

Hyperconverged Analytics: Immersive, Smart, Real-time

A disruptive approach to business intelligence that meets the challenge of our rapidly changing world

Introduction

If change is the one constant in your business, clinging to traditional, unchanging business intelligence (BI) can put you at a severe competitive disadvantage. Traditional BI, with historical data, flat dashboards, and costly manual interventions, cannot keep pace with data science infused analytics. It can't quickly deliver rich insights to help you manage through unprecedented change. But there is a new, disruptive approach that can.

In this whitepaper, we:

- *Review the challenges in getting value and insights from data.* Even though these are “known knowns,” it would be a mistake to assume that old BI approaches are still sufficient.

- *Discuss the changes driving a new approach to BI.* These include the shift away from “business as usual” driven by the current pandemic, as well as the convergence and overlap of analytics teams and users. To address these known unknowns and thrive, you need adaptive agility.
- *Explore how hyperconverged analytics — a new approach to BI that seamlessly integrates advanced visual analytics, data science, and streaming analytics — can radically transform the speed and power of your organization’s adaptive response to change.* Hyperconverged analytics provides a faster, insight-rich path to transforming unknowns to knowns.

63%

average growth of organizations’ data volumes per month¹

30%

data that will be real time by 2025²

648%

median shortage of data science skills across 10 major US metros³

48%

insights-driven organizations exceeding business goals⁴

Current State: The Friction-filled Path to Using Data for Decision-making

Does your business use data to make decisions the way popular phone navigation apps, like Google Maps or Waze, use and serve up data? Those apps automatically give you the information you need and the actions you should take through a *seamless convergence of real-time, predictive, prescriptive, diagnostic, and descriptive analytics*. Your business, on the other hand, likely finds the path to valuable, data-driven decisions friction-filled and complex.

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- 1 Survey: Rapid Time to Value Is the Main Driver for Analytics Projects, Yet Making Data Available for Insights Is a Barrier for 90% of Enterprise, Matillion, October 21, 2019. <https://www.prnewswire.com/news-releases/survey-rapid-time-to-value-is-the-main-driver-for-analytics-projects-yet-making-data-available-for-insights-is-a-barrier-for-90-of-enterprises-300941624.html>
 - 2 Condon, Stephanie. By 2025, nearly 30 percent of data generated will be real-time, IDC says, ZDNet, November 27, 2018. <https://www.zdnet.com/article/by-2025-nearly-30-percent-of-data-generated-will-be-real-time-idc-says/>
 - 3 LinkedIn Workforce Report, United States, August 2018, LinkedIn Economic Graph, August 10 2018. <https://economicgraph.linkedin.com/resources/linkedin-workforce-report-august-2018>
 - 4 Davenport, Tom, et al. Analytics and AI-driven enterprises thrive in the Age of With, The culture catalyst, Deloitte Insights, July 25, 2019. <https://www2.deloitte.com/us/en/insights/topics/analytics/insight-driven-organization.html>

Further, the exponential growth of data volumes and velocity, and constraints on human analytics and data science resources, is also a huge impediment to getting value from data.

Issue 1. The volume of data your business needs to run is exploding. As recently reported in a Matillion and IDG Research survey, on average, organizational data volumes grow 63% per month.

Issue 2. The velocity of data is radically increasing. As noted by ZDnet, by 2025, fully 30% of data will be real time. Some data streams directly to the cloud; historic and business-critical data might reside on-premises. IoT sensors add to the data volume and velocity and to the complexity of data-driven decision-making.

This growth in data velocity and volume makes it extremely difficult for your analytics teams to keep up with key business needs and provide the insights needed to capture new opportunities or reduce risk before it becomes a multi-million dollar headache. Unlike those popular phone navigation apps, it's your analytics teams that deliver the analytics needed to run your business, and as LinkedIn data shows, these people are stretched thin, leading to more friction.

Issue 3. Your team is already pushing the boundaries of what they can accomplish. Even if you had the budget to add people and analytics, as many industry analysts have noted, data science talent is in short supply globally.

So, it's no wonder your teams are overloaded. How can they combine all the different styles of analytics needed, on all the types of data needed, to give you the 360° view you need? How can your teams keep up with actionable insights to inform your frontline staff, or your supply chain partners, or your operational applications? Can they keep up, or are they over-extended, or even hyper-extended?

What would you need to improve the quality and quantity of the insights? Augmented analytics? Business intelligence? Artificial intelligence? What about data science and machine learning? What about operational analytics tools? And how many new hires would you need?

