system 302
Open Digital Ecosystem

AnalyticsView

Data Analysis Software Suite

Transform large amounts of Plant Data into Actionable Intelligence, in Real Time

Analytics View

Set of solutions that transform large amounts of real-time data into Actionable Intelligence, driving improvement in productivity, efficiency, quality, and sustainability.

smar
Technology Company

SMAR Analytics View software solutions transform large amount of real-time data into Actionable Intelligence, driving improvement in productivity, efficiency, quality, and sustainability.

These solutions can be applied to solve common business intelligence (BI) challenges, enabling users to move rapidly and easily from data to information, without help from IT or from data scientists.

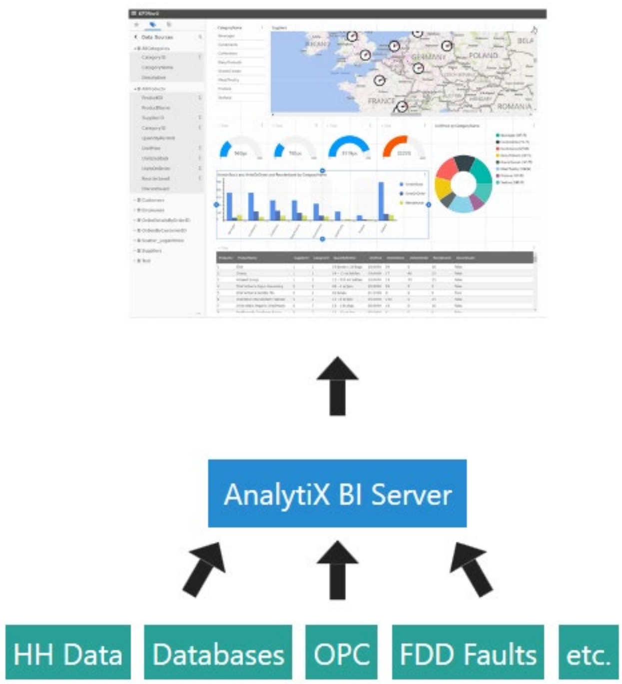
The solutions can leverage technologies such as expert systems and machine learning in Big Data applications, leading to visualization and reporting solutions to address, for instance, quality, efficiency and maintenance issues.

The tools organize critical operating information with a user-definable, ISA-95-compatible, asset-based network for analysis, visualization, and operations. Users are also able to expand such analyses with their own calculations. Our analytics products provide rich, dynamic dashboards that convey concise, role-based information for any industrial automation application.

Two importante tools are the **AnalytiX-BI** and the **Fault Detection and Diagnostics (FDD).**

AnalytiX-BI

AnalytiX-BI opens up new possibilities for analyzing business intelligence (BI) information within an operational context to reduce costs and maximize efficiency. It improves data accessibility, enables analytical processing, and provides data modeling/ context with incredible performance and intuitive visualization. It offers intuitive point-and-click data models and powerful query technologies that bridge IT, management, and business systems.

