Smart Lab Automation with Laboperator LES

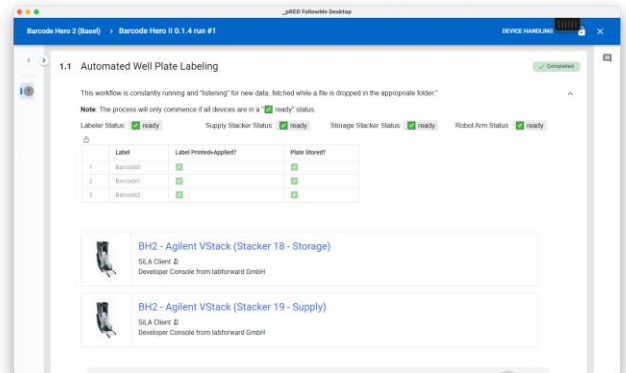## Enhancing device connectivity using SiLA 2

Background & Challenge

Labeling well plates in laboratories is a crucial but time-consuming and error-prone task. Researchers often rely on manual methods such as handwriting or applying individual labels, which can lead to inconsistencies, misidentification, and inefficiencies.

Out-of-the-box labeling solutions are widely available; however, they often fail to meet the specific requirements of laboratory environments. Conversely, developing a fully customized solution from scratch incurs high costs and extended implementation timelines.

+ **Increased Efficiency:** Reduces manual effort, enabling faster, high-throughput processing.
+ **Improved Accuracy:** Minimizes human errors for consistent and reliable labeling.
+ **Seamless Integration:** SiLA 2 standard ensures smooth communication between devices from different manufacturers.
+ **Flexibility & Scalability:** Easy to adapt and expand as laboratory needs grow.
+ **Cost and Time Savings:** Standardized integration reduces implementation costs and accelerates deployment.

Integrated hardware: Aurovis Precise Flex 400, Agilent Microplate Barcode Labeler, Agilent VStack

Solution

To automate labeling while balancing flexibility, cost, and efficiency, Roche partnered with Labforward to implement Laboperator, a Lab Execution System (LES). Unlike rigid out-of-the-box solutions, Laboperator provides a vendor-agnostic framework, enabling labs to orchestrate standard robotic and lab hardware to meet specific needs—without the high costs and delays of custom-built solutions. Using the Laboperator connector, a label printer, three stackers, and a robotic arm were integrated via SiLA 2, with Laboperator Workflows orchestrating the process through an intuitive, browser-based interface.

Seamless connectivity with existing ELN and LIMS systems further enhances interoperability in the labs. Leveraging the SiLA 2 standard, Laboperator's native interface enables true plug-and-play device connectivity, significantly reducing implementation costs and timelines compared to proprietary, non-standardized solutions.

Labforward is an ambitious company from Germany that is setting out to transform the digital laboratory world. With a team of over 60 experts, it provides software, connectivity hardware and services to customers globally.

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