

July 22, 2024



TREND REPORT AND THOUGHTSPOT VENDOR PROFILE

Analytics and Business Intelligence Trends in Cloud, Embedding, and Generative AI

**Products Are Evolving To Ease Cloud Deployment,
Serve Up Insights Where People Work, and Tap
Next-Gen AI**



Doug Henschen

VICE PRESIDENT AND PRINCIPAL ANALYST



Produced exclusively for Constellation Research clients

TABLE OF CONTENTS

Executive Summary3

Market Description: Analytics and Business Intelligence4

Market Trends5

Importance to Buyers 11

ThoughtSpot Vendor Profile 12

Recommendations 16

Analyst Bio. 20

About Constellation Research 21

EXECUTIVE SUMMARY

The analytics and business intelligence (BI) market is mature in many respects, but it's rapidly evolving in three important ways: expanding cloud deployment options; adding embedding capabilities to deliver insights within applications and collaboration platforms or as triggers of business workflows; and adding augmented capabilities such as generative artificial intelligence (GenAI) to ease analysis, improve understanding, and gain predictive insight. These new demands are being added to core analytics/BI requirements such as highly formatted reporting, data visualization, dashboarding, and data storytelling—as well as to the underpinnings of data prep, cataloging, security, authentication, and auditability.

This Constellation Research Trend Report explains which analytics/BI capabilities are emerging to satisfy customer demand for cloud deployment options; explores more ways to embed analytics at the point of decision; and outlines ways to exploit next-generation machine learning (ML) and artificial intelligence (AI) capabilities, as well as including the very latest in GenAI. This report also includes Constellation's independent analysis of analytics and BI vendor ThoughtSpot, with an overview and assessment of the company's strengths, weaknesses, and overall strategy. Early adopters should use this report to better understand trends in the analytics and BI market and ThoughtSpot's capabilities, including its latest efforts to respond to cloud, embedded, and augmented trends.

BUSINESS THEMES



Data to Decisions



Future of Work



Technology Optimization

MARKET DESCRIPTION: ANALYTICS AND BUSINESS INTELLIGENCE

Every organization wants to become more agile, digitally transformed, and data-driven. Analytics and BI products can play a big role in meeting these objectives, but only if they have evolved in three important ways:

- **Cloud-native.** Supporting organizations as they move data and workloads into the cloud or multiple clouds to gain agility.
- **Actionable and embedded.** Delivering data and insights where people work (not just in reports or dashboards) so more users can drive better outcomes.
- **Augmented.** Getting more predictive and automated, taking advantage of ML, natural language (NL), and emerging forms of AI such as GenAI and large language models (LLMs). Augmented features help organizations be more proactive, uncover insights, and eliminate manual tasks.

Even as analytics/BI products are evolving—to keep up with the cloud, actionable and embedded, and augmented trends described above—customers will continue to rely on more-routine analytics/BI features that enable users to:

- Connect to and prepare data from myriad data sources for descriptive and diagnostic analysis and ad hoc exploration
- Catalog, define, and certify data and measures to ease access and ensure consistency, understanding, and trust
- Secure access to data and measures with authentication and auditing features
- Create and distribute formatted, scheduled reports that can be relied on as systems of record for assessing the performance of individuals, departments, and business units or determining commissions, bonuses, or shares of revenue or profit

- Deliver interactive dashboards that enable executives, employees, and business partners to understand business conditions and root causes of outcomes and results
- Harness storytelling capabilities that blend visual analysis with narration to better present and more easily explain conditions, outcomes, imperatives, and objectives

MARKET TRENDS

Here's a closer look at what many analytics/BI vendors are working on at the request of their most demanding customers.

Cloud Services Become the Norm

Bringing analytics/BI “into the cloud” can mean many things. The most crucial questions include the following: Is it up to the customer, or does the vendor take care of deploying and managing the platform? In which clouds is the product available? What are the options for accessing and managing data and ensuring performance?

- **Marketplace offerings.** Customers can run software on any cloud, so the first step in making that task easier is to incorporate a marketplace offering. Marketplace offerings on public clouds make it easier to procure and deploy software.
- **Cloud services.** Many organizations—even large ones—are giving up on self-managing software in the cloud. They are instead turning to software vendors, including analytics/BI vendors, to run their software as a service.
- **Multicloud services.** Larger organizations often run on multiple clouds, so analytics/BI vendors universally offer data connection options for accessing and querying data on multiple clouds, with low-latency support as required. Several independent vendors offer their platforms as a service on more than one cloud.
- **Cross-cloud and containerized deployment options.** Containerization has been broadly embraced by software vendors and by large, sophisticated organizations to simplify deployment, scaling, and

ongoing management of software. Containerized approaches provide a consistent way to deploy, manage, and scale across multiple public clouds, private clouds, and bare metal on-premises deployments.

