

LabConnect

A Connected Sample Preparation
& Evidence Platform for Modern
Laboratories

What is LabConnect?

A modular bench-side platform with



Multiple modes



Hardware: reader/printer/ camera/touchscreen



For existing workflows with minimal extra time



Provides container + derived-container traceability



Captures measurements (especially scales) or device settings



Generates evidence of handling/processing steps



LabConnect: Who We Built This For

Designed for labs where sample preparation is high-throughput and hard to reconstruct later

1

Many containers handled in parallel

2

Gloves, wet benches, frequent cleaning

3

Repeated additions, transfers, and dilutions

4

Audit and deviation pressure

Where this fits best

Food, feed, water/wastewater, environmental, and industrial compliance
QC laboratories

Which of these bench realities match your daily work, and which are missing?

The Operational Challenge

Most errors enter during sample preparation

Sample preparation is the primary source of errors because it involves **frequent transfers, splitting, and adjustments** that create intermediate states, which are not consistently or reliably captured.



Transfers & splitting: samples are transferred or decanted and then split into aliquots, rapidly multiplying derived containers



Adjustments: reagents such as buffers or solvents are added; samples may be heated, centrifuged, incubated, or allowed to settle



Values are often **manually transcribed**, which is slower, error-prone, and increases the risk of incorrect sample association



Manual transcription also weakens **traceability** and leads to **inconsistencies** across operators



Late error detection is common because downstream analysis can still appear plausible



When deviations occur, samples are often handled via **flagged or conditional states** with free-text deviation notes, making interpretation and follow-up difficult

Consequences

- Rework and Rerurns
- Delayed turnaround time
- Time-consuming troubleshooting and traceback (e.g., interpreting ambiguous or incomplete manual notes)
- Reduced confidence in preparation data and result quality
- Higher audit effort and weaker defensibility during disputes
- Inconsistent handovers between technicians and shifts

Which of these consequences is most costly in your lab?



Rerurns &
Rework



Investigation &
Troubleshooting
time



Audit or dispute
effort



Delayed
Turnaround
Time



Impact on
result quality



Shift handovers

Resulting Problems

Lack of linked, timely, complete records

The core issue is that **measurements and exceptions become detached from the execution step and the associated (derived) container** and must later be assembled into a coherent record.



Measurements are captured without a reliable linkage to the exact container and preparation step



Derived container identities are not consistently carried forward through transfers, decanting, splits, and aliquoting



Records are completed retrospectively from partial or ambiguous notes rather than created as a byproduct of execution



Exceptions and deviations are recorded separately from the precise container and step state, leading to identity and status inconsistencies

Impact on record integrity

Even when measurements are technically correct, the resulting records are unreliable. Missing or poorly time-aligned context makes troubleshooting, traceback, and deviation resolution difficult, and weakens confidence in the final results.

Capture preparation evidence as a by-product of doing the work



Context-first capture:

Values are recorded together with container identity, preparation step, operator, and timestamp—creating linked, timely, complete records at execution.



Low-friction at the bench:

Minimal extra time and simple setup. Operators capture actions with a scan or single touch, keeping existing workflows intact and enabling fast rollout and adoption.



Practical flexibility:

Quick to configure and adapt. Ad-hoc steps and deviations are captured naturally, while the system automatically maintains container identity, status, and correct associations across follow-up steps.



How it works in practice

Mode-based guidance:

- Simple, task-focused modes provide just enough structure to capture reliable evidence—without heavy configuration or pre-modeling every workflow variant.
- A barcode scan records different events depending on the active mode
- Centrifuge / incubate / heat: scan records the operation with time, operator, and container state. Scales and other equipment record measured values automatically
- Transfer/split: scan triggers creation of a derived container and prints new labels as needed. Labels naturally detach when containers are split or created ad hoc, allowing identity to follow the physical sample

Evidence export:

Evidence of preparation is automatically packaged and linked to the LIMS record—without disrupting or replacing existing systems.



LabConnect and Its Integration Fit

LabConnect is

- Bench-adjacent and glove-friendly for continuous use
- Modular, with a core module and optional extensions
- Designed for high-throughput preparation with derived containers and frequent transfers

Integration Fit

- LIMS remains the system of record for samples, master data, and final results
- LabConnect captures preparation events and device values, then exports an evidence pack linked to the LIMS record



LabConnect is a modular platform

Core focus:

- Sample preparation traceability
- Instrument data capture
- Evidence generation

CORE MODULES	OPTIONAL MODULES
 Bench Cell	 QC Dashboards
 Instrument Link	 Doc Search
 Evidence Export	 Result Portal



Core Module: Bench Cell

Traceable Sample Preparation at the Bench

- Bench-adjacent workstation designed for day-to-day preparation tasks
- Captures preparation actions as they happen, not after the fact
- Automatically links each recorded value to the active container and preparation step
- Built for gloves, cleaning, and continuous bench use
- Integrated hardware: touchscreen, barcode reader, barcode printer, with optional camera

Purpose

- Reduce sample mix-ups and prevent undetected preparation errors



Core Module: Instrument Link

Automatic Instrument Data Capture

- Automatic capture of readings from connected scales and preprocessing devices
- QR code–based identification ensures correct association with the container and the preparation step
- Eliminates manual transcription and copy/paste at the bench
- Designed for easy expansion to additional instruments

Purpose

- Reduce human error at the source by capturing data directly from instruments



Core Module: Evidence Export

Preparation Evidence Pack

Generates

- Structured data file (timestamps, user, device, step, container)
- Readable PDF summary
- Maps the identified container back to the LIMS sample record entry

Purpose

- Enable review, reconciliation, and investigation
- Without duplicating the final result reporting



Optional Module: QC Dashboards

Operational Visibility

- Real-time view of preparation throughput
- Workload and exception tracking
- Trend analysis from preparation events

Purpose

- Identify bottlenecks
- Support continuous improvement



Optional Module: Doc Search

Natural Language Document Search

- Ask **natural language questions** to search SOPs, methods, and reports
- Permission-based access to ensure appropriate visibility
- Returns **original source documents in the right context for the question, maximizing fidelity** (no generated answers)

Purpose

- Reduce time spent searching during preparation or investigations



Optional Module: Result Portal

Result Portal – External Visibility (Where needed)

- Secure external access to results
- Used only if LIMS does not provide workable customer visibility
- Avoids duplicating LIMS capabilities

Purpose

- Improve customer experience without changing core systems



Integration Boundary

Designed for narrow, low-risk integration

- LIMS remains the system of record
- LabConnect synchronizes identifiers only
- Preparation of evidence exported via file or API
- Explicit linkage for reconciliation

Benefit

- Reduced deployment and validation complexity



Engagement Models (Indicative)

Possible models



Per bench or workstation



Per workflow family



Pilot to production rollout



Partner-led or direct engagement



Why LabConnect



Higher confidence in preparation



Faster turnaround



Less rework



Practical digitization



Clear scope and boundaries



Fast time-to-value



Easy to position and deploy



Why LabConnect

Start small. Measure impact. Expand confidently.

Pilot setup (tailored to your lab)

- Configured to representative pilot customer workflows and needs
- Narrow, well-defined workflow scope
- Supported devices only
- Simple, fast setup with minimal disruption

Success metrics (measured during the pilot)

- Reduced rework
- Prevented errors, measured via captured error signals and deviation reporting
- Investigation and troubleshooting time saved
- Throughput and turnaround time improvement



Next Step



Short demo of one preparation workflow



Review of exported evidence pack



Pilot-fit discussion

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Let's Connect

THANK YOU

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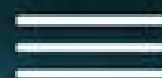
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