Unlocking the Value of Data in Your Laboratory with Real-Time Visualisation and Analytics

Laboratories contribute significantly to the vast quantities of data produced by pharmaceutical manufacturing operations. The challenge is not about creating, storing, or even accessing data. In fact, creating, storing, and accessing data are standard tasks for lab technicians, scientists, and engineers. The challenge comes in unlocking the full value of data in your laboratory. One of the ways to do this is through real-time data visualisation and analytics.

A strong business case for investing in real-time data analytics includes the fact the technologies that are required currently exist and have been tried and tested. They are cutting-edge technologies, but they are proven, reliable, and robust.

Of course, we are not at the end of the road in relation to how data will be used in pharmaceutical labs as new technologies and solutions continue to be developed. For example, the lab of the future will support data being used in conjunction with equipment powered by AI (artificial intelligence) technologies. These systems will be able to conduct real-time testing in-line on the production floor for the majority of quality control tests. This, in turn, will enable the automation of batch release processes and various decision-making tasks, including process optimisation.

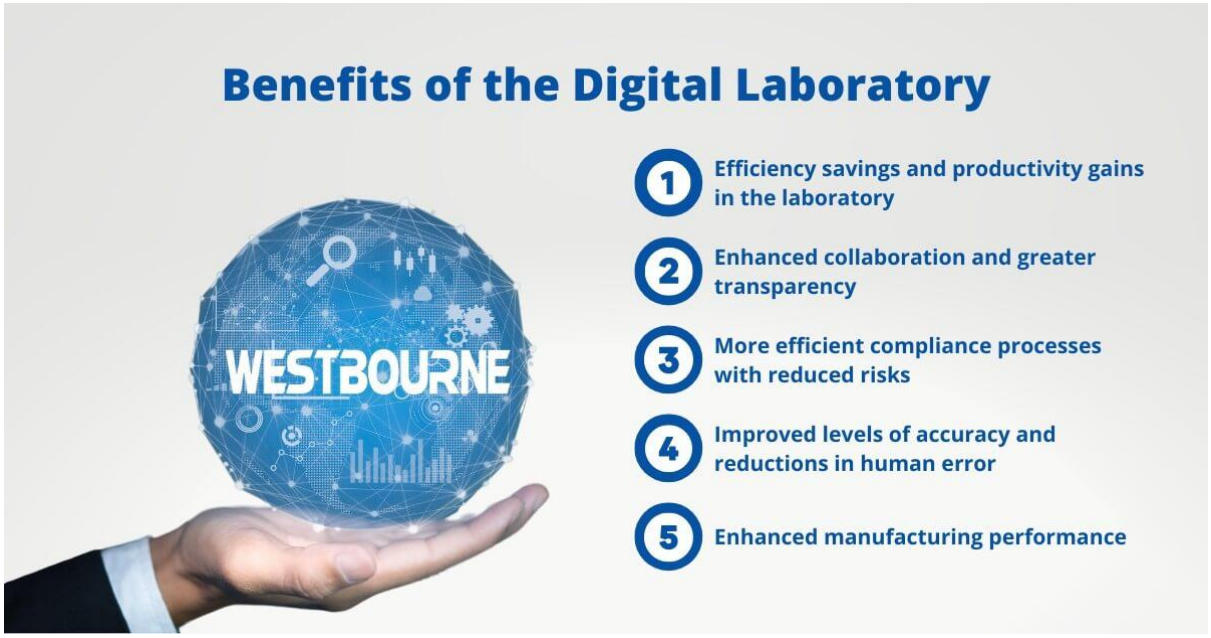
However, getting to this lab-of-the-future stage is a journey that will take time to achieve. The ideal next step for many pharmaceutical laboratory operations is to enable real-time data visualisation and analytics.

Transitioning to a Digital Lab

Transitioning to a digital lab is an essential prerequisite for achieving real-time data visualisation and analytics capabilities. Steps to becoming a digital lab include integrating equipment and systems within the lab as well as upstream and downstream, e.g., on production lines, at the plant level, at the enterprise level, and across the supply chain.

Advanced IT systems are required for the digital lab to become a reality with specific consideration given to the integration with OT (operational technology) systems and equipment, particularly where legacy systems are still in use.

Steps to ensure data integrity are also essential, including eliminating manual data processing and ensuring data follows ALCOA+ principles.



The above steps provide the foundation for implementing the technologies needed to enable real-time analytics and data visualisation. Those technologies include:

- Advanced LIMS platforms
- Industry-leading data analytics tools such as Microsoft's PowerBI or the new AI-powered Microsoft Fabric
- Modern communication protocols such as MQTT (Message Queuing Telemetry Transport)
- IIoT technologies (Industrial Internet of Things)
- AI and machine learning

The Benefits of Real-Time Data Visualisation and Analytics for Laboratories

The benefits of real-time analytics for pharmaceutical laboratories include:

- Tracking trends
- Significantly reduce deviations

- Completely eliminate certain categories of deviation, including recurring deviations
- Optimise scheduling based on the specific requirements of your laboratory
- Analyse root causes with significant reductions in the time it takes to complete root cause investigations
- Optimised planning of equipment maintenance
- Improved stock and materials management, including optimising the spending and availability of reagents and consumables
- Improved understanding of lab workload and the rapid identification of bottlenecks

The Importance of Partnership and Support

Getting access to actionable and meaningful data should be a top priority for laboratories in pharmaceutical manufacturing organisations. Without this focus on actionable and meaningful data, dashboards and other data visualisations can become overwhelming, while reports, alerts, and notifications can end up being ignored. For example, sending alerts to an already busy email inbox will most likely mean an increase in unread messages rather than improved productivity, reduced risks, and other desired outcomes that alerts are designed to deliver.

Data integrity, as mentioned previously, is also necessary to ensure the data being analysed and visualised is accurate and complete.

Partnering with the right solution provider will help you avoid the mistakes and risks that come with data analytics technologies while accelerating your progress to unlocking the full potential of the data your lab operations generate.

At Westbourne IT, we have the broad range of skills and experience required to help achieve your data goals. This includes extensive IT expertise and a proven track record of supporting pharmaceutical laboratories in the implementation of new technologies, modernising processes, increasing automation, and improving the quality, use, and access to data. Get in touch today to speak to one of our experts.