TIBC®

8 Must-have Capabilities to Take Your Data Visualization to the Next Level

INTRODUCTION

Analytics is no longer about collecting and exploring data, but more about converting it into actionable insights. With artificial intelligence and machine learning (AI/ML) becoming increasingly easier to procure and deploy, more organizations are finding these technologies crucial for maintaining competitive advantage and driving business forward. According to Gartner, "Analysts predict that by 2020, AI technologies will be virtually pervasive in almost every new software product and service."[1] The power of AI, combined with data analysis, is allowing organizations to unlock new information that was not easily attained before and to move towards even more valuable prescriptive and predictive analytics.

On top of analytics, AI leverages a variety of tools and techniques, such as predictive modeling and machine learning, to detect patterns in historical and new data. The core of AI-driven analytics is natural language processing, which can enable factoring of human intent. This capability is especially valuable for processing data, making analytics easier for occasional users, and automating analytics. AI-driven analytics is helping gain new perspectives—from delivering proactive customer service and optimizing prices in real time, to predicting impending machine failure.

When evaluating potential solutions, organizations often compare ease of deployment, time to insight, and cost. While all are important, there are several more assessments needed before choosing the right solution. These include capabilities around the availability of predictive, geospatial, and location analytics, ease of use, and integration with the cloud.

In this whitepaper, we discuss must-have capabilities to take data visualization and analytics to the next level, and how TIBCO Spotfire® on Amazon Web Services (AWS) can assist in this journey.

CLOUD INTEGRATION

CHALLENGES

Choosing the right analytics solutions goes deeper than simply the analytical capabilities being offered. Organizations are often challenged to find a solution that easily integrates with their cloud solutions, without the need to purchase additional services or reconfigure their current architecture. In addition to seamless integration, modern analytics solutions need to be designed with scalability in mind. With the increasing prominence of Internet of Things (IoT) devices generating real-time streaming data, organizations need the facilities to store this data without having to continuously purchase and configure new hardware.

SOLUTION

Analytics solutions designed for the cloud provide the necessary scalability to keep up with the volume and velocity at which data is collected, both real-time and historical, from an ever-growing number of data sources.

TIBCO SPOTFIRE ON AWS

Some of the biggest drivers for AWS are its scalability and elasticity. Organizations can instantly scale up or down to meet demand by deploying or retiring applications and workloads. Regardless if workloads are needed for minutes or days, organizations pay only for the resources they use.

With these drivers in mind, TIBCO Spotfire® data analytics was designed to be "AWS ready." It easily integrates with and analyzes data from Amazon Elastic Compute Cloud (Amazon EC2), Amazon Relational Database Service (Amazon RDS), Amazon Redshift, Amazon Elastic MapReduce (Amazon EMR) and even on-premises data sources.

DATA CATALOG

CHALLENGES

When data is stored in disparate sources, it's difficult to get the full picture. Finding, categorizing, and creating relationships between unorganized data can be an impossible task and leave important data unused.

SOLUTION

To solve for this, organizations seek solutions that offer data catalogs to simplify the search for related data sources. These solutions need to easily integrate with existing business systems to reduce the time it takes to migrate and catalog data.

TIBCO SPOTFIRE ON AWS

TIBCO Spotfire on AWS offers AI-driven search capabilities that help users quickly find related data sources and create relevant relationships to enrich their overall analysis. Regardless of data type, structured or unstructured, TIBCO Spotfire can help you organize data in the way that makes the most sense for your business needs. Semantic enrichment capabilities provide an additional layer of metadata that helps with indexing and contextualizing data.

SELF-SERVICE DATA PREP

CHALLENGES

Data preparation is just as important as the analysis itself. But with the volume and speed at which data is collected, organizations often struggle to keep up. Without the right tools and skills, this problem causes analysts to lose out on valuable insights from data that's become stale.

SOLUTION

When searching for a data analytics solution, it's important to consider the data preparation capabilities that come with it. This functionality helps speed cleansing and preparation of data, resulting in the user spending less time preparing for analysis and more time developing insights.

