The Better Way: A Hyperconverged Analytics Platform

If your organization relies on business intelligence (BI) applications to provide the insights needed to meet goals and manage risks, you need to be sure that these insights are:

- Deep and multidimensional, leading to novel learnings and aha! moments

- Easy to consume, share, and act upon by the business users needing those insights

- Not simply descriptive or diagnostic, but predictive and prescriptive, incorporating AI-based recommendations and machine learning that support automation

- As dynamic as the world we live in, reflecting not just historic data, but also real-time data

Without these qualities, the insights gained can steer you in the wrong direction — or worse. Shallow analytics are, in effect, "zombie analytics," dashboards that can't provide rich, immersive insights and so will metaphorically consume your organization's brain, compromising your ability to meet goals and manage risks.

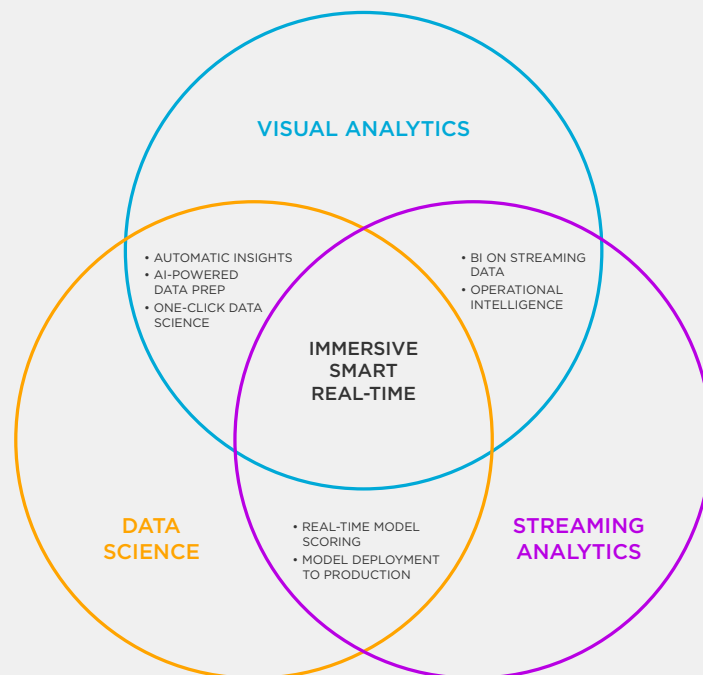## Conventional BI and Analytics Tools Are a Risk to Agility

The shortcomings of zombie analytics that blunt the intelligence of an organization include:

- **Shallow, flat dashboards that miss important insights.** Relying on conventional dashboards is risky, because their apparent clarity makes it seem as if they're providing a complete answer, when they are, in fact, an impediment to deeper inquiry. Data-driven decision-making requires agile, immersive exploration, the ability to seamlessly drill down into outliers and quickly visualize "what if?" scenarios— and you can't do that with a flat dashboard.

- **A lack of tight integration between visual analytics and data science that limits predictive insights.** Most traditional approaches to BI dashboarding are descriptive, or at best diagnostic, rather than predictive or prescriptive. Using analytics this way is like looking only at the rear-view mirror while driving. But, to predict the future and share it through visual analytics too often takes manual effort, manual coding, and scarce data science resources. A better way would be to embed data science right within the visual analysis, speeding the time to more valuable insights and automation.

- **A lack of tight integration with data streams that limits organizational agility.** For operational excellence and radical improvements in efficiency, you need to know what's happening right now, and you need to be able to gain insights in real time. With embedded data science, agility is enhanced through prescriptive analytics and automation, and through real-time analysis to automatically and continuously update the recalculations in models.

The Better Way: An Analytics Platform that's Hyperconverged

VISUAL ANALYTICS

- AUTOMATIC INSIGHTS
- AI-POWERED DATA PREP
- ONE-CLICK DATA SCIENCE

- BI ON STREAMING DATA
- OPERATIONAL INTELLIGENCE

IMMERSIVE
SMART
REAL-TIME

DATA SCIENCE

- REAL-TIME MODEL SCORING
- MODEL DEPLOYMENT TO PRODUCTION

STREAMING ANALYTICS

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

- **Immersive.** Rather than a flat, static visual analysis, the immersive quality of hyperconverged analytics enables richer, responsive drill-down brushlinked analysis for better insights and exploratory discovery.
- **Smart.** Hyperconverged analytics is not only a smarter approach, by seamlessly embedding data science within visual analytics, it enables smarter collaboration across roles and teams, empowering citizen data scientists.
- **Real-time.** By supporting rich analytics on streaming data, hyperconverged analytics drives better closed-loop analytics and insights that reflect changing conditions for dynamic use cases.

