

# TIBCO Spotfire 12

Close the gap between insights and action with immersive, smart, and real-time analytics

## Take Action

New in TIBCO Spotfire 12 software, the Cloud Actions feature closes the gap between insight and action in a fully governed, scalable analytics platform. It lets you trigger seamless transactions without leaving the Spotfire environment, for example, to schedule maintenance, open a ticket, create an alert, reload data, or call an API to reduce the time lag between event and action for real-time decisions.

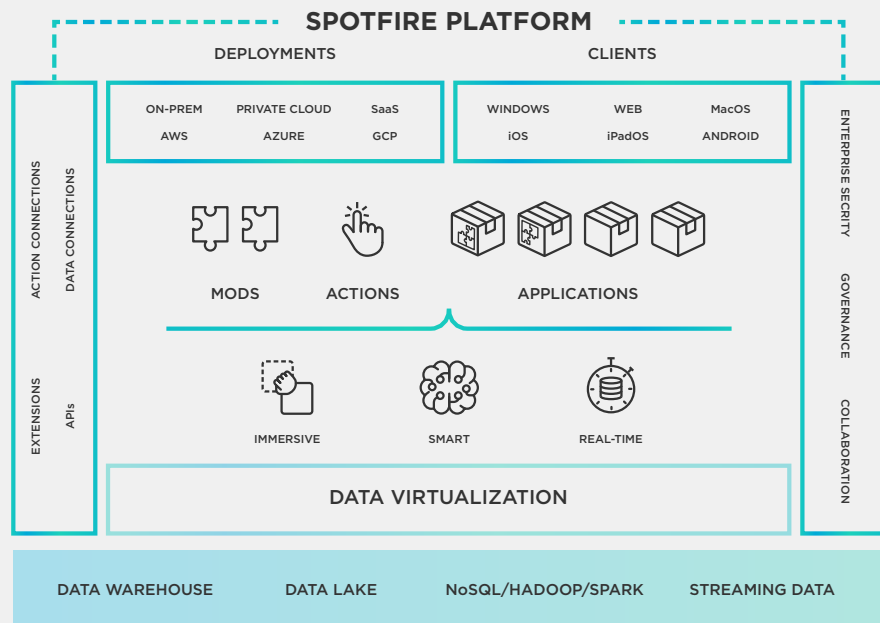
Taking action directly from analytics workflows drives a competitive advantage by increasing the overall volume and quality of timely decisions while lowering the overall cost of operations.

The latest evolution of TIBCO Spotfire analytics, version 12, resolves and speeds actions based on governed analytics at-scale and empowers fast creation of analytics applications. Hyperconverged analytics brings visual analytics, streaming analytics, and data science capabilities together in a seamless experience, delivering immersive, smart, and real-time analytics. Now, using best-of-breed analytics capabilities, every organization can discover the richest insights for smarter data-driven decision-making from any kind of data. Spotfire Mods functionality allows building custom low-code analytics apps even faster, radically improving the speed to value and insights for business users.

## What Is Spotfire Software?

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The TIBCO Spotfire end-to-end enterprise-class analytics platform enables anyone to make discoveries in data through immersive visual exploration and advanced analytics applications. With predictive analytics, geolocation analytics, and streaming analytics in one decision and control environment, it delivers capabilities at scale for analysis of data at-rest and data in-motion.



## Benefits

### Get Faster Insights

Spotfire software helps everyone develop insights faster. Type a few letters in the search bar, and the system builds relevant charts and provides a choice of quick contextual actions for matched records, files, help, etc. Click a metric of interest, and the AI-powered recommendations engine (based on data science and machine learning) reveals outliers, relationships, and data structure annotated with simple text explanations. Or filter, mark, drill, brush, pan, and zoom to finetune your findings and share your insights with your team. Anyone can get started easily, and everyone will find the answers they seek in the fastest time possible, with the least effort possible.

## Immersive

The Spotfire platform is designed to deliver insights faster than any other analytics tool. Countless development hours have been dedicated to aligning the experience with how people naturally interact with the world. Users can grab the data they want, look at it from different perspectives, and speed through views to discover relationships and gain insight. If they spot data quality problems, Spotfire features help fix the issues while automatically capturing all the transformations without breaking the flow. This agile, automated experience is the foundation, allowing people to answer questions even faster than they occur to them.

## Direct Manipulation with Instant Feedback

With consistent interaction and a tight action-response loop, pliable Spotfire visualizations give users a sense of shaping the data with their hands. Users focus on the analytical problems and interact directly with the visual representation of the data, molding it in ways that help spark insights.

