TIBCO

Immersive, Hyperconverged Analytics for Rapid Learning, Decision-making, and Acting

Seamlessly connect, explore, and immerse yourself in any kind of data

Immersive analytics is a key defining benefit of hyperconverged analytics that helps anyone working with data to develop smarter, deeper, fresher insights in less time. With a single visual hyperconverged analytics experience based on best-of-breed diagnostic, predictive, and real-time analytics, traditional rear-view monitoring is transformed into a rapid learning, decision, and action environment. The result is a substantial net-new value for the most mature analytics practitioners today, with value extending far beyond traditional business intelligence. It transforms analytical applications into hyper-aware nerve centers able to bring operational excellence, customer intimacy, and optimization of the most high-value use cases.

Discovery of What Had Been Completely Unknown

As presented in the TIBCO whitepaper, *Hyperconverged Analytics: Immersive, Smart, Real-time*, hyperconverged analytics offers best-in class visual analytics, machine learning, data preparation, geoanalytics, and streaming analytics in one experience. In this environment, it's possible to discover what was heretofore completely unknown, and lift the efficiency of knowledge workers across the organization, including general business users, analysts, data scientists, and analytics app developers.

Immersive analytics equips users with flexible, natural data exploration for data sources both at-rest and in-motion. By speeding arrival of previously unknowable findings, decision models can be enriched with a full complement of new knowledge.

Immersive visual analytics offers multiple ways to engage with an analysis, understand outputs, accelerate better business outcomes, and apply insights at-scale.[1] In tandem with real-time event analysis, an immersive environment enables decision-makers to visualize a bleeding-edge holistic view of events impacting the state of a business.

Hyperconverged systems offer visibility into behavioral and transactional event streams across channels and interactions. They provide the ability to run calculations on those events in real time and distill insight to inspire next actions for driving top and bottom line business results for the greatest impact.

While visual analytics is powerful as a standalone experience, with fully interactive and responsive dashboards or apps, its strengths are amplified exponentially by the force-multipliers of smart and real-time. With real-time analysis driven by embedded data science models that inform mission-critical, data-driven operations, immersive analytics gives decision-makers the confidence to act in the moment.

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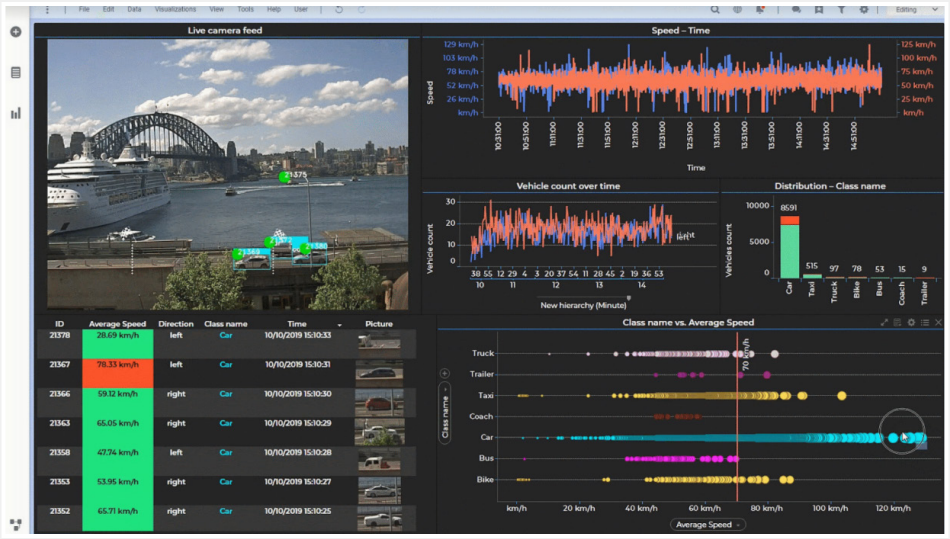
1 Vesset, Dan. Three Capabilities That Drive the Future of Intelligence: The Next Source of Competitive Differentiation: Next-level intelligence is needed to compete in the growing digital economy. IDC, January 17, 2020. https://blogs.idc.com/2020/01/17/three-capabilities-that-drive-the-future-of-intelligence-the-next-source-of-competitive-differentiation/

