CASE STUDY

Axxam Replaces 3,000 Paper Notebooks

Improves Data Integrity with Revvity Signals Notebook

By Revvity Signals

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Introduction

Axxam, an Italian innovative research and discovery organization providing early discovery services across the life science industry and is dedicated to the highest quality standards of data management and data integrity. Going above and beyond the requirements for an early-stage drug discovery company, they voluntarily implemented Good Laboratory Practice standards and achieved ISO 9001 and ISO 27001 certifications— globally recognized international standards for quality and information security management systems.

Adhering to these high standards was challenging, however, as ~165 employees in different research groups struggled to share data efficiently with both internal and external colleagues, as thousands of paper notebooks created inefficiencies and limitations. To address this problem, Axxam implemented Signals Notebook by Revvity Signals, the premier cloud-based electronic laboratory notebook (ELN). With Revvity Signals, Axxam achieved its goal of strengthening data integrity, while also streamlining workflows, boosting efficiency, and fostering collaboration across research teams.

The Limitations of Paper Laboratory Documentation

Axxam's experiments generate large amounts of data from scientific instruments. From 2006 to 2023, the team filled 3,000 paper notebooks with experimental data. This manual method of data capture presented several problems, including:

- Inefficient data recording and traceability
- Lack of reproducibility of experiments
- Difficulty retrieving and sharing raw data with clients and collaborators
- Compliance and data integrity risks
- Resource-intensive documentation processes

They wanted an ELN that could enhance data accuracy, increase efficiency, strengthen audit trails, improve searchability, and enable better collaboration between internal and external teams.

Solving Data Challenges with Revvity Signals Notebook

To improve data management, integrity and compliance, Axxam transitioned to Signals Notebook, a collaborative, cloud-native ELN from Revvity Signals. This solution enables scientists to document their experiments and collaborate on their work in a shared, secure data-management environment. The comprehensive solution integrates multiple research groups for enhanced collaboration, standardizes data capture, and ensures data integrity.

Axxam implemented Signals Notebook as a full-scale replacement for paper notebooks, touching every aspect of the organization's research workflow. The solution provided digital documentation in an interconnected system that linked experimental activities across different scientific disciplines, including biology, a notoriously challenging field due to the complexity of the experiments and the variety of data sources.

> *Ensuring quality for the early stages of drug discovery is crucial, and it guarantees more reliable data.*
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> — **Beatrice Bellanti**
> Quality Assurance Manager, Axxam

Signals Notebook was an ideal fit for Axxam's needs because it offered flexible template creation, robust Application Programming Interface (API) integration, comprehensive data tracking capabilities, and the ability to handle diverse experimental protocols.

Through the implementation process, Axxam carefully considered the different requirements of 13 experimental groups. The Revvity Signals team worked closely with representatives from each group to define each team's requirements, understand the interactions between teams, and configure the software to ensure traceability.

Centralized Data Collaboration

Previously, Axxam's 13 experimental groups had minimal insight into each other's work on a given project. Paper notebooks made cross-group collaboration inefficient and prone to information loss and errors.

Signals Notebook created a unified digital platform that provided transparency across all research groups. The Revvity Signals team implemented custom templates with pre-configured lists and fields for each experimental unit, allowing seamless data sharing and consistent

documentation across groups. For instance, service groups such as molecular biology and cell culture became connected inside the solution by the task and request tool. As a result, previously isolated groups became fully integrated into the research workflow, providing transparency and collaboration.

> *Signals Notebook connects all experimental activities, even from teams that are not directly involved in laboratories. For example, the compound management group and data sciences group have become part of this process. These two groups never used paper notebooks, but now they are inside this process, and they are connected by Signals Notebook.*
>
> ▪ **Beatrice Bellanti**
>
> Quality Assurance Manager, Axxam

Enhanced Data Integrity and Compliance

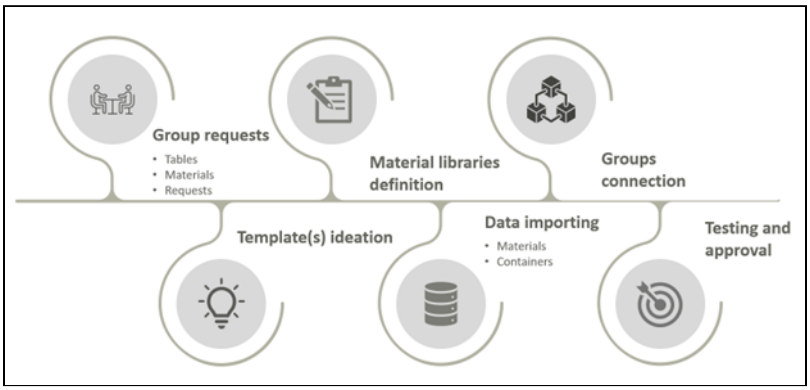
In addition to creating inefficiencies, relying on paper notebooks posed significant risks around data traceability, reproducibility, and regulatory compliance. Implementing Signals Notebook allowed Axxam to create robust audit trails with mandatory field configurations and automated data tracking. They developed specific standard operating procedures for digital data registration and added features such as reagent databases and inventory management. This transition from paper to ELN strengthened data integrity processes and created a more reliable documentation system, supporting the company's ongoing goals of adhering to the highest quality standards

Streamlined Experimental Documentation

Paper notebook documentation was time-consuming and inconsistent. While selecting an ELN, Axxam's leadership team prioritized the ability to develop workflows that were both user-friendly and streamlined, reducing unnecessary clicks. They collaborated with Revvity to create templates featuring pre-configured lists, mandatory and optional fields, and intuitive data-entry processes. The approach helped ease the transition from paper to electronic notebook by creating a more efficient process that busy scientists would embrace and consistently use.

Seamless Integration with Signals Notebook's APIs

Manually importing the reagent inventory would have taken a significant amount of time and effort, considering the assets, batches, and containers for every library. However, the team simplified data migration and reduced the need for manual entry by implementing API integrations. They used Signals Notebook's APIs and workflow tools to import data from existing databases, including an in-house MySQL database and various Excel files. The undertakingoperation involved creating multiple assets, generating batch IDs, and establishing container types. It was a challenging but rewarding process that would have been time-consuming through manual entry but was faster and easier with Signals Notebook's APIs.



Axxam's implementation journey involved using Signals Notebook's APIs to seamlessly migrate data from existing databases.

Conclusion

Improving Scientific Documentation by Embracing Digital Tools

Axxam successfully shifted from fragmented paper documentation to a unified digital research platform. They replaced 3,000 paper notebooks with a cloud-based ELN, Signals Notebook, transforming data management from a manual and siloed process to an integrated and accessible modern workflow.

This transformation improved collaboration by connecting 13 different experimental groups. They improved data visibility across the organization, adding traceability and real-time access to experimental data. At the same time, they enhanced data integrity, to ensure the company could continue to meet the highest industry standards.

The organization's new digital workflow enables Axxam's scientists to describe experiments more thoroughly, allowing them to utilize that information to inform future development. The organization is now well-positioned to leverage advanced data analysis and gain valuable insights from artificial intelligence tools in the future.

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