ALTAIR® ANALYTICS WORKBENCH™ — COMPREHENSIVE DATA ANALYTICS DEVELOPMENT ENVIRONMENT

Altair Analytics Workbench is a sophisticated coding environment that's ideal for developing models and programs written in the SAS language. With it, developers can include Python, R, or SQL code in their SAS language programs, and it requires no third-party software to run SAS language programs. The platform also provides a drag-and-drop workflow where users can develop models and programs without needing to write any code.

Altair Analytics Workbench is powered by Altair SLC™ to run workflows, programs, and models.

Users can bridge existing SAS language needs with open-source languages and embed Python, R, and SQL code blocks in workflows or SAS language programs. Users can also exchange and process data between Python, R, SQL, and SAS language segments of their programs and workflows.

Analytics Workbench handles advanced analytics tasks such as data preparation, exploring, profiling, and visualization, predictive modeling with decision trees, regression, score carding, clustering and segmentation analysis, model validation, and preparing for production deployment. It also enables users to perform data extractions and transformations and produce spreadsheets and reports.

A Powerful Integrated Development Environment (IDE) for Any User

Analytics Workbench supports an intuitive drag-and-drop workflow to create, maintain, and run programs written in the SAS language as well as SQL, Python, and R. The software also includes a code editor and templates that allow users to augment their workflows with code blocks built in the languages of SAS, Python, R and SQL.

The software can run full programs or selected lines of code for testing purposes, provides facilities to explore logs, libraries, datasets, and other generated output, and offers import and export wizards along with project management functions, code history logging facilities, and comes equipped with an extensive range of open-source plugins.

Use Analytics Workbench's visual programming tools on a workflow canvas with drag-and-drop blocks for data prep, discovery, and modeling. This approach provides the perfect combination of low-level data engineering tools for retrieving, blending, and preparing data for analysis, together with machine learning capabilities to build, explore, and validate reproducible predictive models.

Combine Python, R, and/or SQL with SAS Language Code

Analytics Workbench includes SAS language procedures for using Python, R, and SQL code inside a single SAS language program. Exchange data seamlessly between the different parts of a program. Logs and output such as graphs are piped back and handled as part of the SAS language program output.

Write data-centric applications using the best programming languages for the job, mixing syntax from different languages inside a single program. Workflows can include code blocks written in different programming languages.
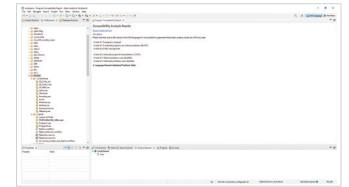
The code analysis tool built into Altair Analytics Workbench lets users confirm compatibility regardless of whether they store program files on mainframes, servers, in the cloud, or on local machines.
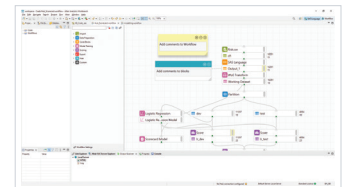
Altair Analytics Workbench provides two ways to combine programs in the languages of SAS, SQL, R, and Python. Use the software's SAS language perspective to interleave languages using wrapper functions. The system can process data in any language and pass output from one language to another for additional processing. For example, users can create a program that processes and models data with R — and then apply additional processing in the languages of SAS, SQL, or Python.