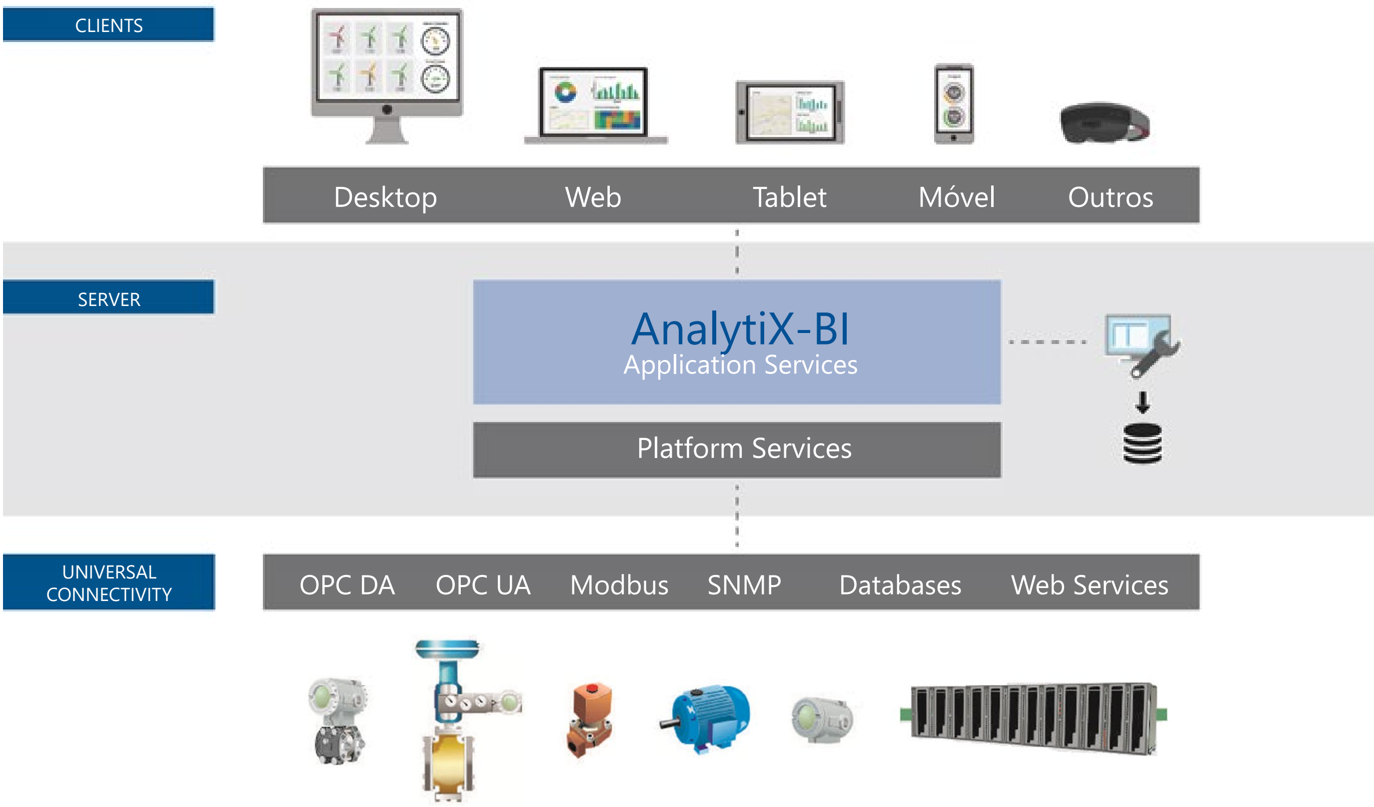


AnalytiX-BI is used worldwide to help organizations access, process, model and provide clear context for their valuable data.

The landscape of data in today's applications is of very diverse nature: systems are made of a large variety of components, many of which have their own data storage and their own interface to provide access to stored data – whether it is a web service, a database, an historian, etc.

This scattering of information often makes it difficult to provide a cohesive view of a system and, even in cases where all the data can be visualized together, it might not be shaped logically for the end user. Correlating these different datasets with each other is challenging and trying to query them using a common set of filters or parameters is difficult.

AnalytiX-BI was created to address these problems. Data is organized in user-defined Data Models, representing collections of datasets that are logically related to each other, irrespective of their physical origin. Data Models are connected to actual data using Data Flows; ETL (Extract Transform Load) processes that allow multi-step transformations of the ingested data for better shaping and filtering before loading it in a model.



AnalytiX-BI Architecture

The diagram above outlines the most common and most powerful architecture, and the way the pieces are designed to work together.

Following the data from the bottom up, your originating data sources can be just about any piece of data that can connect to, whether it be OPC, web services, HistoryView, AssetWorX, or a custom database. This data is pulled into data flows. Each data flow is a sequence of steps to modify and shape the data to best fit the data model. Data flows can be parameterized, so clients can get only the specific data they need.

Once the data has been shaped by data flows, it is pulled into data tables inside a data model. The data model defines relationships between the tables. These relationships make it easy to query the data.

Data from a data model can either be queried directly by clients such as KPIView, or the user can predefine views for a data model. Views can be based on the data tables, or on other views. Due to the predefined relationships, it is very easy to query the data model without having to worry about the proper JOINs between tables.

Since the data model is cached, triggers can be defined on each data table in the model to re-query its data source. Triggers can tell the table to be dropped and recreated anew, or only update the records that have changed. Each table can have multiple triggers, so you can define the best scheme to ensure your table is refreshed in the manner best suited for it. Triggers can work with parameters of data flows to only pull in data since the last data model refresh.

Fault Detection and Diagnostics

In modern automation and in most control systems, in general, a great deal of attention is devoted to the problems of Fault Detection and Diagnostics. One part of FDD methodology deals with the ability of a control system to detect and report (or, in some cases, predict) equipment failures or abnormal operating conditions while another part focuses on problem analysis and failure cause diagnostics.

In the world of OPC-enabled SCADA systems, the concept of fault detection unambiguously falls into the area of Alarms and Events management. OPC Alarms and Events specifications define how OPC A&E-enabled servers generate events to notify operators about various occurrences in the system. SMAR OPC A&E Servers provide a mechanism to scan data point values (e.g. signals from sensors, PLC/Controllers variables, expressions or external Rules engine boolean variables) and evaluate logical conditions generating Alarms (in OPC A&E language) or Faults (in general, non-OPC process control literature).