Issue 4. Traditional approaches to analytics don't easily adapt to new demands. And there's more complexity adding to your teams' over-extension. With all the analytics tools to stitch together for that 360° view, it's difficult to make choices without adding workflow complexities or compromising capabilities. But for successful digital transformation, one that helps you realize the true value of your data, it's vital to resolve those roadblocks.

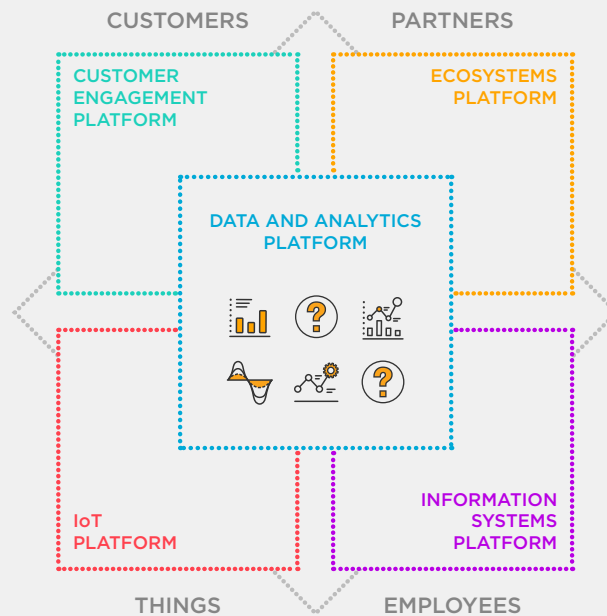


Figure 1. Data and analytics “platforms” may in reality be disparate offerings from different vendors plus custom-coded internal solutions. This fragmented approach can add roadblocks and friction to insights agility.

Changes Driving a New Approach: Blurring Boundaries, Using Automation, Enabling Collaboration

As your business seeks a better way to get high-value insights despite these issues, and your analytics team evolves, their roles blur as they collaborate. The analytics tools and solutions they use increasingly enable automation, and support the “virtuous cycle” of data --> insights --> action --> learning.

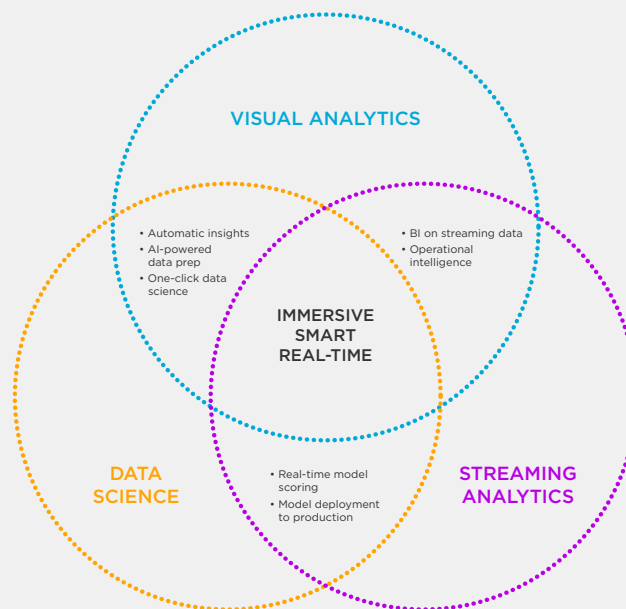


Figure 2. The virtuous cycle of analytics.

Exploring the Disruptive New Approach: Hyperconverged Analytics

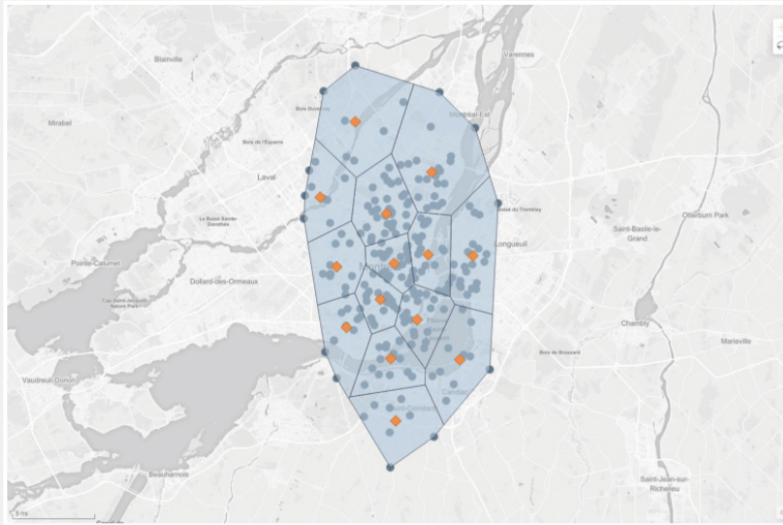
The idea behind hyperconverged analytics is to cut the friction that's slowing time to high-value insights. Without compromise or additional headcount, hyperconverged analytics gives you *the best* data preparation, visual analytics, machine learning, geoanalytics, streaming analytics, and cloud analytics, in one experience.