## Integrated Experience

Visual analytics depends on a whole range of workflows: accessing and wrangling data to make it all consistent and ready for analysis, using ad hoc analysis and analysis design, applying predictive models, sharing the results with others. Spotfire software responds to the iterative nature of visual analytics and allows users to perform all the key tasks without losing their flow.

## Combine Real-time Data with Historical Data

TIBCO is the first in the industry to introduce real-time, streaming data to an enterprise class analytics platform. With Spotfire analytics, you can combine streaming and historical data to uncover the reasons for what's happening in the moment, and take action to change the future.

## Enjoy Ultimate Performance

Spotfire analytics has a hybrid memory that delivers the same agile experience for data of any size or type. You can push lightning fast queries directly to the cluster, or with the latest memory compression and reusable algorithms, support more users on the same hardware for extracted data. Or point to real-time operational sources and enjoy the same interactive experience on data that changes multiple times per second. Spotfire analytics scales to support high-performance analytics for any application.

## Solve Tough Problems

The simple, intuitive Spotfire experience belies its depth and power. Unlike limited visualization-only tools, Spotfire analytics natively runs thousands of machine learning and statistical methods via the embedded commercial R and TIBCO Statistica engines. Its maps support multiple interactive layers with precise distances, multiple geographic projections, connectivity to TIBCO services for address level geocoding, fuzzy matching, route optimization, and other powerful geoanalytic capabilities. These advanced analytics, along with native streaming, enable Spotfire analytics to extend the reach of BI to operationally intensive businesses such as Manufacturing, Supply Chain, Capital Markets, and IoT.

## Fearless Exploration

Spotfire software beautifully supports ad hoc experimentation through visual feedback. Actions are reversible, and can easily be reviewed, enabling users to ask any question and still feel in control. Fearless exploration means users can immerse themselves in insight discovery. Both visualization settings and data wrangling steps can be reapplied to new data.

## Smart Suggestions

Spotfire software simplifies tasks by providing good defaults, applying heuristics and recommending actions based on context and available data. Beginners get started faster, and experienced users discover new ways to explore data. The artificial intelligence (AI) infused recommendations are never intrusive and always keep users in control, letting them focus on the goal rather than the software.

## Multi-layer Maps and Instant Geocoding

When geoanalytics matters, Spotfire analytics offers a powerfully immersive experience. The software supports multiple map layers, and enables users to drag-and-drop data containing city and country names for automatic geocoding and reverse geocoding. From epidemiology to natural resource management, and from real estate to retail, geoanalytics helps generate insights and make predictions that would not be possible using traditional tables and charts.

## Inline Data Wrangling

As users ingest and interact with data, Spotfire data wrangling helps fix data quality problems, inconsistencies, and deficiencies right within the platform itself. Users don't need to go outside the environment to prepare data before visualizing it. They can combine, shape, clean, enrich, and transform data, all while doing data exploration.

## Automatic Dataflows

Spotfire analytics automatically captures all transformations and data wrangling steps and lays them out in the data canvas as a fully editable dataflow. Users can edit everything in the dataflow and share the steps for reuse with others in the organization.

## Smart

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### Natural Language Search

With natural language search, Spotfire analytics lets people search in their own words by typing into the search bar to enable charts creation, get AI-powered recommendations, find data to mark, and launch tools. The search bar becomes the command-line from where you can drive the entire application.

## Build Process Specific Applications

Spotfire analytics makes it extremely easy to build and deploy process specific applications with point-and-click navigation. Our customers and partners use out-of-the-box Spotfire capabilities and rich APIs to build and deliver solutions with connectivity to proprietary data, custom visualizations, custom computations, and statistical methods, and to drive actions across multiple systems.

## Employ Modern Architecture & Governance

Spotfire analytics has been optimized for scaled, secure deployments to very large, geographically distributed organizations. As one of the earliest cloud analytics solutions, the Spotfire platform has modern and mature automated administration capabilities. The same service-oriented architecture is in the cloud, on-premises, and in hybrid deployments, so you can enjoy smooth onboarding and worry-free upgrades performed either by TIBCO or your own IT organization.

## AI-powered Insights

The robust and scalable Spotfire AI engine automatically identifies potential relationships to explore, offering guidance by suggesting best practice visualizations for illustrating the relationships for insight discovery. Relationships are presented in the context of what the user is doing. Users can discover trends, outliers, and patterns in any data without having to know its structure!

