CASE STUDY

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How a Top 5 Pharma Doubled Clinical Trial Capacity of Existing Teams

Modernizing sample operations with QuartzBio's Sample Intelligence solution



About The Client

A Top 5 global pharmaceutical company managing more than 100 concurrent clinical trials came to QuartzBio seeking to increase their R&D pipeline capacity without having to add headcount. They needed to move faster, operate smarter, and scale rapidly, all while keeping compliance and data quality intact.

This case study follows their journey from fragmented, manual sample operations to a fully connected, AI-powered workflow. The study showed that automation and unified sample intelligence can deliver both immediate operational improvements and long-term portfolio and team scalability across complex global clinical programs.

The Challenges

Managing biospecimens across dozens of global clinical programs posed operationally challenging, and the client's sample operations teams were stretched thin. The tools and systems they were using were not keeping pace with their needs.

Three core pain points stood out:

- **Fragmented systems:** Paper logs, spreadsheets, and disconnected platforms created silos that made it difficult to get a clear, unified view of sample data.
- **Time-consuming manual workflows:** Routine tasks like copy-pasting files, consolidating informed consent data, and reconciling records across systems consumed hours that could have been spent on higher-value work.
- **Lack of sample lifecycle visibility:** Teams had no reliable way to track sample counts, flag missing samples, project upcoming collections, or confirm consent completeness.

The path forward required two things: (1) unified, harmonized data that all stakeholders could access, and (2) a measurable reduction in the manual effort required to keep that data current.

The Solution: QuartzBio's Sample Intelligence (SI) Solution

The client team implemented QuartzBio's Sample Intelligence solution, the industry's only connected, AI-powered solution spanning the entire clinical sample lifecycle—from collection to assay insight.

The solution combines deep domain expertise in data management and sample lifecycles with compliant (21 CFR Part 11, GxP / ICH E6 (R3), GDPR, HIPAA) business intelligence. The secure, interoperable platform provides automated data ingestion, harmonization, query tracking, sample lifecycle monitoring, consent tracking, and real-time analytics powered by AI agents to unify, monitor, and maintain high-quality biospecimen data across studies and vendors.

Throughout the case study period, the Sample Intelligence solution delivered broad impact across four client use cases:

Use Case 1: 360° Sample Visibility

- A harmonized Master Sample Inventory integrating lab, EDC, and consent data.
- Full visibility into shipped, analyzed, missing, or stable/unstable samples.

Use Case 2: Sample Data Quality

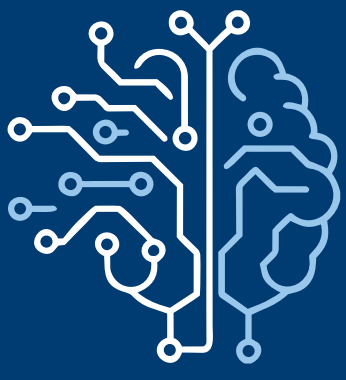
- Automated detection of discrepancies across files.
- Automated query tracking, resolution insights, and root-cause visibility.
- Identification of previously unknown data issues, improving data integrity.

Use Case 3: Sample Collection Monitoring & Compliance

- Identification of samples not collected and visibility into expected vs. collected counts.
- Projections of upcoming sample collections.
- Support for ICH E6(R3) through timely detection of compliance risks.

Use Case 4: Sample Logistics & Testing Monitoring

- Real-time tracking of sample status, location, and chain of custody.
- Monitoring of sample stability, duplicate testing, shipments, and testing status.



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Outcomes

The teams achieved dramatic efficiency improvements, including:

- **85% or more reduction** in time spent on sample-related tasks*. (Table 1)
- 100% detection rate for missing samples and automated query generation.
- Significant reductions in data ingestion, reconciliation, consent tracking, and Excel-based processes.

Task	Time Required Without QuartzBio	Time Required With QuartzBio	Impact
Data ingestion & file creation	527 min	**24 min**	**95% faster**
Sample collection monitoring	120 min	**2 min**	**98% faster • 100% missing sample detection**
Query tracking automation	120 min	**10 min**	**92% faster • 100% automated query generation**
Manual Excel manipulation	143 min	**8 min**	**94% faster**
Consent tracking completeness	40 min	**5 min**	**88% faster • 100% consent documentation**
Data reconciliation	120 min	**3 min**	**98% faster**

Table 1. Automated tasks accelerated sample management. Sample operations tasks were completed an average of 95% faster. Conservatively, 85% reduction in time was used for further ROI calculations in this analysis.

Capacity Expansion*

Because teams were spending dramatically less time on routine tasks, they could take on significantly more work — without adding headcount. Study capacity doubled across both early-phase (Phase I) and late-phase (Phase II/III) trials, representing an increase of 100+ trials managed by the same team (Figure 1).

