

Achieving robust instrument integration at scale through reusable patterns

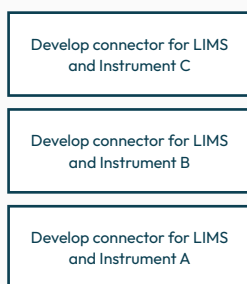
In the rapidly evolving landscape of laboratory automation, the efficient integration and management of instrument data into LIMS and ELN solutions has become critical for enhancing scientific workflows, ensuring optimal research outcomes, data integrity and traceability.

Splashlake's standards-driven approach focuses on identifying reusable patterns that facilitate optimal integration of

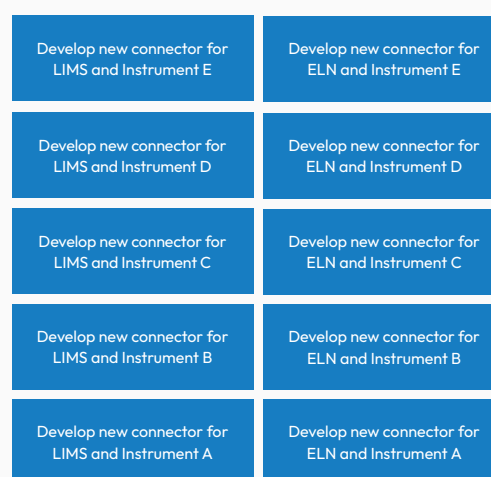
instrument data into LIMS and ELN, delivering scalability and interoperability. By analyzing successful implementations, Splashlake has distilled key patterns that can be applied across diverse instruments, providing a scalable and cost-effective framework for laboratory automation.

Traditional Integration

Initial integration tasks



High services time/cost based on customized code



Implementation

- Services cost and time added to implementation
- Need to research data formats, obtain SDKs and find documentation
- Risk of errors due to lack of working examples
- Parsing of CSV and text files is unreliable, often providing incomplete data sets
- Manual reformatting in external systems diminishes data integrity

Ongoing Support

- Support can be challenging due to diversity of connectors

Upgrade/ Expand System

- Upgrades require full rewrite of connectors
- Connections in expanded systems may be written differently for same instrument/system
- Costs increase significantly as new instruments and systems are added over time
- System becomes more reliant on custom code, even harder to upgrade/support

Transitioning from ad-hoc implementations to scalable approaches is essential. Splashlake adopts strategies for more scalable architectures, opting to manage integration capabilities as a product that delivers almost all customer requirements without customization or configuration. Rather than depending on a mapping engine and scripting that enables customers to configure any connections they want, Splashlake provides a rich solution that reduces the need to map, enabling customers to realize faster time to value, reduced Total Cost of Ownership (TCO) and vastly improved scalability. Managing digital capabilities as a product is crucial for sustained success in the ever-changing landscape

of laboratory technologies, allowing customers to achieve transformative advances through exceptional data and metadata governance.

By implementing robust frameworks and practices, labs can improve productivity and convenience through bi-directional integration, allowing batch-oriented integrations, e.g. chromatography sequences, run definitions for robotic platforms, or recipe transfer for formulations. This scalable approach drives accuracy, accessibility, and utility for downstream analysis and decision-making processes, in line with FAIR data principles.

Splashlake Integration

No additional integration tasks

Install Splashlake solution with ready-to-use connectors for LIMS, ELN, instruments and equipment

Reduced services time and cost through product-focused approach

Upgrade Splashlake solution with ready-to-use connectors

Implementation

- Cost of connectors included in subscription
- Productized integration provides predictable solution

Ongoing Support

- Eased support through thorough product understanding
- Existing connectors continually updated
- New connectors continually added to portfolio

Upgrade/Expand System

- Upgrades apply required connectors
- Connections in expanded systems are identical for same instrument/system
- No painful additional time and cost investments as new instruments and systems are added over time
- System is product-focused, far easier to upgrade/support

“We’re dedicated to delivering an excellent return on investment to our customers, and enabling them to fully prepare their organizations to scale from the outset. By identifying reusable patterns across their instrument data assets, we can deliver a robust and scalable solution that sets a new standard in lab digitization and data accessibility. This data integration capability is fully productized, making it future-proofed and easy to support and upgrade as our customers’ needs continue to grow.”

Burkhard Schaefer,
Managing Director of Splashlake

Communication Standards such as SiLA (Standardization in Lab Automation) and MQTT ensure seamless communication between instruments and systems. In addition, open data formats such as AnIML (Analytical Information Markup Language) allow creation of interoperable data packages that document lab processes. Adopting these and other standards can reduce the number of interfaces to maintain, thus greatly simplifying integration efforts and reducing total cost of ownership.

Applying reusable patterns to achieve lab digitization enables more rapid operation, since data collection, processing, authorization and analysis are automated and not reliant upon manual intervention at every stage. This is of particular benefit in high-throughput environments where

rapid data processing is required in order to maintain a large workload, or closed-loop experiments, where systems are reliant upon the data collected in each iteration in order to continually improve. In this scenario, discovery labs could optimise experiments faster, with the software orchestrating and assembling a data package across all instruments as soon as each run completes.

Splashlake’s approach to comprehensive instrument data management transitions from one-off implementations to scalable approaches, managing integration capabilities as a product, and leveraging data and communication standards. By adopting the Splashlake solution, laboratories can make fast, informed decisions and expedite critical research outcomes.