## Predictive Analytics

Spotfire analytics has many built-in one-click predictive methods that are available to use for classification, clustering, and forecasting, making it very easy for anyone to get started with predictive analytics. Data and results can be visualized in Spotfire interactive dashboards, while the data science and underlying calculations can be done using the TIBCO Data Science platform or analytics from R, Python, SAS, and Matlab via TIBCO Spotfire Data Functions software. Additionally, you can write and manage scripts all in one environment with native R and Python bundled engines.

## Real time

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Spotfire analytics brings real-time situational awareness about any operational system to users' fingertips with first-class visual support of real-time data. TIBCO Spotfire Data Streams software allows instant access to more than 50 additional streaming data sources. With Spotfire analytics, you can combine streaming and historical data to understand the reasons for what's happening in the moment, and take actions to change the future. Business intelligence can now address mainstream operational intelligence and IoT situations where the costs and risks are severe if data is not analyzed and acted upon as soon as it's generated.

## Analytic Applications

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Spotfire software is a fantastic analytics platform for analysts and data scientists, and it can also easily be configured to give anyone access to an analytic application tailored to meet a specific need.

Without coding, analysts can build fit-for-purpose, data-driven applications to share with their colleagues. Developers who build analytic applications for specific industries and business functions can use the Spotfire platform to save time and get to market faster, instead of building analytics applications from scratch.

With rich native Spotfire data access, calculation and visualization capabilities, and specialized data functions and mods from the Spotfire community, building powerful analytic applications has never been easier.

## Data Functions

A Spotfire data function is a no code, reusable add-in to the software that provides additional data access, calculations, predictions, and data transformation capabilities. Without having to write a line of code or use complex statistics, business users and analysts get access to deep and specialized data science capabilities through a point & click user experience. Statisticians and data scientists can easily package R, Python, TIBCO Data Science (Statistica), MATLAB, or SAS functions as data functions, and share them with their team, organization, or the large Spotfire user community. With Spotfire Data Functions, it's possible to write and manage scripts in one single environment with native R and Python bundled engines.

## ModelOps

TIBCO ModelOps integration in Spotfire analytics enables building fully governed, AI-infused apps for visualizing auditable workflows in a single analytics platform. Users can access pipelines through Spotfire Data Functions for real-time streaming predictions to monitor and improve the understanding of data science model performance at scale. Data functions allow even non-developers to build, manage, and score models using low-code, language-agnostic tools (Python, Tensorflow, Spark, PMML, cloud services).

## Actions

Analytic applications do not need to stop at insight. With Spotfire Cloud Actions, users can trigger seamless transactions in business systems like Workday, Salesforce, Marketo, or Zendesk without leaving the Spotfire environment. For example, they can schedule maintenance, open a ticket, create an alert, reload data, or build API calls to close the gap between event and action for real-time decisions. This also extends to IoT systems; Spotfire applications act as your decision and control hub.

## Mods

The Spotfire Mods framework allows the rapid creation of lightweight add-ins, bringing new interactive visualization and user interface capabilities to the Spotfire analysis environment. Mods look and feel like native Spotfire functionality to all users. They work in any environment and can be easily shared across teams and organizations.

Spotfire Mods give analysts and data scientists access to a rich set of specialized visualizations tailored to their industry and their role from within an easy to use analytics environment. Report and app developers who build interactive dashboards for executives and other business users can tailor their dashboards using specialized visualizations that resonate with their audience, while simultaneously taking advantage of the data access, data wrangling, and interactive capabilities of the Spotfire platform.

A Web developer can easily build a new mod using Javascript/HTML by taking advantage of web-based visualization toolkits.

Hemlock  
Semiconductor

**"With Spotfire analytics, we've been able to pull years of testing data and see trends and demographics that allowed us to ask a lot of questions about that process. From those questions, we put together an impressive cost savings portfolio of opportunities to improve the business. We really couldn't do that before, because of the amount of data involved."**

—Kevin Britton,  
Program Manager

## Features And Capabilities

### Analytics

- Dynamic Queries
- Maximize/Minimize Visualization
- Search
- Line Similarity
- K-means Clustering
- Hierarchical Clustering
- Data Relationships
- Regression Modeling
- Classification Modeling Tags
- R Data Functions
- Python Data Functions
- Statistica Workflow Data Functions
- Matlab and SAS Data Functions
- Natural Language Query
- Visualization Recommendations
- Data Action Recommendations
- AI-driven Insights
- Lists
- Custom Tools

### Sharing and Collaboration

- Bookmarks
- Conversations
- Export to PDF
- Export to PowerPoint
- Export to Image
- Custom Export