TIBCO SPOTFIRE ON AWS

With smart data wrangling capabilities, TIBCO Spotfire enables users to visually manipulate data before and during analysis. Unlike traditional analytics solutions, data wrangling is uniquely offered inline through the visual analysis and preparation interface. All data analytics solutions require some preparation, but often users don't know if something is wrong with the data or how it will be used until they are fully immersed in the analysis process. With AI incorporated into data prep, users can determine how the data should be organized prior to analysis.

Data cleansing, visual manipulation, and inline transformation tools make it easy to merge, clean, and transform data prior to analysis. With these tools, business analysts can spend less time prepping data, and more time acting on the valuable insights gained from it. Once you determine how your data should be cleansed and organized, TIBCO Spotfire on AWS allows you to automate the data cleansing process. Faster data cleansing means faster time to insight, allowing organizations to position themselves to respond to real-time events such as security threats or peaks in customer demands.

DATA VISUALIZATION FOR ALL

CHALLENGES

While the right analytics solution needs to deliver valuable insights, it also needs to be usable by various roles across the organization. Comprehensive analytics tools often come with complex interfaces that require IT intervention. This can hinder productivity because IT can become overwhelmed with requests and it creates extra, unnecessary steps in the analysis process.

SOLUTION

Easy-to-use interfaces and features like natural language search allow any user within an organization to gather and analyze data and drive insights faster.

TIBCO SPOTFIRE ON AWS

In addition to offering self-service analytics, TIBCO Spotfire on AWS provides instant AI-driven recommendations generated as soon as data sources are connected. This means that even novice users can obtain actionable insights to share across the organization.

Built-in Spotfire advanced analytics tools include comprehensive interactive visualizations, which enable users to see which data is most valuable and how it is making an impact. Machine learning algorithms can find relationships and missing data and patterns. Simply clicking a metric of interest reveals outliers, relationships, and the data structure.

One-click collaboration offers simplified sharing across the organization. Of course, with sensitive data being shared, additional security measures need to be put in place. TIBCO Spotfire Server offers both authentication and authorization capabilities that can be integrated with existing user identity and access management systems. Authentication will validate the identity of the user, allowing them to access the user directory. The authorization process determines their rights and accessibility within the directory, as well as what they are allowed to do with the data they have access to.

AUTOMATION AND ALERTS

CHALLENGES

While procuring large volumes of data is beneficial to organizations, as they gain better insights, analyzing that data while it's still relevant becomes a challenge. Sifting through to find the right data to answer specific questions can be time consuming and therefore lead to time-sensitive data becoming stale or unusable.

SOLUTION

Solutions offering automatic alerts can inform users when time-sensitive data has been generated or is ready to "expire."

TIBCO SPOTFIRE ON AWS

TIBCO Spotfire can be configured to push key insights to users when it's important for them to take immediate action. This supports timely use of critical data. Additionally, with the power of automation, users can create analysis files and a series of actions to be taken automatically when new data arrives. Built-in features such as continuous feedback allows analysts to learn, refine, and further enhance their insights.

PREDICTIVE ANALYTICS

CHALLENGES

Legacy analytics solutions are often designed to answer the question "What happened"? While historical data is important, knowing what has already occurred doesn't necessarily help analysts use that information to predict future events and maximize business opportunities. Maintaining competitive advantage with AI and ML technologies, and making it easier to apply analytics to complex data, means that analysts need to shift their methodologies to answer "What will happen"?

SOLUTION

AI/ML powered solutions with specific forecasting capabilities allow organizations to not only predict future events from past data, but also process live data in real time.

TIBCO SPOTFIRE ON AWS

With easy to use, one-click forecasting tools, any user can create customizable expressions and data functions for predictive analytics. TIBCO Spotfire on AWS integrates with R Code, a programming language specific for statistical computing and graphics. This integration helps users benefit from thousands of R packages, available for free within the Spotfire UI to take data from a reactive to a more proactive state. For more advanced users, TIBCO Spotfire provides point-and-click authoring that allows for custom R models to run in the analysis.