Maximum Efficiency

The hyperconvergence of immersive and smart analytics promotes greater productivity and operational gains for teams across adaptive organizations. With guided recommendation systems baked into analytics workflows, non-technical workers can "borrow the brain of a data scientist" and act on AI-driven suggestions. This capability also shortens time to insight considerably for analysts and IT personnel who support executive and managerial decision-making.

Given that once discrete data and analytics domains are now converging,[2] citizen developers can now build advanced analytics applications with low-code Python and R scripting on-the-fly.

For an example, this real-time, always-on dashboard incorporates webcam video and real-time analytics using object classification of vehicles in Sydney, Australia.



Meanwhile, information explorers in other corners of the adaptive organization can help themselves to immersive apps built on constantly refreshing models. Sub-minute analysis runs continuously as citizen data scientists drill down and iterate analytics queries, changing course at the speed of thought, essentially running Python functions as an engine within dashboards. From line of business reporting and executive support to analyst productivity, everyone arrives at data-informed decisions faster.

2 Goasduff, Laurence. Gartner Top 10 Trends in Data and Analytics for 2020. June 9, 2020. https://www.gartner.com/smarterwithgartner/gartner-top-10-trends-in-data-and-analytics-for-2020/

Immersive and smart analytics also liberate data science teams from manual, low-value, time-consuming data preparation tasks. Duplicate efforts of copying and translating projects across multiple environments, including open source platforms, are extremely wasteful for such expensive resources. Beyond eliminating high-costs of task switching, immersive and smart analytics makes data scientists optimally efficient as they have more time to model deeper analyses and provide higher value for the organization.

Hyperconverged Analytics In-practice: Hemlock Semiconductor

One company that unites immersive, smart, and real-time qualities of visual analytics is Hemlock Semiconductor. As the largest producer of polysilicon in the United States, Hemlock had the strong imperative to optimize cost of predictive maintenance, product quality, and reliability, as well as statistical process control. Historically, the company struggled with legacy systems that relied heavily on IT for daily and weekly batch data analytics and reports. These systems made fast, high-impact operational decisions extremely difficult; The lack of visibility into manufacturing processes caused bottlenecks and high costs due to high variability of production.

With smart data science models built on real-time event streams, Hemlock closed the monitoring loop and applied a predictive approach to managing operations. Continuous learning helped fine-tune model development and accelerated processing by 1000x with savings of over $1 million.

Real-time Adaptation and Response

When informed by smart, advanced applications and real-time analysis, immersive visual analytics enables decision-makers to sense, adapt, and respond much faster.

For enterprises that produce high volumes with thin profit margins, enabling faster and more frequent response can make big differences and often millions in cost savings. For any business relying on its ability to change fast, real-time visibility and awareness is needed; yet technology is too often stuck in legacy systems devoid of insight.

Hyperconverged Analytics In-practice: AA Ireland

Auto insurer AA Ireland needed to develop new data models at a rate fast enough to attract the right customers to its web properties at the right time. Large stores of siloed data proved difficult to consume and calculate in live tests and experiments. Implementing a combination of streaming data, business events processing, and visual analytics, it developed its first analysis model in three months, which optimized pricing, prevented fraud, and, with deeper understanding of customer value, helped better define market segments. Its new immersive analytics environment provided comprehensive understanding of data for real-time predictability and informed long-term business decisions for campaigns, return of investment, and dynamic product pricing.

