3DS BIOVIA

DATA SCIENCE IN THE LAB
AUTOMATING ADVANCED ANALYTICS WITH BIOVIA PIPELINE PILOT
Datasheet

Laboratories across a variety of science- and process-driven industries are increasingly moving their R&D into a fully digitalized environment. Their goals are to streamline operations and to better leverage their data. Integrated workflows and equipment, automated data capture and standardization, and seamless software and user experiences all offer value on their own, but digital data offers more. Artificial intelligence, machine learning, data visualization and a cohesive data science strategy allow organizations to go beyond operational efficiency. BIOVIA Pipeline Pilot provides the scalable framework necessary to make this data science strategy a reality, transforming your lab into an intelligent, data-centric machine.
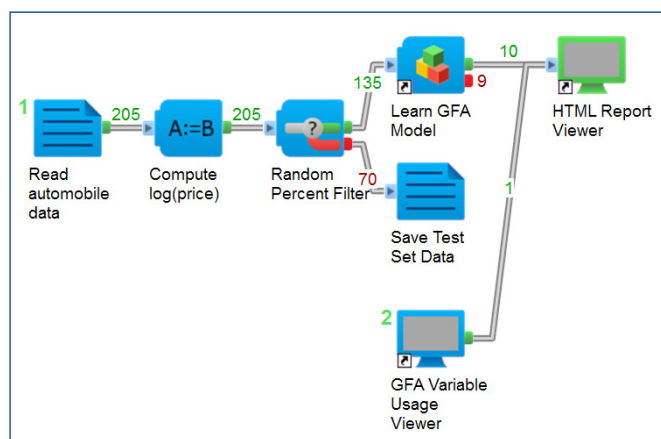
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GOING BEYOND A DIGITALIZED LAB

BIOVIA Pipeline Pilot is a graphical application that automates the scientific analysis of data, enabling users across the enterprise to rapidly explore, visualize and report research results without needing to write a single line of code. Pipeline Pilot optimizes the research innovation process, increases operational efficiency and reduces costs for both research and IT.

One of the major obstacles to an effective data science initiative at any organization has been maintaining the quality of the models available to end users. Often, teams rely on fads over sound fundamentals. BIOVIA Pipeline Pilot ensures that best practices are easily captured, deployed and shared across your organization, maximizing the value of your data science team and allowing them to focus their work on value-added tasks.

DATA SCIENCE: VALUE FOR THE LAB

As organizations increasingly move their data into the digital realm, the opportunities for data science grow exponentially. This opportunity can also be realized in the lab: data science not only allows organizations to "discover" more rapidly, it also allows them to more efficiently design experiments, automate manual tasks and allocate resources. BIOVIA Pipeline Pilot provides the framework to pull data from a variety of sources, "clean" it for analysis, and apply it to a variety of models to extract insight. All within a single workflow.

An example machine learning protocol

Example 1: Formulations Design

An effective product is more than just a single "secret ingredient;" it is a delicate balance of both raw materials and design goals. Optimizing novel or reformulated products for new markets often has a short lead time, meaning that only a relatively small space of potential mixtures can be tested. BIOVIA Pipeline Pilot expands this scope, coupling multi-parameter optimization methods with previous formulation data to help researchers design new experiments more intelligently.

Example 2: Image Analytics

From microscopy to protein crystallization to manufacturing scale-up, images have become a fundamental data format for laboratory-driven organizations. However, analyzing these

images is often a manual, labor-intensive process, and automation with traditional machine learning approaches is often not feasible. BIOVIA Pipeline Pilot delivers deep learning capabilities for enhancing, processing, analyzing, integrating, cataloguing, searching and reporting image data. Users can drag and drop individual components into a workflow to integrate this data with numerical, chemical, graphical and textual data in a unified computing framework.

Example 3: Predictive Maintenance

Managing laboratory equipment is critical to providing an efficient and effective lab environment. Often, maintenance follows regular schedules, attempting to catch potential problems before they lead to down time or damage to a device. However, this process is relatively inefficient, as there is some variance in the remaining life of different parts in different machines. BIOVIA Pipeline Pilot can couple historical data with equipment conditions and performance, correlate it with device failures and predict future ones, providing a proactive means to monitor their performance and ensuring maintenance is provided as needed and avoiding failure.

TAKE YOUR LAB FURTHER WITH SCIENTIFICALLY-AWARE COMPONENTS

BIOVIA Pipeline Pilot makes adding discipline-specific capabilities to your workflows easy with Component Collections. The collections contain numerous "scientific building blocks" which allow researchers, developers, engineers and IT professionals to easily perform both science-specific and generic data-processing functions.

Explore our discipline specific capabilities for:

- Chemistry
- ADMET
- Gene Expression & Mass Spec
- Sequence Analysis
- Next Generation Sequencing
- Materials Modeling & Simulation
- Polymer Properties (Synthia)
- Plate-based Data Analytics

WHY BIOVIA PIPELINE PILOT?

- Enhance your organization's solutions with data-driven, repeatable processes using predictive analytics and machine learning
- Augment lab operations with trending and decision support backed by data
- Create scientifically-aware solutions with discipline-specific, self-service modeling tools, statistical filters and clustering components
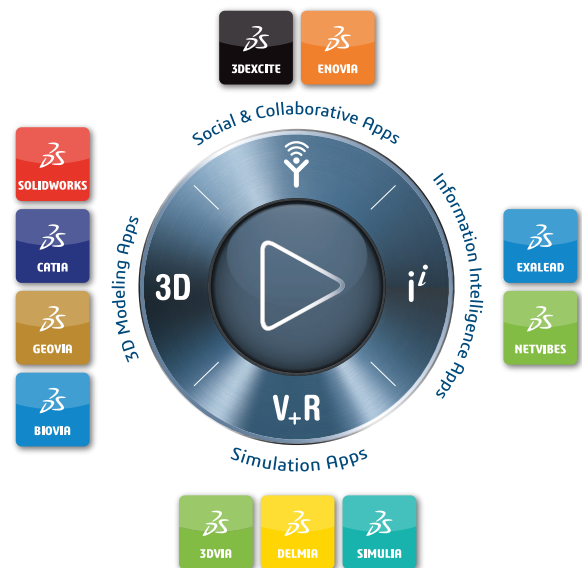- Automate non-value-added tasks like data aggregation, blending, merging and cleaning

- Scale up business processes by sharing and reusing best practices across the organization

- Deploy on cloud for rapid implementation and quick time to value

BIOVIA Pipeline Pilot accelerates R&D innovation and decision making by bringing advanced data analytics and machine learning to the lab. It helps organizations in science- and process-driven industries meet their goals with tools that enable them to manage, process and analyze their data in the lab and beyond.

Learn more at 3dsbiovia.com/pipeline-pilot.

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