

A CASE STUDY

Collaborative innovation to support diagnostics growth



COMPUTYPE®

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CUSTOMER BACKGROUND

One of Computype's largest customers is a highly regulated medical device company that specializes in automated platform innovation for diagnosing various forms of cancer. Early on, tissue processing had been accomplished manually, but efficiency was lacking, motivating the shift towards automation.

New and improved analytical equipment was soon developed by internal experts, and as a result, plans to incorporate barcoding and identification services were deemed necessary. This is when Computype was contacted to assist in developing identification and tracking services that would support a more automated means of processing. A development like this would support strategic growth and provide faster, more accurate diagnoses.

THE CHALLENGE

Initially, the process utilized for diagnosing various forms of cancer was to first collect cell samples, then lay the collected cells on a microscope slide, and lastly flood the sample with different types of stain or reagents.

The reaction of these proprietary stains resulted in different cancer cells to change colors, providing researchers the ability to diagnose the form of cancer in the respective cells. Although this process was functional and accurate, an interest emerged to integrate to a more efficient and automated way of handling and processing all while ensuring the high degree of accuracy was sustained.

Through much innovation and development, a platform was designed that provided an automated way of testing cancer cells through utilization of a carousel-like machine. Today, histology slides are inserted into an instrument, proper test protocol is performed as the specimens rotate through the carousel, and the sample is then ready for the pathologist to screen under a microscope.

Though this solution provides the automatic element of sample processing while also enabling pathologists to better perform their job functions, determining a way to identify samples while keeping them protected from stains and reagents still posed a challenge.

It was quickly determined that using a standardized barcode wasn't a feasible option, as a label was needed that would not only assist in identifying the sample, but also prevent the harsh reagents from flowing over the entire slide, all while remaining unaffected throughout processing.

Understanding the value of each unique sample and the process involved to ensure an accurate and efficient diagnosis, Computype engineers worked for an extensive period of time developing and testing over ninety different versions of an innovated barcode label.



OUR SOLUTION

Eventually, what is now referred to as the FLAP (Flexible-Laminate-After-Printing) label was developed, which proved a reliable solution to accommodate these unique needs and integrate into the now automated process.

What makes the FLAP label so unique is the combination of adhesive and laminate that go on to prove functionality in the end use application. The FLAP is peeled from the laminate sheet as an adhesive label with a barcode on the bottom half, and a clear flap with a laminate layer on the top half.

Once the label is adhered to the slide, the laminate is peeled away, and the clear material is then pulled directly over the barcode and adhered to prevent damage, creating a hydrophobic barrier. This laminate prevents the barcode from ever coming into direct contact with reagents leaving both the barcode and its subsequent patient identification information unaffected by stains and reagents.

Additionally, Computype developed a solution enabling these labels to be printed on-demand at clinic sites so lab users are able to print-and-apply labels to slides as individual processes and demands dictate.

Soon after integration of the FLAP label, discussions began around developing an improved barcode label for identifying stock of bulk reagents. The labels utilized prior were causing issues as they weren't remaining adhered to the irregular surface of the specified containers. Now a collaborative partner, Computype engineered a custom label solution using a thick adhesive to ensure the label never fall off or become detached.

These labels are also laminated with clear polyester to prevent chemical attack and abrasion. Pre-printed by Computype, these sequentially numbered barcodes are now combined with reagent dispensers. One-thousand different part numbers are required to manage end user volumes and uniquely identify the different reagents; and with Computype's sequence management services, part numbers and sequence number ranges are tracked, guaranteeing no duplicates.

The next joint development project was centered on developing RFID labels for tracking the reagents currently in use in the cancer-testing process. Reagents are stored in plastic dispenser kits with five to seven moving parts and are customized to fit directly into the cancer screening instruments. Problems were advancing involving the integration of software, printers, and RFID tags together to encode the information correctly and then print the respective text and barcode on top of the tag simultaneously.

An implementable solution wasn't readily available as there was an encoding problem that the current vendor was unable to identify. Computype's software experts stepped in to identify and solve the encoding problem, and ultimately developed an RFID tag that would work for tracking reagents.



As a result, reagent stock is now kept on shelves in containers that Computype-engineered tags uniquely identify through utilization of RFID. This technology works to enable encoding of information onto the chip, printing of the barcode and other necessary information onto the label, and application of the hybrid RFID barcode to the reagent containers.

Utilization of Computype's RFID integration expertise enabled a seamless migration from data button technology to the more cost effective solution of the RFID hybrid label. In addition to that, migrating to an RFID reader with the ability for direct integration into the instrument to read the label allows users to properly track all the different reagents being used at all times.

Shortly thereafter, the relied-upon series of label printers was discontinued by the manufacturer, so a quick and new means of printing labels on-demand was required. This was urgent as stopping production of RFID labels would require unplanned expenses and resources.

With Computype's software expertise, our engineers were able to rewrite existing software to integrate with new printers, allowing production to continue instead of halting due to obsolete printer technology.

As the now trusted advisor, the question was raised regarding if a label similar to the FLAP label, but without the actual flap itself could be developed. A new instrument was created to use as a first step for testing cell samples. It was discovered that using FLAP labels for the initial testing was unnecessary given the innovated process of this new platform.

With this new instrument, samples are first exposed to less harmful reagents to see if signs of cancer can be detected before undergoing the intense treatment required by the automated instrument.

Developing a label capable of withstanding exposure to reagents and processes without the laminate protection was no easy feat, and Computype spent about six months developing and testing various label constructions, coatings, and ribbon combinations.

After testing over one-hundred different constructions, a solution was discovered; a chemical and reagent-resistant label that has now made for a more time and cost efficient process in relation to the cancer testing processes.

Over the years, finding blank label stock of superior quality became a priority. Computype stepped in and started providing these as we had a product of better print quality, visual appeal, and adhesive capabilities than competitors.

These blank labels are primarily used as package labeling for shipping purposes and occasionally used directly on products for identification purposes.

HOW COMPUTYPE HELPED

As this company grew, Computype grew alongside them and partnered for collaborative innovation. Recently, Computype deemed it beneficial to deploy a full time employee to this customer's headquarters as an On-site Solutions Manager.



This position was created based on the strategy to have a single automatic identification expert readily available on-site and at all times, ensuring quick service and a knowledgeable resource. If errors occur, the Solutions Manager is readily available for troubleshooting or assistance.

CompuType makes it a priority to establish relationships and our services to this partner extend beyond many years, products, and overcome challenges exemplifying our willingness to innovate to best serve our global customers.

Throughout many years of collaborative partnership innovation, this continues to be a relationship CompuType deeply values. Beginning with our commitment to creating the FLAP label that would seamlessly integrate into the automated process, CompuType grew to be a trusted resource that would provide many value-added products and services to assist in providing fast and accurate cancer diagnosis to patients.

Our expertise regarding RFID was largely beneficial and enabled proper tracking of reagents. Additionally, software expertise has resolved difficult encoding issues, allowing for seamless production even through a technology transition.

Through our expertise, services, and commitment to our partners, we provide great value to our customers and their business processes. We have been able to provide reliable and sustainable solutions to ensure accuracy and ease of use for the scientists in their lab as well as end users. The ultimate goal of improved patient care is something we're proud to be a part of.

