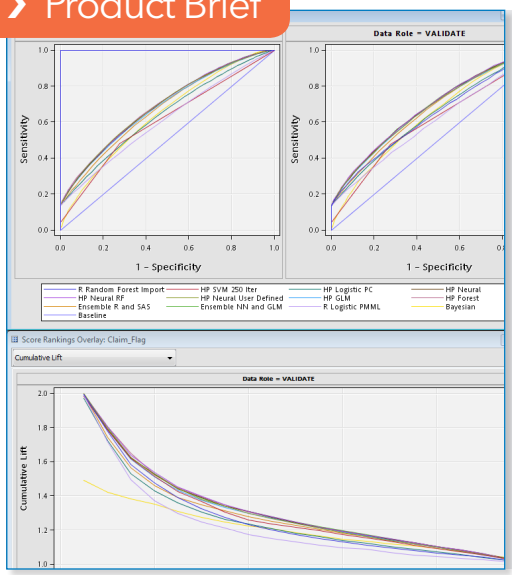
› Product Brief



Challenges

- Excessive time needed for data preparation and exploration, model development and model deployment.
- Unnecessary data movement and redundancy between your data and analytics environment.
- The labor-intensive process of preparing data and recoding analytical models for deployment.
- Current IT architecture is unable to meet analytics processing requirements.
- Lack of alignment between IT and analytics teams.

SAS® Predictive Modeling Workbench for SAP HANA *and* SAS® High-Performance Predictive Modeling Workbench for SAP HANA

Simplify, improve and accelerate the predictive modeling life cycle within your SAP environment

Overview

Facing massive amounts of data and pressure to make faster, more accurate decisions, many organizations are on the hunt for high-speed analytics. The integration of SAS® Analytics with SAP HANA allows analyses to be performed as close to the data as possible, eliminating movement, duplication and reconciliation of data.

By integrating the in-memory SAP HANA platform with SAS applications and enabling SAS' industry-proven advanced analytics algorithms to run on SAP HANA, the SAS Predictive Modeling Workbench for SAP HANA and the SAS High-Performance Predictive Modeling Workbench for SAP HANA greatly accelerate all steps in the analytical life cycle. With these solutions, you can prepare data for advanced analytics, explore data and develop superior predictive models, as well as deploy, execute and monitor these models - without creating additional copies of the data outside of the data store.

The Solutions

- **SAS Predictive Modeling Workbench for SAP HANA** enables you to conduct analytic data preparation and develop descriptive and predictive models. For model deployment, in-database scoring allows the execution of predictive models within the SAP HANA platform. Model management and performance monitoring capabilities ensure that the best models are in use at all times for optimal outcomes. This solution comprises SAS® Enterprise Miner™, SAS/ACCESS® Interface to SAP HANA, SAS Scoring Accelerator for SAP HANA and SAS Model Manager.
- For analytical use cases that would benefit from incremental lift or return from big data analytics, distributed processing and near-real-time insights, **SAS High-Performance Predictive Modeling Workbench for SAP HANA** should be considered. It features data preparation and exploration, model development and deployment with the SAP HANA platform. This integration helps reduce the extraction of data from the SAP HANA environment to the analytics environment. Model management and performance monitoring ensure that the best models are in use at all times for optimal outcomes. SAS High-Performance Predictive Modeling Workbench is an add-on to SAS Predictive Modeling Workbench. It includes SAS High-Performance Statistics and SAS High-Performance Data Mining.

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THE POWER TO KNOW®

Additionally, the native integration of SAS with SAP HANA lowers the total cost of ownership for IT by simplifying the data and analytics processing environment. Time-consuming data movement and resource-consuming data duplication is reduced through innovative in-memory analytics and in-database processing. This increases productivity of all those involved in the analytical life cycle process.

Benefits

Discover new insights and solve real problems

SAS provides the industry's widest array of industry-proven statistical, data mining and machine-learning algorithms for building predictive and descriptive models. Don't just depend on decision trees because they're easy to use. Try ensemble modeling or support vector machine models to find the best solution and identify new insights that drive competitive advantage.

