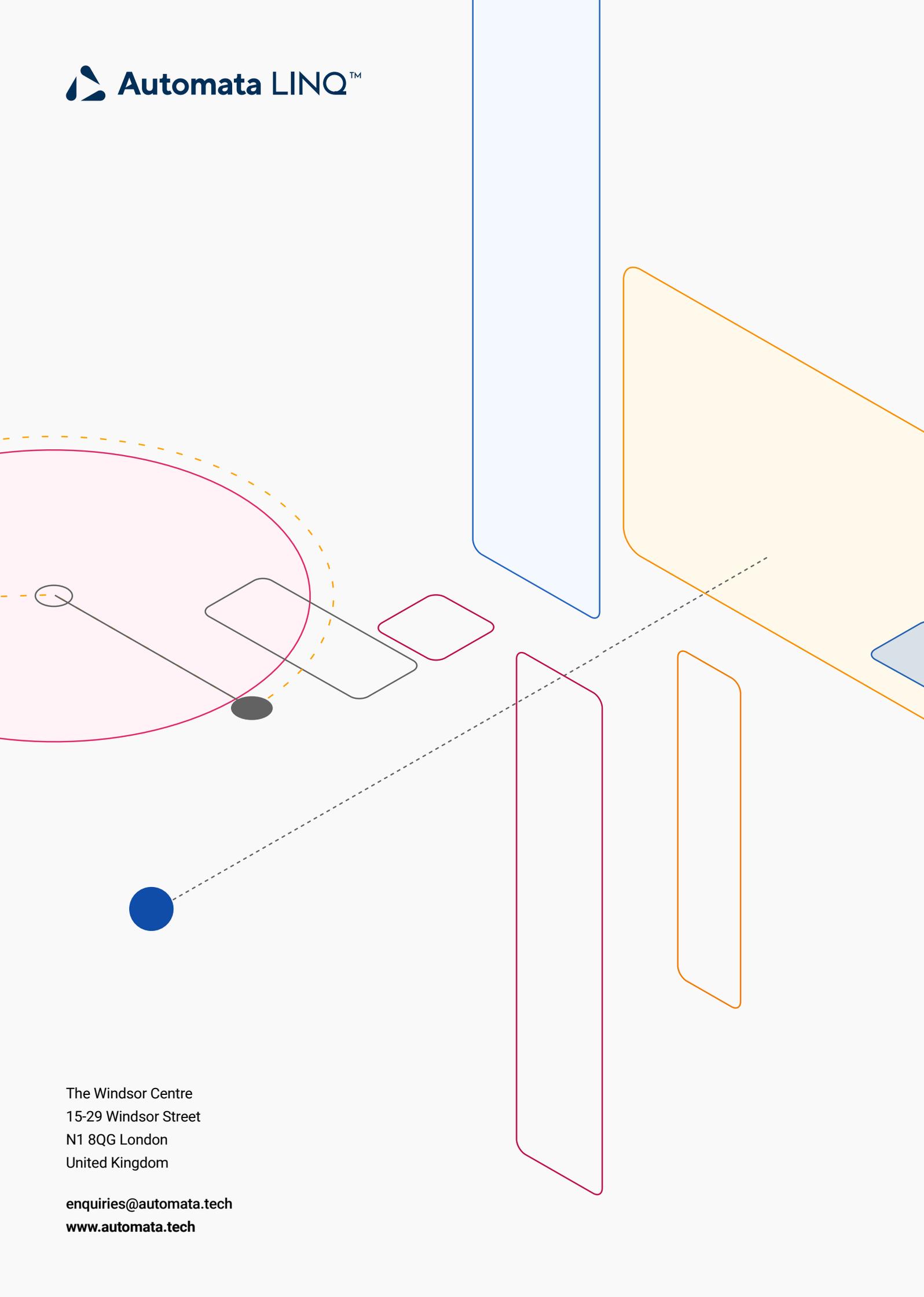
Based on the final solution that will be installed¹, the new, fully automated ELISA process is expected to achieve:



Percentage reduction in manual interactions



1. The CRO first contacted Automata in Q1, 2022, and a solution was provided at the end of Q2. The CRO gave Automata the go-ahead to produce the system in Q3, and the system is due to be installed on-site in April 2023.



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