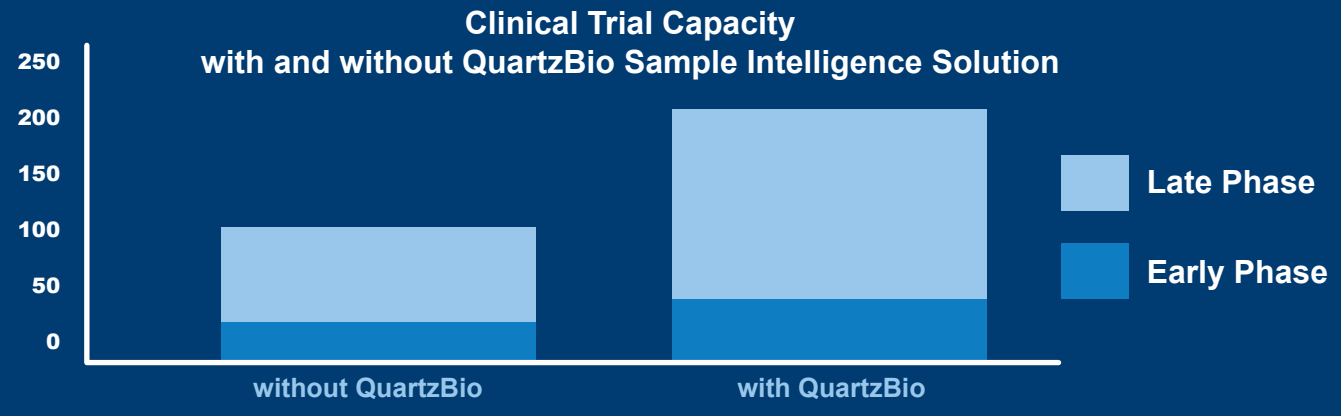


Figure 1. Increased capacity: By implementing QuartzBio, the client increased their study capacity by 100+ trials without adding headcount.

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Financial Impact **

The efficiency gains translated directly into cost savings. Using a fully loaded FTE cost of $250,000 (as cited by the client) and the observed 85% reduction in sample data management effort, the savings per study ranged from $196K to $283K, with a reliable planning midpoint of approximately $239K per study.

Scaled across a portfolio of 100+ trials, that represents the potential for hundreds of millions of dollars in efficiency gains — without compromising quality or compliance.

Qualitative Outcomes

- **Improved data quality, completeness,** and timeliness of monitoring.
- **Earlier detection of issues that previously went unnoticed,** reducing the risk of patient data loss
- **Strong cross-functional adoption,** with 100% of users recommending the platform for continued use

In Their Words

> *I was able to reduce manual reconciliation efforts and follow-up communications related to sample status and discrepancies."*

> *SI was able to identify a pattern of data discrepancy-- which identified a potential issue with our requisition form. That demonstrates the purpose of SI for our organization. No one had raised this as an issue previously--SI allowed us to identify this issue.* ***This allowed us to fix a problem we wouldn't have ever known about."***

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Methodology

***Methodology used to calculate increased sample operations capacity:**
Users reported the time required to complete key sample operations tasks before QuartzBio's solution was implemented and again after implementation to quantify time savings. We then incorporated the proportion of a typical sample operations role dedicated to these tasks to determine realistic FTE impact. Finally, these reductions were applied across the existing trial portfolio to estimate the overall increase in capacity that the solution enabled.

****Methodology used to calculate financial impact:**
We quantified the per-study financial impact of an 85% efficiency gain applied to sample data workflows. Using the typical team FTE range of 0.90 to 1.30 FTE, the reduction yields 0.765 to 1.105 FTE saved per study. When applying the fully loaded cost of $250,000 per FTE as cited by the client, the resulting savings ranged from $191,250 to $276,250 annually. The midpoint of this range—approximately $233,750—serves as a reliable single-value estimate for planning and forecasting.

Looking Ahead

This case study demonstrates that when sample data is unified, automated, and accessible in real time, teams can achieve 85% faster task completion, 100% missing sample detection, doubled study capacity, and more.

These savings emerge from reductions in manual reconciliations, vendor follow-up, data processing, sample inventory review, and cross-functional coordination. When scaled across multiple studies, this can create multi-million-dollar portfolio efficiencies, strengthen operational agility, reduce burnout risk, and enhance timelines for data-driven decisions.

Future case studies may explore additional downstream benefits, including reductions in manual errors, improved cross-functional collaboration, and faster overall R&D cycle times.



Learn how Sample Intelligence could amplify work for your team.

Reach out to our team for a 15-minute review of your current workflow at
www.quartz.bio/contact-us

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Selected References

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