Hyperconverged analytics is next-gen analytics technology that unifies advancements in visual analytics, data science, and streaming analytics into a seamless experience for everyone—business users, analysts, data scientists, and analytics app developers. It enables more profound data exploration and insight, helping to uncover even what was completely unknown. And, it automatically serves the information your organization needs, and the actions it should take, through a *convergence of real-time, predictive, prescriptive, diagnostic, and descriptive analytics*.



Hyperconverged Analytics Is Immersive

By converging different styles of analytics, this new approach provides a seamless data discovery experience. No need to jump in and out of separate applications and tools. You and your teams can explore and find insights the way they think: spot something of interest, focus on it, drill down, ask questions. It's a much richer, more intuitive experience.



TIBCO Spotfire location analytics: Beyond plotting of map markers, automated map creation and enriched relationships with instant geocoding show spatial patterns and relationships within multiple data layers, map services, and GIS data. [See an animated gif here](#) by scrolling down to 4. Powerful Location Analytics Enhancements.

In the example above, using United States county data we lasso select regions to find the biggest disease outbreaks in a region. The calculations are relative to the selection.

The benefits of the *immersive* qualities of hyperconverged analytics include:

- **Discovering unexpected, significant relationships faster.** By using brushlinking and AI recommendations, you can get insights from outliers at the speed of thought, rather than at the speed of toggling between tools and applications.
- **Performing immersive analytics on data streams more easily.** With hyperconverged analytics, data science provided training models for machine learning are used with streaming analytics to bring a new, immersive dimension to analytics output.
- **Following a line of analytics inquiry more deeply.** With low-code Python and R scripting embedded within analytics applications, there's no need for analysts to wait on limited data science resources for deeper insights.

The net impact—with hyperconverged analytics, you'll generate valuable insights faster to speed your business towards its goals.

Hyperconverged Analytics Is Smart

What could be smarter than extending the predictive power of data science into your analytics, without needing to add more data scientists? Hyperconverged analytics enables better data-driven decisions by making AI part of the analytics UX, using smart algorithms to support recommendations for immersive discovery, next-best actions, and data preparation.

[This video clip](#) illustrates how immersive visual analytics, embedded data science, and streaming analytics are hyperconverged with TIBCO. The AI-driven algorithms in hyperconverged analytics automatically inform your choices along the way, while still leaving you free to decide how to develop your analysis and what to do next.

The benefits of the *smart* qualities of hyperconverged analytics include:

- **Accelerating insights with AI-infused analytics.** In hyperconverged analytics, AI not only supports the human decision process, it can serve up actionable, automated findings, alerting users as needed.
- **Enabling data analytics at scale for richer analysis.** Rather than being limited to representative data samples, AI and ML infused analytics enables smart, automated data prep so analysts can work with the largest datasets available. By accessing all the data in all its granularity, analytics outcomes are smarter.
- **Obtaining a more complete analysis seamlessly.** Bring all your data into one analysis — data from streams, transactions, historic data, IoT feeds — and apply drag-and-drop, low code Python scripts for a seamless, smarter analytics experience.

What makes this even smarter, hyperconverged analytics provides dashboarding and reporting to enable users with insights right at the point of decision-making, wherever they are.

Hyperconverged Analytics Is Real Time

Your business runs in real time, and your analytics findings should, too. Whether business-critical data comes in from customer transactions, manufacturing data streams, supply chains, or the IoT, you need to analyze changing conditions and respond — and without delays caused by switching between systems and applications.

Hyperconverged analytics supports your decision-making as changing conditions unfold, enabling your business to stay up-to-the-moment.

The benefits of the *real-time* qualities of hyperconverged analytics include:

- **Getting insights and value from all your data, including data streams and IoT data.** Changing conditions require adaptive actions. With hyperconverged analytics, you can manage, monitor, and adapt to those changing conditions most important to your business.
- **Going beyond the dashboard, going beyond predictive analytics, enabling prescriptive analytics.** Static reports and simple dashboards don't enable the real-time insights needed to move from predictive to prescriptive analytics. Hyperconverged analytics gives you what you need to seamlessly automate actions based on real-time data.
- **Generating real-time insights with your current staffing levels.** Data wrangling and preparation of streams, transactions, IoT, and historical data — then manual coding to extract insights — is resource-intensive. With hyperconverged analytics, AI and drag-and-drop Python and R scripting reduces time to insights, and expands the power of your current team to meet the demand. And by providing a native connection to streaming data sources that needs no coding, hyperconverged analytics enables less-technical team members to do more streaming data work without needing developers to assist.