Ideally, a hyperconverged analytics platform will also enable the rapid creation of custom analytics apps, to ensure that you get the insights you need most. And the strongest approach will provide the agility to further customize what's needed fast through tightly integrated, prebuilt components. By using the power of hyperconverged analytics, you get immersive analytics your way for smarter teams and smarter organizations.

Key Attributes of Custom Analytics Apps for Hyperconverged Analytics

| CUSTOM ANALYTICS APPS AND MODS		
IMMERSIVE	Empowers analysts and business users to drill down and explore for insights easily and fearlessly	• Pliable user experience • Consistent interaction model with tight action-response loop for fast, intuitive feedback between user and app • Reversible ad-hoc exploration • Brushlinked analysis, where a change to the data in one view seamlessly modifies what's seen in another view • Geoanalytics and location analytics • Dynamic dashboarding • Collaboration enabled through threaded discussions, annotations, and filtered analytics views • Contextualized insights • Inline, seamless data wrangling
SMART	Provides tight integration with data science capabilities	• Data science pipelines embedded in AI-infused business applications • Model operations for deployment, monitoring, and governance • One-click predictive forecasting • Both Python and R data function packages written and managed natively • AI-powered Recommendations engine and insights • Natural language query • Automated alerting for situations requiring human intervention

REAL-TIME	Consumes and analyzes both historic and streaming data in a single analysis environment	• Real-time analysis of live streaming data • Extensive libraries of pre-built streaming data connectors to leading technologies such as Kafka, MQTT, OSI PI, and TIBCO Messaging • Support for edge (Internet of Things) data via additional custom sources and APIs • Cloud or on-premises implementations • Seamless connection to streaming data sources via a no-code, browser based platform

BUILT ON AN INTEGRATED, EXTENSIBLE PLATFORM

Introducing Spotfire 11

With TIBCO Spotfire 11 software, the promise of hyperconverged analytics becomes an immersive analytics reality. The Spotfire platform delivers immersive, self-service visual analytics for everyone, generating insights from all kinds of data, whether at rest or in motion—including real-time streaming data. It offers visual analytics, data wrangling, streaming analytics, geo and location analytics, and predictive analytic capabilities packaged in a beautiful user experience. And it supports creating and sharing mods, those components of an analytics app that tightly integrate with Spotfire analytics and leverage its power, seamlessly.
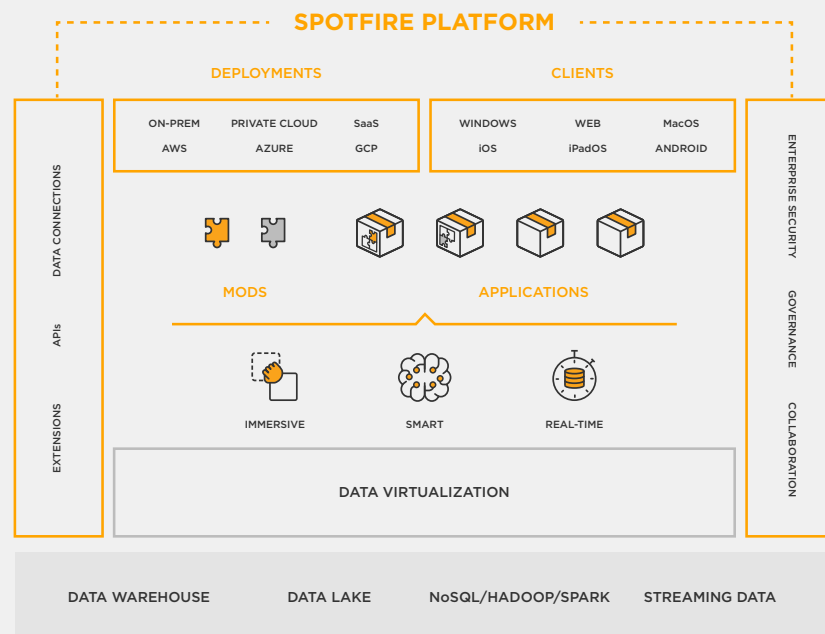
With Spotfire 11 analytics, users get what they need for faster, richer insights.

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

Countless hours went into aligning the Spotfire experience with how people naturally interact with the world, so that high-value insights can be delivered faster than any other analytics platform.