By effectively analyzing past and present data at once, predictive analytics provides the edge organizations need to stay competitive—from determining consumer trends in retail to predicting faults in machinery. Predictive analytics can also be leveraged to spot potential fraudulent activities or determine weak points in a security system.

GEOSPATIAL AND LOCATION ANALYTICS

CHALLENGES
On-premises legacy solutions that provide analytics often fall short when quickly segmenting data by location. For organizations with multiple locations, whether across a city or country, location-based analytics adds another layer of insight to customer behaviors or factory productivity trends.

SOLUTION
Implementing geospatial and location analytics is not an easy feat. Accurate mapping data needs to be immediately available as users request it. Because of this need, organizations are seeking easy-to-use mapping and layered location-based visualization software.

TIBCO SPOTFIRE ON AWS
With the use of map data and layers, TIBCO Spotfire automatically recognizes location data and provides interactive, customizable multi-layer maps. With data mapping, users can bring real-world context to their analyses, which would be impossible with traditional tables and charts. The approved map charts are not limited to geographical maps. They can be maps of airports, malls, sports stadiums, semiconductor wafers, or any other kind of shape file that can be used to generate insights. Spotfire advanced location analytics capabilities are extended through use of TIBCO® Enterprise Runtime for R (TERR), which is a unique alternative R Code interpreter developed by TIBCO. TERR was designed to operate faster than the open source R engine, offering speeds up to 100x faster. This allows users to quickly find the location/geospatial data they need and apply it to their data on a clean, visualization-rich dashboard.

STREAMING DATA

CHALLENGES
For operationally intensive use cases where every second counts, more and more business users and leaders demand that insights affect actions instantaneously or with as little delay as possible.

SOLUTION
Streaming data requires a comprehensive solution that processes and analyzes live data as it's being generated, but organizations also need this data to be easily navigated by the average end user.

TIBCO SPOTFIRE ON AWS
Streaming data is a feature native to TIBCO Spotfire, allowing visual analytics to be applied to real-time events as they occur. This capability enables users to visualize data in real time and send alerts to take action. With the power of automation, data analysts can operationalize Spotfire decisions so they're timely, contextual, and based on fresh data.

IoT devices often generate data constantly, meaning organizations need the space to store that data prior to processing. By leveraging the scalability and storage capabilities of AWS, organizations can store large batches of data as needed, without having to procure additional on-premises hardware or storage facilities. This flexibility is especially important for organizations that experience seasonal or unexpected peaks in data generation.

TIBCO SPOTFIRE ON AWS

Whether for those just starting with data visualization, or teams trying to solve high-value business problems, TIBCO has always focused on time-to-high-value-insights. Many years of investment have resulted in innovation that addresses the necessary considerations and capabilities described above. Spotfire easily scales from small teams to entire global organizations, balancing ease of use with advanced analytics. With the freedom and flexibility to analyze streaming data at a speed that promotes competitive advantage, you can easily act on your data while it's still relevant.

With seamless connectivity to AWS services such as Amazon EC2, Amazon S3, Amazon RDS, Amazon EMR, and Amazon Redshift, TIBCO Spotfire makes it easy for you to securely scale your analytics efforts when needed. Its easy-to-use interface makes powerful, AI-driven analytics accessible to every user. With the scalability of AWS and the performance of TIBCO Spotfire, your organization will gain the power you need to stay competitive and continuously innovate.

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1 https://www.gartner.com/en/newsroom/press-releases/2017-07-18-gartner-says-ai-technologies-will-be-in-almost-every-new-software-product-by-2020

aws

TIBCO fuels digital business by enabling better decisions and faster, smarter actions through the TIBCO Connected Intelligence Cloud. From APIs and systems to devices and people, we interconnect everything, capture data in real time wherever it is, and augment the intelligence of your business through analytical insights. Thousands of customers around the globe rely on us to build compelling experiences, energize operations, and propel innovation. Learn how TIBCO makes digital smarter at www.tibco.com.