Add high performance to your analytical life cycle

SAP HANA provides a distributed, in-memory environment so you can quickly execute analytical models built using SAS High-Performance Data Mining. The in-memory analytics in the SAS High-Performance Predictive Modeling Workbench produces insights at breakthrough speeds by dramatically reducing analytical processing time. Bring greater precision to questions you ask by using more data. Quickly add variables as part of the data discovery phase to more accurately reflect current market conditions. Perform more modeling iterations to close in on optimal models for more accurate insights and timely decisions.

Treat models as high-value assets

As organizations up their use of analytical models, a single, common framework to manage the models is essential. You need a way to register, validate, publish, deploy and retrain models for optimal results. SAS Predictive Modeling Workbench ensures that model quality is monitored on a continuous basis for accuracy, usefulness and sustained business performance. So you know your model performance is not degrading.

Reduce data movement and streamline model deployment

SAS High-Performance Predictive Modeling Workbench allows you to perform data discovery and model development in memory. There's no need to make copies of data on a separate server for processing. Automated model deployment steps reduce complexity and deliver fast insights while maintaining data integrity. In-database scoring reduces unnecessary data movement, streamlines model deployment and improves the productivity of analytical professionals and IT.

Simplify your IT landscape

Analytics infrastructure should not get in the way of your modeling processes or become a constraint. As your organization's use of analytics grows, so does the need for a flexible IT infrastructure. Bringing the analytics to the data creates a single IT environment, which reduces maintenance and total cost of ownership for IT. SAS and SAP HANA together can cost-effectively scale, meet near-real-time analytical processing demands, and manage growing and increasingly diverse workloads.

Capabilities

Accelerated predictive analytical life cycle

There's value in stepping through the predictive analytics life cycle more quickly. The faster you can analyze the data, detect a pattern that you can use to make predictions and apply these predictions in business processes for better decisions, the more value you will create. The integrated infrastructure provides the right tools for the different stakeholders to be efficient and productive in their tasks, whether it's the data management team that prepares the data, the data scientist who develops the model, or the IT group that needs to deploy and execute the model.

Data access

The SAS/ACCESS Interface to SAP HANA provides native integration between SAS and SAP HANA to read, write and update data. Processing of crucial data management functions can be pushed to SAP HANA via SQL.

Data preparation and exploration

Preparing data for predictive modeling and data mining is a time-consuming aspect of the analytical life cycle. With these solutions, you get a powerful set of interactive data preparation tools to make this part of the modeling process easier and more efficient. You can address missing values, filter outliers and develop segmentation rules. Other core data prep tools include file importing, and appending, merging and dropping variables. Descriptive summarization features and interactive exploration tools enable

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novice users to examine large amounts of data in dynamically linked, multidimensional graphs, making it easier to detect and understand relationships in your data.

Predictive model development

Model building is the portion of the analytical life cycle that data scientists and analytic professionals enjoy most. SAS Enterprise Miner, included with both workbench solutions for SAP HANA, streamlines the data mining process so you can create highly accurate predictive and descriptive models using the industry's most comprehensive set of predictive modeling and machine-learning algorithms.

Data scientists can have many different predictive modeling and machine-learning algorithms compete to quickly find the best performing model. Modern algorithms include random forests, support vector machines, ensemble models, neural networks, Bayesian models, bagging and gradient boosting, time series data mining and many others. A drag-and-drop interface and self-documenting process flow enable you to quickly develop and deploy models .

Once you've built your models, how do you find the one that performs best? A visual assessment interface lets you easily compare models to find the one that provides the most lift. Model profiling helps you further understand how the predictor variables contribute to the outcome.