Immersive

The immersive Spotfire experience is unparalleled:

- Pliable visualizations that allow direct manipulation with instant feedback
- An integrated workflow experience that supports the way users work—iteratively, immersed in analytics without losing flow
- Ad-hoc experimentation with actions that are reversible, and can easily be reviewed, enabling users to ask any question and still feel in control for fearless exploration
- Smart suggestions via AI-infused recommendations that help beginners get started faster, and experienced users discover new ways to explore data
- Outstanding geoanalytics capabilities, allowing users to immerse themselves in multi-layered maps and drag-and-drop data for automatic geocoding and reverse geocoding, as well as granular location analytics such as building-level analysis
- Contextual conversations and collaboration, via one-click web publishing in dashboards with support for threaded discussions, annotations, and filtered analytics views
- Inline data wrangling right within the Spotfire environment, allowing users to combine, shape, clean, enrich, and transform data, all while doing data exploration
- Automatic capture of all transformations and data wrangling steps layed out in the data canvas as a fully editable, shareable, reusable dataflow

Smart

With Spotfire 11 software, the power of AI and data science is at your fingertips, integrated within the same environment as your analysis.

- With natural language search, the search bar is the command line from where you can drive the entire application, letting users search in their own words to enable the creation of charts, get AI-powered recommendations, find data to mark, and launch tools to further an analysis.
- The robust, scalable Spotfire AI engine lets users discover trends, outliers, anomalies, and patterns in any data without having to know its structure—automatically identifying potential relationships to explore, and suggesting best practice visualizations illustrating those relationships for insight discovery.

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

- It's easy to get started with Spotfire predictive analytics. Its many built-in, one-click predictive methods are available for classification, clustering, and forecasting, and data and results can be visualized in 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 Spotfire data functions, you can write and manage scripts all in one environment with native R and Python bundled engines.

Real-time

Spotfire 11 software brings real-time situational awareness of any operational system to an immersive analytics experience, with first-class visual analytic support for real-time data, you can:

- Combine streaming and historical data to understand what's happening in the moment, and take actions to change the future.
- 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.
- Expand your reach—get instant access to more than 50 additional streaming data sources with TIBCO Spotfire Data Streams software.

Analytic Applications, Mods, and Data Functions

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

- Build fit-for-purpose, data-driven, shareable applications—without coding
- Use it as an analytics development platform to save time and get to market faster
- Infuse custom analytics apps with rich native data access, calculation, and visualization capabilities
- Expand the power of those apps with specialized data functions and mods from the Spotfire community
  - A Spotfire data function is a lightweight add-in that provides new data access, calculations, and data transformation capabilities.
  - Statisticians and data scientists can easily build shareable data functions using R, Python, TIBCO Data Science software, MATLAB, or SAS. Additionally, it's easy to write and manage scripts in the Spotfire environment with native R and Python bundled engines.

- 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.

Spotlight on Spotfire Mods

With Spotfire mods, Spotfire 11 software ushers in a transformative moment for analytics applications. Adapting an idea from the gaming community for lightweight, tightly integrated modifications that change the game play experience, mods provide lightweight add-ins to the Spotfire environment that similarly add capabilities and reinvent the user experience.

