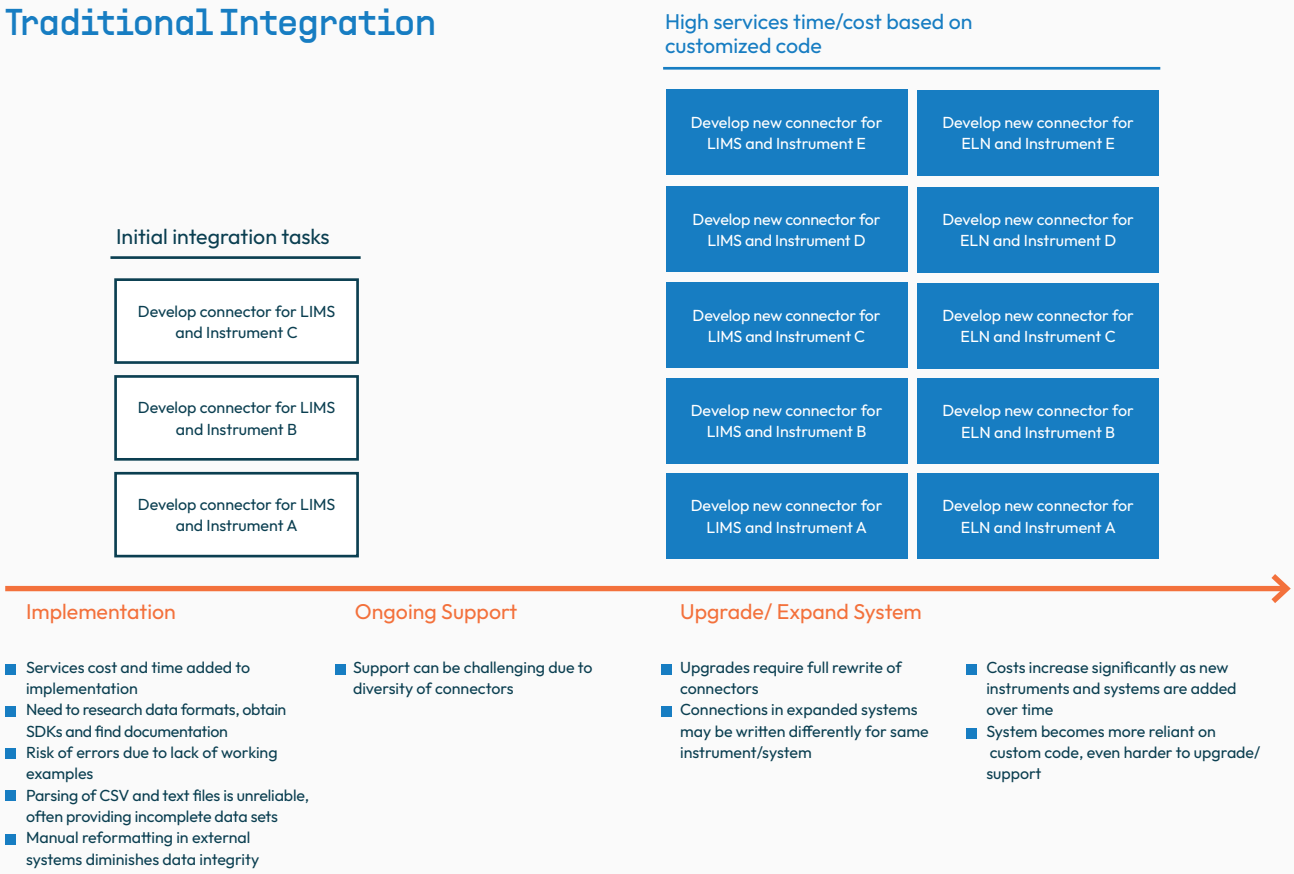
Achieving robust instrument integration at scale through reusable patterns

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.

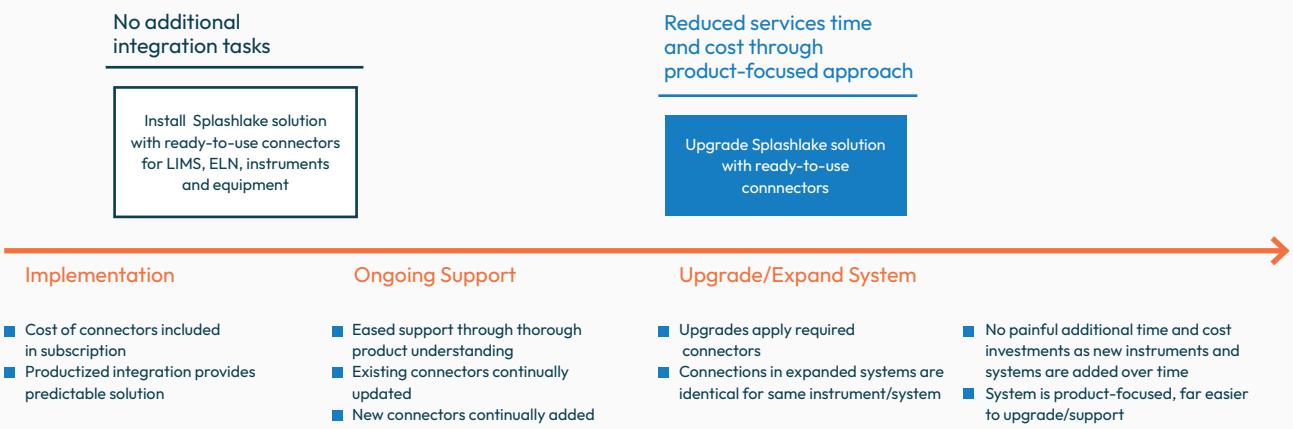
Traditional Integration



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



"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.