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5.2023 / 1
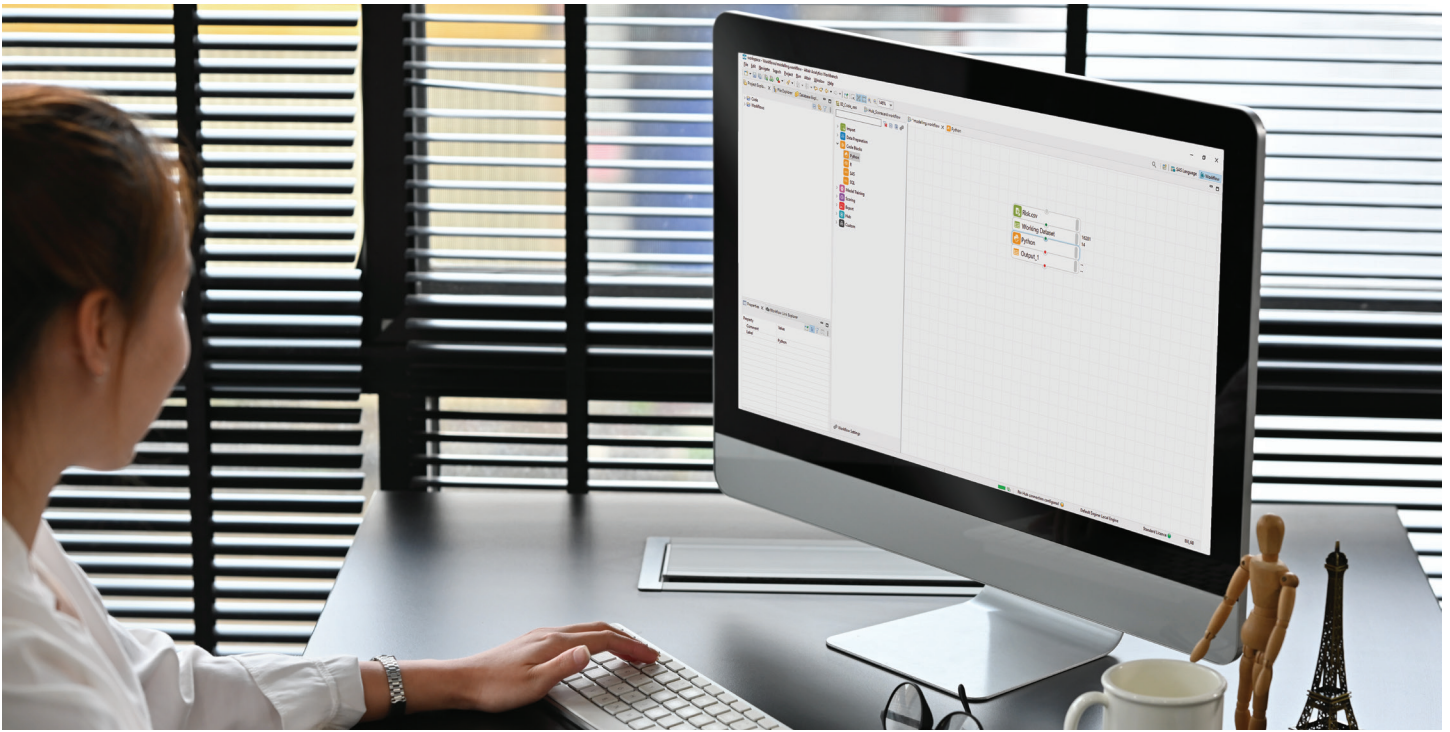
Analytics Workbench coding perspective focuses on SAS language programming but allows users to mix SQL, Python, and R inside your SAS language programs. Exchange data easily between the Python, R, SQL, and SAS languages within programs. Tools include:

- Code editor
- Code templates
- Run a program or run selected lines of code from a program
- Facilities to explore logs, libraries, datasets, and other generated output
- Wizards to export and import datasets to and from Microsoft® Excel® and CSV
- Project management and code history facilities
- An extensive range of open-source plugins to extend the Eclipse framework
- Code blocks within workflow

Fair for You, a non-bank lender in the U.K., uses Altair to run credit scorecards developed using a combination of SAS language code. Learn more.

Building workflows doesn't require programming skills, but if you have them, you can insert code nodes into your workflow using SQL, Python, R, and SAS languages for advanced tasks.

Data Preparation:
Combine Visual Workflows with Python, R, SQL, and SAS Language Code Blocks

Preparing big data can often be slow and painful if you're restricted to using just one type of tool. Analytics Workbench enables you to write executable data prep programs or use its drag-and-drop interface to build workflows. You can augment your visual workflows by inserting programmable code blocks.

Remove data irregularities by replacing, modifying, or deleting records as appropriate. Flag major issues like missing values and outliers using the point-and-click data profiler to speed up the process and prevent any impact that unclean data can have on model accuracy. Reshape the structure of data from wide to long format using a range of drag-and-drop techniques.

In addition, users can utilize Analytics Workbench to transform raw data with techniques including binning, optimal binning, standardization, scaling, clustering, and factor analysis to reveal underlying trends that can improve model performance. Use interactive workflow blocks including joins, aggregations, filters, and partitions and re-use your workflows to make repeatable processes fast and efficient. Employ the point-and-click data profiler to confirm datasets are clean and ready to use in machine learning models.

Built-in SAS language capabilities allows you to create and run data prep tasks written in the SAS language without needing to install other third-party SAS language products. Create SAS language programs to execute or augment any workflow by inserting SAS language code blocks. Embed and mix code blocks written in Python, R or SQL within the same data prep workflow. Analytics Workbench enables fast, direct access to a wide range of data sources, including cloud data, Hadoop environments, data warehouses, databases, spreadsheets, and many other file-based data formats.

Reveal Insights with a Built-In Data Profiler

Analytics Workbench includes a data profiler that makes it easy to explore and validate your data, count missing values, and display univariate statistics and variables with correlation matrices and other powerful visualizations. The Data Profiler provides a wide range of statistical insights without the need to write any code, and the ability to write code in Python, R, or SAS languages enables you to extend the system's profiling capabilities as needed.

Moreover, users can explore data visually with decision trees. All nodes in the Analytics Workbench tree display summary statistics and are color-coded to illustrate results clearly. Automatically grow an end-to-end tree or grow one level at a time with complete control. Once you have your tree, extract results and tables to use in third-party documents or presentations and extract error-free code defining the end-to-end tree for deployment into production.