Unlike other approaches to analytics extensions, the tight integration of mods ensures users get a seamless, immersive experience. The vision for mods is centered on community, shareability, and ease of creation, and the only limit is your imagination—where will Spotfire mod components take you on your analytics journey?
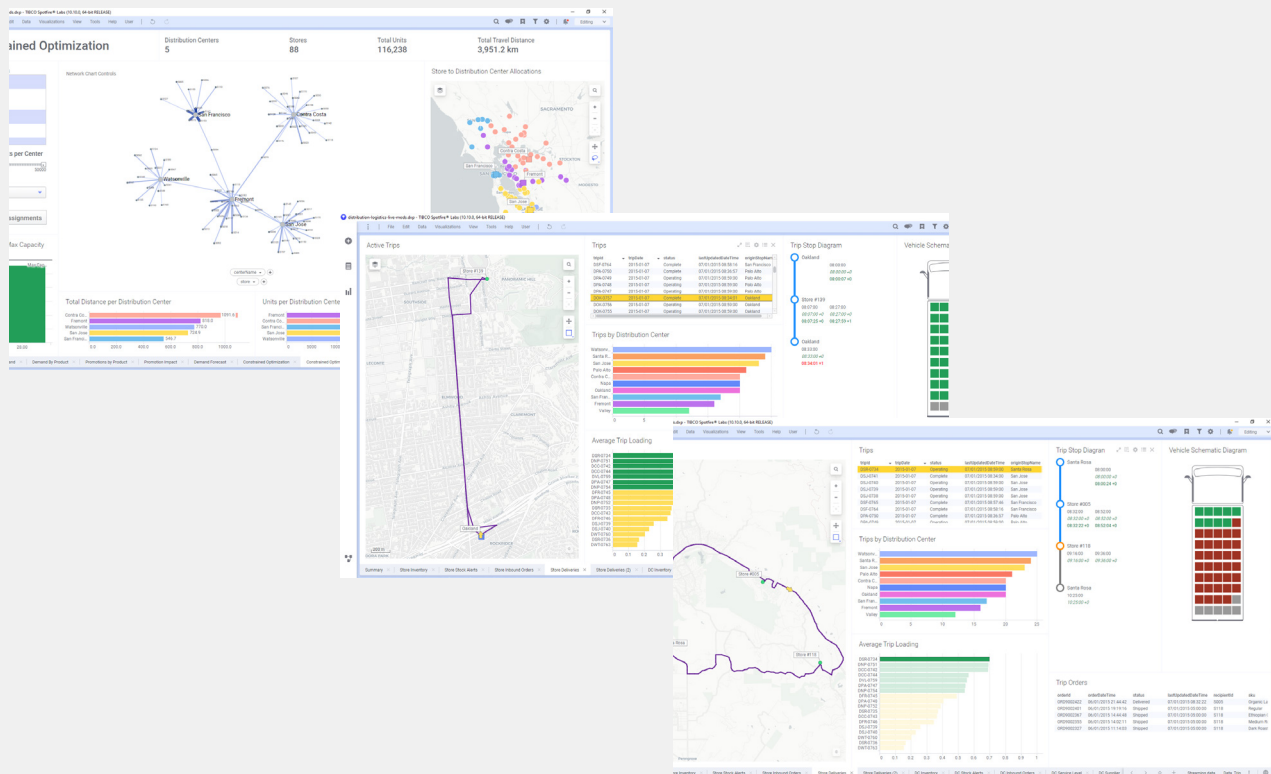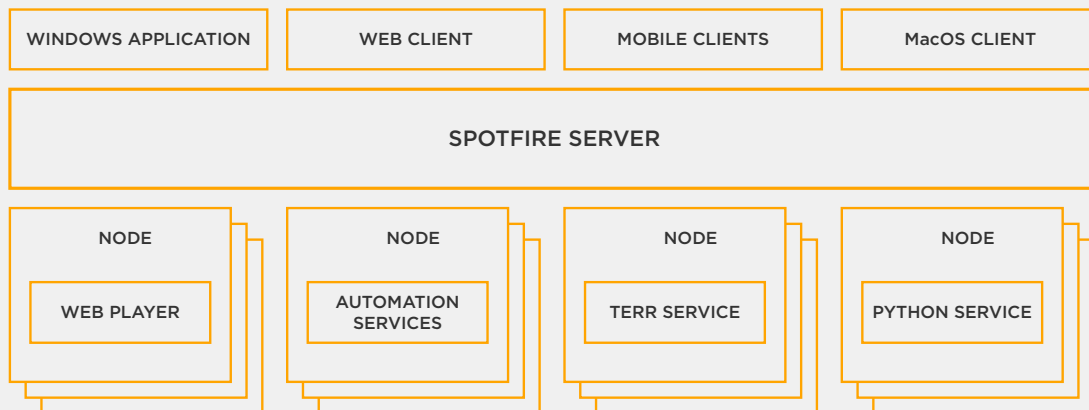

By creating and using Mods, insights are brought to life. For example, a Network Chart Mod and a Trip Stop Diagram Mod can be combined to build an immersive, end-to-end analysis for logistics route optimization, down to the truckload.

Bringing it all together

The Spotfire architecture supports analysts and developers in bringing the immersive, smart, real-time analytics experience all together. For technical details and updates, see the TIBCO Community Spotfire pages: https://community.tibco.com/products/spotfire

SPOTFIRE ARCHITECTURE

WINDOWS APPLICATION	WEB CLIENT	MOBILE CLIENTS	MacOS CLIENT

SPOTFIRE SERVER

NODE	NODE	NODE	NODE
WEB PLAYER	AUTOMATION SERVICES	TERR SERVICE	PYTHON SERVICE

Learn More

Learn more about Spotfire 11 software and Spotfire Mods components (requires login). Trial the software and check out our YouTube channel.