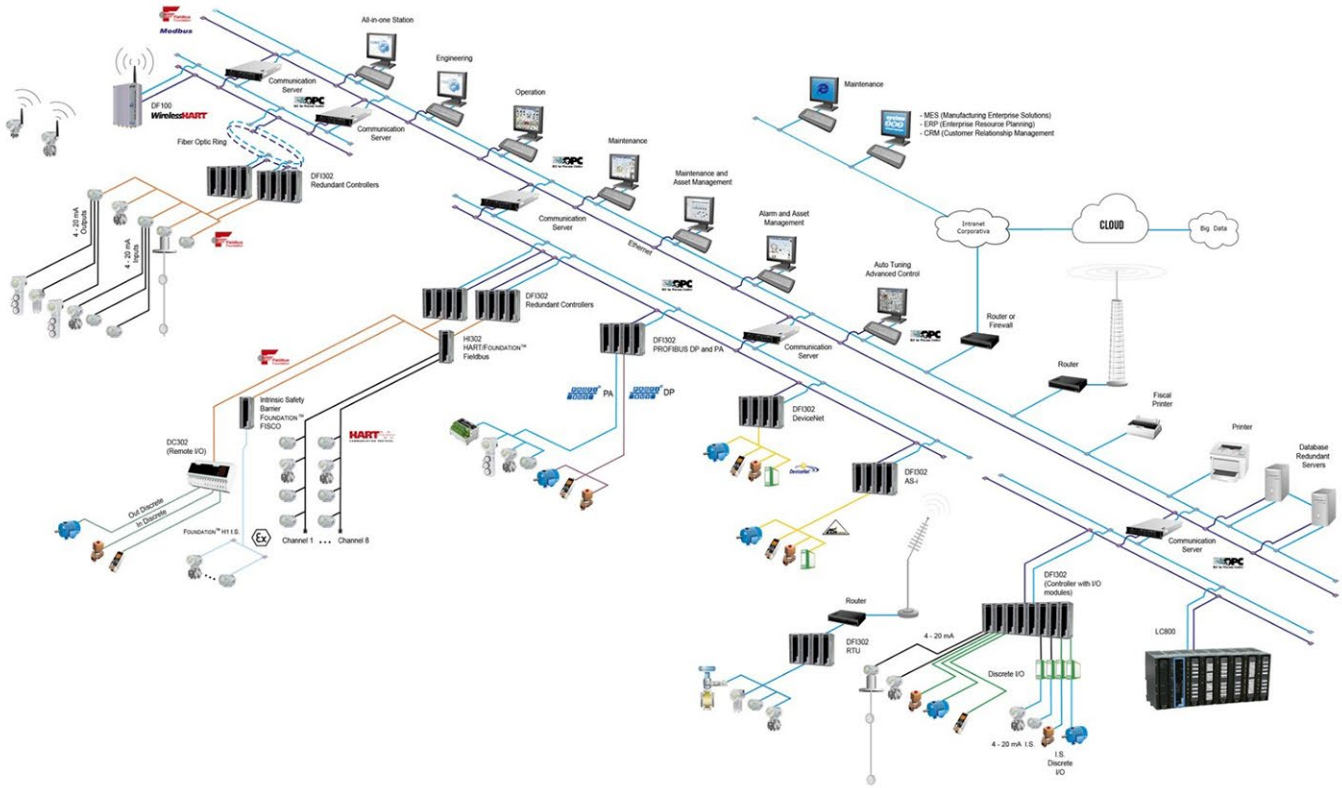
FDD technology addresses the need for a set of tools to perform alarm analysis and diagnostics, with a goal to determine a root cause or a limited set of possible reasons that lead to the appearance of specific Alarms (Faults). Both ideal simulation and historical pattern search approaches to fault diagnostics require very specific detailed knowledge of the equipment types being diagnosed.

Fault Detection and Diagnostics (FDD) technology significantly reduces costs and improves operational efficiency. Fault rules can be customized to predict equipment failures and advise personnel of preventive actions. Before the emergence of FDD software solutions, many organizations relied on institutional knowledge in order to fix or maintain their wide variety of equipment. After the development of FDD tech, this type of info (the numerous symptoms, causes and recommended actions) that may have only existed in the heads of senior personnel or, if lucky, in print or electronic archives, could now be used in algorithms to help organizations move from reactionary “break/fix” maintenance to more modern, more cost-effective predictive maintenance.

SMAR FDD tools use a Fault Rules Engine that calculates fault probability as well as all associated costs. It saves users configuration time by making integration easier, faster and more intuitive. SMAR FDD tools are able to integrate with the most popular SCADA, PLC and other systems used to monitor equipment conditions.

AnalyticsView

Data Analysis Software Suite



system 302

Open Digital Ecosystem

Rua Dr. Antônio Furlan Junior, 1028 - Sertãozinho, SP - CEP: 14170-480 - Brazil
insales@smar.com.br | +55 (16) 3946-3599 | www.smar.com