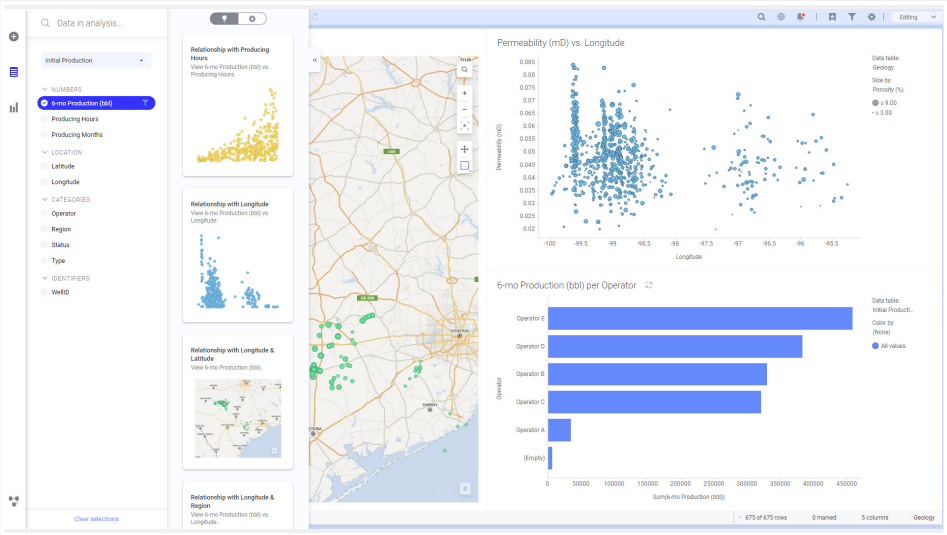
Immersive, smart, and real-time analytics applications can be quickly deployed to provide impactful predictions for everything from supplier management and financial analysis to cost of quality. Rapidly changing conditions require that urgent decisions are data-informed, where immersive and real-time analysis is blended with historical analysis for timely and confident decisions and predictable business outcomes.

Data Exploration & Discovery

Any analytics user, whether business analyst or line of business manager, is limited by their knowledge and understanding of the business. Complex and unique challenges, market factors, and other realities determine the direction, action, or inaction that a business takes. So essentially, data exploration and discovery is flawed and biased by knowledge workers' depth of understanding. To get at unknowns with the potential for high impact and high value, there's a need to broaden analysis, requiring both comprehensive data and advanced analysis.

However, true discovery can't be modeled on known questions alone. Immersive analytics allows singling out a datapoint of interest, drilling down through interactive brushlinking, and adapting subsequent continuous strings of queries, a process supporting a more intuitive cognitive flow. When all these capabilities are provided within a single immersive experience (or smart learning platform) — including proactive AI recommendations of relationships to explore — that's an environment that can produce high impact unknowns. The environment can also eliminate the high cost of task switching, manual work, and duplication of effort across toolsets (similar to the classic inefficiencies of legacy BI and ETL workflows).

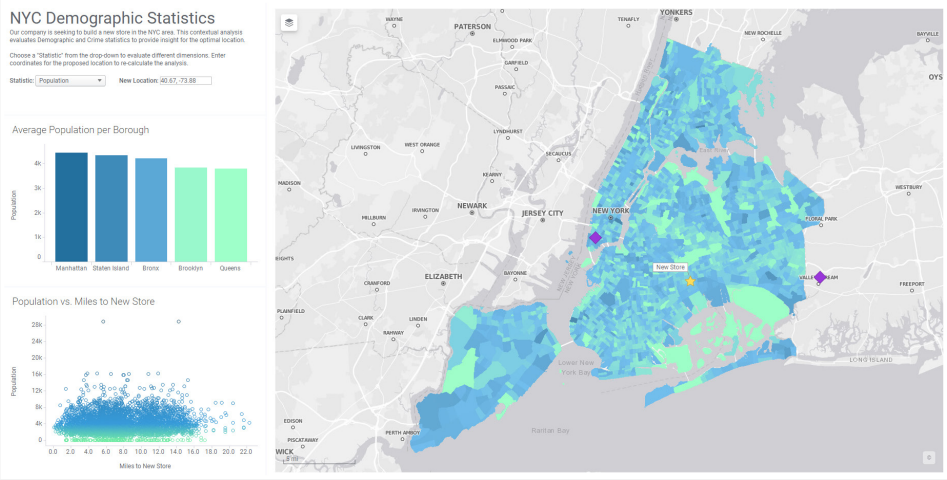
Through AI-assisted exploration, the Spotfire Recommendations engine automatically identifies interesting patterns in data and shows the most significant relationships to explore.