### Data Access

#### File Formats

- Comma-separated Variable (.csv)
- ESRI Shape Files (.shp)
- Microsoft Excel Workbooks (.xls, .xlsx, .xlsb, .xlsm)
- Log Files (.log)
- Spotfire Text Data Format (.stdf)
- Spotfire Binary Data Format (.sbf)
- Text (.txt)
- Import Data from Data Function
- TIBCO Spotfire DecisionSite Files (.sfs)
- SAS Data Files (.sas7bdat, .sd2)
- Microsoft Access Databases (.mdb, .mde)
- Universal Data Link (.udl)
- Clipboard
- Custom File Data Source

### Relational DBMS

- Amazon Aurora MySQL
- Amazon Aurora PostgreSQL
- Amazon EMR Hive
- Amazon EMR Spark SQL
- Amazon RDS MySQL
- Amazon RDS PostgreSQL
- Amazon RDS SQL Server
- Amazon Redshift
- Apache Drill
- Apache Hive

**USDA**

**“One of the key things that attracted us to TIBCO Spotfire analytics was that it was easy to install, easy to create visualizations that people could use, and easy to learn on the fly. With the Spotfire platform, we haven’t had to work so hard to incite change.”**

—Darryl Earnest, Deputy Administrator

- Apache Spark SQL
- Cloudera Hive
- Cloudera Impala
- Cloudera Spark SQL
- Databricks on AWS
- Dremio
- Google BigQuery
- Google Cloud SQL for MySQL
- Google Cloud SQL for PostgreSQL
- Google Cloud SQL for SQL Server
- Hortonworks Hive
- Hortonworks Spark SQL
- IBM BigInsights Hive
- IBM BigInsights Spark SQL
- IBM BigSQL
- IBM DB2
- IBM Netezza
- MapR Hive
- MapR SparkSQL
- MariaDB
- MemSQL
- Microsoft Azure Database for MySQL
- Microsoft Azure Database for PostgreSQL
- Microsoft Azure Databricks
- Microsoft Azure HDInsights Hive
- Microsoft Azure HDInsights Spark SQL
- Microsoft Azure SQL Database
- Microsoft Azure Synapse Analytics
- Microsoft SQL Server
- MongoDB (Connector for BI)
- OData
- Oracle
- Oracle MySQL
- Pivotal Greenplum
- Pivotal HAWQ
- PostgreSQL
- SAP HANA
- Snowflake
- Teradata
- Teradata Aster
- TIBCO Cloud Live Apps
- TIBCO ComputeDB
- TIBCO Data Virtualization
- TIBCO Spotfire Advanced Data Services
- Vertica

**Multidimensional DBMS**

- Oracle Essbase
- Microsoft SQL Server Analysis Services
- Microsoft Azure Analysis Services
- SAP BW (Netweaver Business Warehouse)

**Streaming Data**

- Apache Kafka
- TIBCO Enterprise Message Service
- JMS
- WITS, WITSML
- OsPi
- IBM MQ
- MQTT
- RabbitMQ
- TIBCO eFTL
- Apache Hadoop
- Apache HBase
- Apache Cassandra

## Riteway Foods

**“TIBCO sets itself apart with interactive visualizations and built-in predictive modeling. You click on a graphic and subsequent visualizations show which data it affects. It’s a wow factor that has set us apart. . . .For our division, Spotfire absolutely paid for itself within the first year.”**

—Elisa Westlund, Director of Insights, Analytics, and Marketing

- Apache Kudu
- Salesforce Streaming
- Change Data Capture
- FIX
- Capital Market Exchanges

### Applications

- Google Analytics
- Microsoft SharePoint Online Lists
- Salesforce

### APIs

- ODBC
- JDBC
- OData
- Custom Data Source

For a comprehensive list of systems where Spotfire can trigger Actions, [see this documentation resource](#).