Data Modeling

Use supervised and unsupervised modeling techniques to build on the insights developed in the data discovery process. Create models with visual tools in the workflow environment or write code to take advantage of modeling algorithms available in Python and R, and from our own SAS language capability.

Use techniques including k-means and hierarchal clustering to segment markets, identify trends in demand, or classify fraudulent behavior. Our drag-and-drop clustering blocks provide quick insights and convenient modeling. Explore results with visuals at the click of a button. Use neural networks for predictive modeling by adding a neural network block to a workflow and changing model inputs and configurations to explore statistical results immediately.

Use our decision forest capability as a supervised modeling method with a reliable predictive performance for continuous and discreet variables. Select from a range of configuration options to choose the growth algorithm, variable treatment, and other preferences that give easy and complete control without the need for extensive modeling experience.

Write linear and logistic regression syntax in your code to generate output or simply add regression blocks to a workflow for instant access to reports with easy exploration of a range of statistical outputs. Change any of the inputs of a workflow regression block to generate real-time updates to the model report.

Create credit risk scorecards using workflow blocks to help visualize the process:

- A weight of evidence transformation block provides tables and graphs to guide binning
- Optimize variables automatically with a range of configuration options, or manually control to join and manipulate bins
- Build models with an array of statistics and charts; scorecard blocks allow you to scale the results

The Altair Unlimited® Data Analytics Appliance is a pre-built, pre-configured, ready-to-run solution loaded with powerful software including Altair Analytics Workbench, Altair SLC™ SAS language compiler and execution environment, Altair SLC Hub™, and more. Learn More.

Learn More at:
altair.com/data-analytics

The model analyzer is a workflow-only block that provides instant assessment and comparison of different models to determine the best one for your needs. With it, users can:

- Compare models from train and test partitions
- Compare output from different types of models
- Compare models generated from workflow modeling blocks to those generate from code blocks programmed in Python, R, or SAS language
- Automatically reflect any changes to input models in the model analysis report

No-Code Machine Learning Model Development
Analytics Workbench features machine learning support for supervised and unsupervised learning, including decision trees, clustering, regression analysis, and neural networks. Explore, build, and test machine learning models with workflow blocks and automatically generate error-free code for production use.

Use the visual development tools to build predictive, behavioral, and application scorecards to help with variable selection, training, evaluation, and model validation. Automatically extract error-free and ready- to-deploy scorecard code or use in production.

Use Stand-Alone or In Client/Server Mode
Analytics Workbench can run programs on remote installations on a server or cloud. Generated output, datasets, logs, and more can all be viewed and manipulated in Analytics Workbench as if the workloads had been executed locally. This is ideal in an enterprise concerned with security, scalability, and manageability since data doesn't have to leave the data center, and analysts benefit from powerful analytics with an advanced local user interface. All connections are made with strong, resilient, and industry-standard encryption systems.

Part of Altair's Complete Data Analytics Tools Portfolio
Altair provides a complete set of data science and analytics tools that support a wide range of capabilities:

Artificial Intelligence and Machine Learning: Our industry-leading visual approach to analytic modeling helps business users minimize repetitive tasks, share knowledge across the enterprise, and reuse steps within connected model workflows for faster analysis and shared insight. Business users, managers, analysts, engineers, and data scientists use Altair tools to develop, manage, and deploy sophisticated AI and machine learning models quickly with an explainable user interface.

Stream Processing and Data Visualization: Connect directly to streamed sensor data from MQTT, Kafka, Solace, and other message queues and build complex stream processing applications with a simple drag-and-drop interface. Build and publish sophisticated real-time dashboards without writing any code. Solve difficult problems quickly, understand complex relationships in seconds, and identify issues that require further investigation with just a few clicks.

Data Preparation: Access, cleanse, and format data from a wide variety of sources (including Excel, CSV, PDF, TXT, JSON, XML, HTML, SQL databases, Big Data like Hadoop, and more) without any manual data entry or coding.

Learn More at altair.com/data-analytics

Take control of your analytics ecosystem with Altair SLC Hub. Use Altair SLC Hub's simple interface to deploy analytical programs, models, and workflows as scheduled tasks with execution decision rules, or simply deploy them to appropriate internal business users or external customers for shared and on-demand execution. Altair SLC Hub handles programs and models coded in the SAS language, Python, or R, as well as workflows created with Analytics Workbench. Altair SLC Hub provides centralized governance and deployment services for every step in the data analytics lifecycle. Learn more.

Altair SLC's built-in SAS language compiler runs SAS language and SQL code, and utilizes Python and R compilers to run Python and R code and exchange SAS language datasets, Pandas, and R data frames. The software runs on IBM mainframes, in the cloud, and on servers and workstations running a variety of operating systems. It supports both remote job submission and the ability to exchange data between mainframe, cloud, and on-premises installations. Learn more.