For more directed and pre-defined questions, analysis may begin with a hunch or a defined task that needs to be validated or confirmed (for example, identification of drivers and patterns in seasonality). A "beginning with the end in mind" directed approach to exploratory analysis is not as sound as pure truth. As business management visionary Peter Drucker[3] once said of those seeking data points to support an argument: "No one has ever failed to find the facts that they are looking for." Data is not truth, but it does provide confidence in decision support.

An immersive analytics environment allows for instant adhoc queries, iteration, calculations on-the-fly, and effortless exploration of relationships between visualizations, including both static and streaming data. In the application shown on the next page, business strategists are able to interact with multivariate consumer demographic data when selecting the optimal retail store placement in New York City. With instant updates to marking schemes reducing the time to insight, analysts can strike the right balance between population density, average incomes, and commuting distance, to arrive at the most likely location for a profitable store.

3 Wunker, Stephen. Why Peter Drucker Distrusted Facts, Harvard Business Review, November 4, 2011. https://hbr.org/2011/11/why-peter-drucker-distrusted-facts



Diagnostics to Modeling Future Outcomes

Immersive analytics reveals actionable insights for everyone in less time. Some example use cases of discovering new value creation:

Uncovering important relationships in new potential markets or growth segments

Understanding issues hidden in mounds of data calls for analytics and action. For example, for logistics leaders to understand where resources need to be for timely response, or to protect companies from risk, decision support is required. Immersive visual analytics platforms discover net-new market opportunities and consumer segments, but can also point out the risks involved in scaling complex enterprise operations.

Isolating root causes

Leading indicators of growth opportunities or risk can serve as early warning signs of unsatisfied customers or persistent operational issues. An immersive analytics environment can provide business leaders with an early warning system that leads to course-correction and minimizes damage. Whether the risk involves revenue or brand reputation, it's better to have an early read through the lens of immersive visual analytics. Identifying leading indicators can affect forecasting, predictability, and confidence in bottomline outcomes:

- Unexpected customer churn
- Product issues such as defects and returns
- Optimized operations, mitigation against losses:
  - Campaign failures
  - Supply chain breakdowns
  - Lost market share due to pricing or other competition

Immersive Analytics Summary

Hyperconverged Analytics for Meeting the Challenge of Digital Transformation

Organizations like AA Ireland and Hemlock Semiconductor are realizing tangible results from hyperconverged analytics. But even organizations early in their digital transformation journey will find similar benefits from this new analytics approach.

Recent research from IDC notes: "While analytics, business intelligence, and artificial intelligence strategies and technologies have made information collection and synthesis familiar to most businesses, most will need to address serious challenges to achieve future of intelligence capabilities. . . . [This future of intelligence] retains the best of business intelligence and analytics, but extends them with other capabilities for synthesis of information and extends [sic] into learning."[4]

Decision environments that are immersive, smart, and real-time can synthesize insights and embed intelligence to extend learning throughout the enterprise.

With hyperconverged analytics, you can embed learnings and intelligence into all business processes for:

- Richer, deeper, immersive discovery—without needing more resources
- Decision support right where and when your users need it
- Game-changing new opportunities for cost savings and market opportunities

Learn more about hyperconverged analytics capabilities.

4 Vesset, Dan. Ibid.

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