### Data Preparation

- Audit and Author Data Table Workflow
- Add Calculated Column
- Join Tables (Add Columns)
- Union Tables (Add Rows)
- Replace Data Table
- Split Column
- Replace Empty Values
- Change Data Type
- Replace Value
- Unpivot
- Insert Data Function
- Add Hierarchy
- Normalization
- Pivot
- Set Data Table Properties
- Set Column Properties
- Custom Data Transformation

### Visualizations

- Table
- Bar Chart/Column Chart
- Histogram
- Line Chart
- Combination Chart
- Map Chart
- Pie Chart
- Scatter Plot
- Bubble Chart
- Treemap
- Parallel Coordinate Plot
- KPI Chart
- Waterfall Chart
- Trellis
- Pareto Chart
- Image Map
- Heatmap
- Graphical Table
- Bullet Graph
- Calculated Values and Icons
- Sparklines



**“Mod customizations give us a great way of knowing what our consumer base is, and how they think of us and our competitors.”**

—Data Engineer, leading athlectic lifestyle brand

- Summary Table
- Box Plot
- 3D Scatter Plot
- Reference Lines
- Curve Fits
- Custom Visualizations
- Visualization Mods \*\*
- Dashboard Layout
- Mobile Layout

\*\*In addition to all of Spotfire native visualizations available out of the box, numerous [Community Visualization Mods](#) are also available for download on the TIBCO Exchange. These include a word cloud, Sankey chart, animated bubble chart, area chart, and spider plots, with more being added continuously.

### Analytic Applications

- Input Controls
- Scripting
- Document Properties
- Actions

### Administration

- User Administration
- Configure SSO
- Manage Feature Access and Preferences
- Group Administration
- Monitoring and Diagnostics
- Automation Services Job Scheduling
- Scheduled Updates
- Manage Upgrades and Extensions
- Analyze User Action Logs
- Analyze System Logs
- Registering an API Client
- Manage Resources
- Easy Deployment through K8s in Azure, GCP, or on-premises
- Self-healing
- Easier Upgrades
- Elastic Services
- Easier Clustering and Load Balancing

All Spotfire services in Linux. Kubernetes managed.

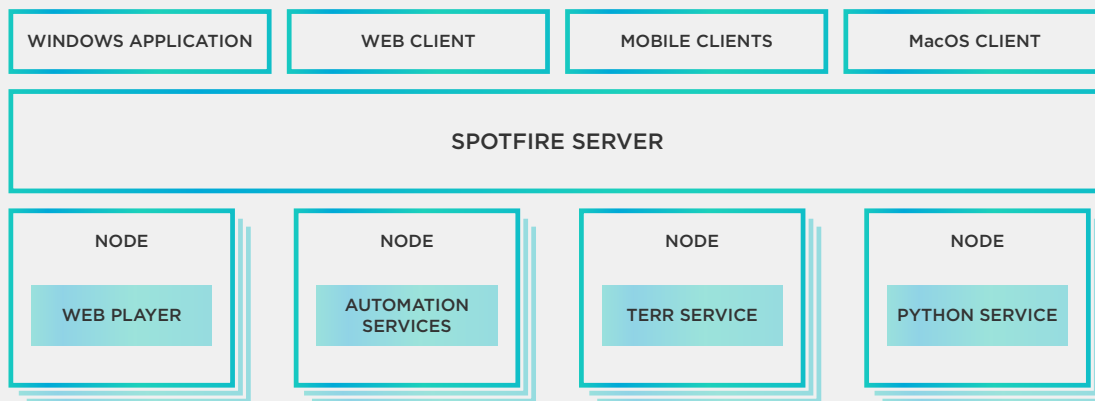
### Customization

- Embedding / JavaScript API
- Menu Add-ins
- Customizable Toolbar
- Custom Panels
- Custom Export
- Custom Sharing
- Custom Visualizations
- Custom Value Rendering
- Custom Data Sources
- Custom Data Functions
- Custom Data Transformations
- Custom Expressions
- Custom Curve Fitting
- Custom Preferences
- Custom Log-in Screen
- Custom Start Page

## Scalable Architecture

Spotfire analytics supports the smallest implementations to the largest, most demanding global deployments with unparalleled performance, scalability, and security. Spotfire software is deployed in the world's largest companies in Consumer Packaged Goods, Energy, Financial Services, Life Sciences, Manufacturing, and other industries. Administrators can be confident that business-critical analytical applications perform as needed using capabilities such as redistribution of resources for multiple workloads and SLAs, addition and deletion of nodes and service instances, and smart routing and resource pools. Spotfire analytics works within existing enterprise IT systems and security models and is backed by TIBCO's global domain expertise and 24x7 customer service.

### SPOTFIRE ARCHITECTURE



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TIBCO Software Inc. unlocks the potential of real-time data for making faster, smarter decisions. Our Connected Intelligence platform seamlessly connects any application or data source; intelligently unifies data for greater access, trust, and control; and confidently predicts outcomes in real time and at scale. Learn how solutions to our customers' most critical business challenges are made possible by TIBCO at [www.tibco.com](http://www.tibco.com).

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