Hyperconverged analytics reduces the complexity of applying deep analytics to data streams, providing a unified view of real-time change for insights-driven decision-making.

How Does Hyperconverged Analytics Work in the Real World?

For Hemlock Semiconductor, “immersive” meant more than \$1 million in projected opportunities.

For **Hemlock Semiconductor**, “immersive” meant more than \$1 million in projected opportunities. Hemlock Semiconductor faced increasing commoditization within the polysilicon industry. Hyperconverged analytics was key to competing more effectively, enabling teams to accelerate delivery of process optimizations and associated cost elimination.

“We’re moving from archaic, static data to more intuitive, real-time data,” said Keith Carey, IT director. “We needed to be able to look at our internal information to understand costs in more detail and bring in external information so we could take advantage of potential new business models, such as offering excess material on the spot market.”

Hemlock turned to TIBCO for hyperconverged analytics to address its challenges. By implementing TIBCO Spotfire and TIBCO Streaming analytics, and TIBCO Data Science and TIBCO Virtualization software, the company created self-service analytics to generate the most valuable insights. “...it allows us to provide detailed business and operational data to our end users without them having to wait,” said Carey. For Hemlock, immersive analytics meant value across the organization.

For Gilead, “smart” meant an analytics platform infused with AI to support deeper data discovery.

For **Gilead**, “smart” meant an analytics platform infused with AI to support deeper data discovery. “Our requirement was interactive visualizations that could support exploratory data analysis for a highly regulated environment, and yet meet our futuristic AI pathway and help us embrace open source,” said Vishakha Mujoo, manager of R&D information systems.

Several groups within Gilead use TIBCO Spotfire analytics for use cases from day-to-day operations monitoring to trend analysis, helping everyone better understand their data. The clinical trials group uses it for statistical analysis; the operations team for daily monitoring of live data to uncover issues faster; the submissions team for trend analysis and live monitoring of submissions; and the MSS group for supporting signal detection.

“Spotfire analytics is helping integrate various groups, connecting the dots, and making sure we are able to standardize our processes across various functional groups,” said Mujoo. For cutting-edge pharmaceutical research in a highly regulated environment, hyperconverged analytics is just smart.”

For CargoSmart, “real time” meant a profoundly enhanced customer experience.

For **CargoSmart**, “real time” meant a profoundly enhanced customer experience. Ralph Ho, Senior Manager, Customer Integration, noted, “We wanted to use advanced analytics to provide unprecedented visibility so ocean carriers could plan ahead in case of disruption and make use of real-time analysis to improve decision-making. We needed a platform that would allow us to crunch different data types in high volumes.”

CargoSmart found hyperconverged analytics met the challenges. This integrated approach to analytics allows the company to facilitate, or to co-design with customers, custom analyses and dashboards. “It’s shortening time to market and also allowing us to deliver exactly what customers need to meet their business objectives,” said Mr. Ho.

With hyperconverged analytics, CargoSmart can apply artificial intelligence to IoT data for augmented decision-making for disruption handling. For example, medical supply manufacturers need to know that certain supplies are continually refrigerated. Now, if conditions change, IoT temperature sensors can raise events that can be alerted on and visualized for customers in real time.

Hyperconverged Analytics Can Help You Meet the Challenge of Digital Transformation Now

Organizations like Hemlock Semiconductor, CargoSmart, and Gilead are getting tangible benefits from hyperconverged analytics. But even organizations early in their digital transformation journey will find similar benefits from this new analytics approach.

As noted in a recent IDC report, “Business models of the future require an integrated technology architecture that allows the automation of business processes to allocate more resources to innovation. This is driving the emergence of the ‘Intelligent Enterprise’ — an organization with intelligent technologies embedded into all business processes.”⁵ With an analytics platform that is immersive, smart, and real-time, it’s easier to transform your organization through embedded intelligence and smart automation.

With hyperconverged analytics, you can embed analytics insights 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.

5 Hernandez, Danielle, Philip Carter, and Sureshpal Singh. Why Companies Fail at Digital Transformation: Clearing the Road to the Intelligent Enterprise, IDC Market Spotlight, January 2019