High-performance model development

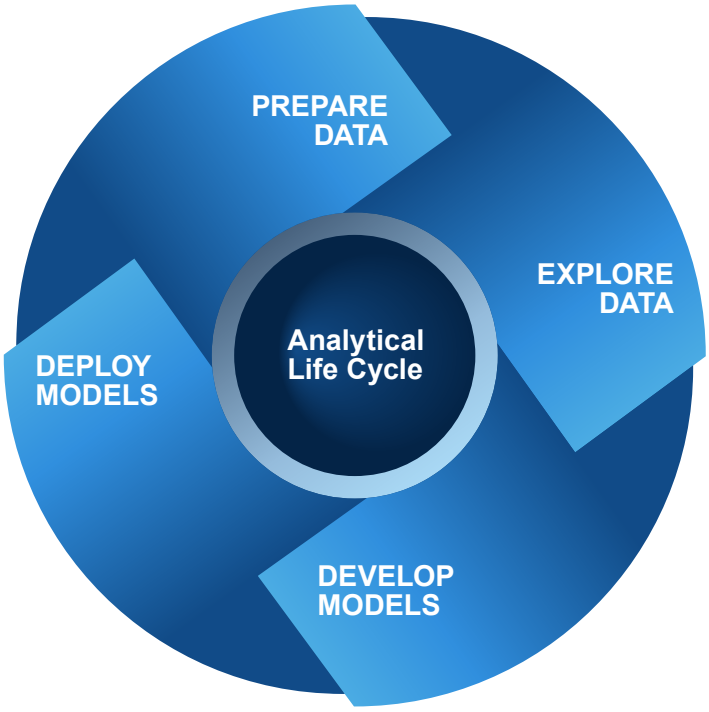
If you need to explore big data and use it to quickly develop complex predictive and descriptive models, consider the high-performance workbench solution. It is tightly integrated with SAP HANA's massive parallel processing in-memory environment so that complete data – hundreds or thousands of variables – can be analyzed and evaluated with sophisticated modeling techniques in a fraction of the previous processing time.

The SAS High-Performance Predictive Modeling Workbench allows the execution of analytical workloads in a distributed mode. Parallel loading of data from SAP HANA into the in-memory environment for analytical processing occurs using high-speed feeder technology.

The SAS® Difference

Imagine what you can accomplish when you combine industry-leading analytics with a high-performance data storage platform. With SAS and SAP HANA, you can:

- Eliminate data duplication.
- Reduce data movement.
- Reduce requirements to reconcile data.
- Minimize decision latency and application complexity.
- Add superior predictive analytics to SAP HANA.
- Improve the performance of workloads by running SAS analytical models in-memory within SAP HANA.
- Increase data scientist productivity.
- Provide business users with insights in real time by embedding analytics into operational applications.



SAS Predictive Modeling Workbench for SAP HANA and SAS High-Performance Predictive Modeling Workbench for SAP HANA address the entire analytical lifecycle requirements – from data preparation and exploration to model development and deployment. Model management and monitoring are included to ensure that the best models are in use at all times.

There's no need to make copies of data on a separate server for analytics processing. The integration allows analytical processing to be performed as close to the data as possible. High-performance, multithreaded versions of data mining and machine-learning techniques include neural networks, random forests, clustering, Bayesian networks and more. With the high-performance workbench for SAP HANA, you can run more models per day, test and evaluate more scenarios, and quickly ask different questions, improving employee productivity and providing more confident answers for your organization.

Distributed model deployment and execution

Both solutions provide an automated process to deploy predictive models to run directly on the data within SAP HANA, taking advantage of the SAS Embedded Process technology. This eliminates the need to move data for scoring purposes, further reducing the cost, complexity and latency. By processing directly in the massively parallel SAP HANA environment, predictive models can provide answers extremely fast, enabling operational business decisions in real time.

Model management and monitoring

Integrate your analytical model management, deployment and monitoring with your SAP HANA data store. A consistent and repeatable framework lets you register, validate, deploy, monitor and retrain analytical models to ensure their sustained business value. A secure model repository is complemented by a rich metadata structure, project templates and a workflow interface so you can easily choose the best model out of a pool of candidate models and test model execution in your operational environment.

Continuous evaluation of modeling results against KPIs and monitoring of all production analytical models is supported to determine when a model should be refined or retired. Users can be alerted, according to enterprise-approved business rules, when models are not performing to agreed service levels. Based on the complete asset library provided in the model management environment, underperforming models can be automatically refitted based on triggers or schedules.