Constellation's analysis: Marketplace offerings are helpful for organizations that still prefer to self-manage software deployments, but analytics/BI vendors know that's not enough. That's why most vendors now offer their software as a service, which wasn't the case just a few years ago.

Actionable Analytics and Embedded Options Flourish

Organizations of every description are looking for ways to foster data- and insight-driven decisions, business processes, and customer experiences. In some cases, organizations are developing customer- or employee-facing software and cloud services. With actionable and embedded analytics options, these firms don't have to start from scratch.

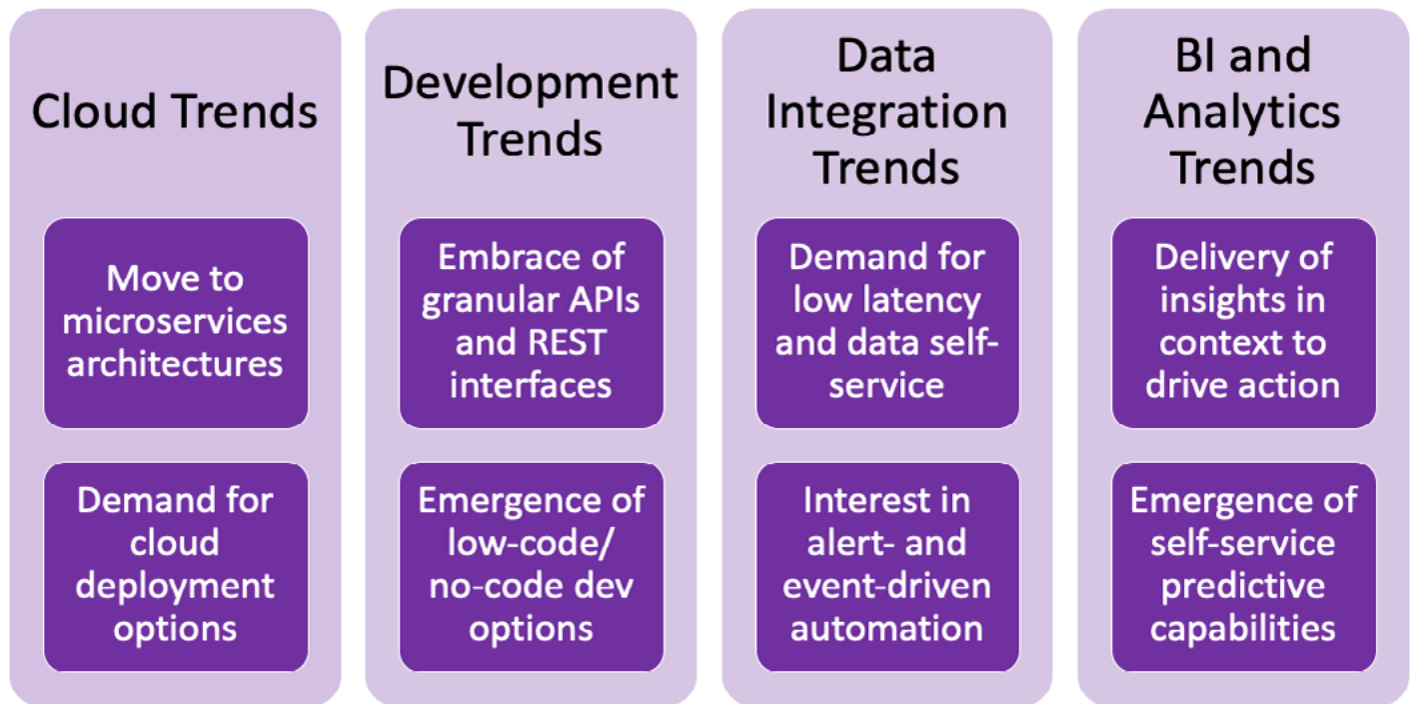
Embedded analytics options have long been used by independent software vendors (ISVs) and software-as-a-service (SaaS) companies to accelerate development and data-driven innovation. But early embedding often stopped at bolting a static reporting capability onto an app. That's not enough. Today CxOs at innovative organizations are using embedded capabilities to weave actionable analytics into enterprise apps, productivity and collaboration apps, custom applications, and breakthrough revenue-generating digital services.

As shown in Figure 1, trends in four areas have evolved and accelerated the demand for embedded analytics capabilities.

- **Cloud trends**

- **Microservices architectures** are the foundation of modern cloud computing, supporting the delivery of fine-grained, composable services that can be flexibly swapped in and out without the need to rewrite applications. Analytics and BI platforms must have these fine-

Figure 1. Trends in Four Areas Have Evolved Embedded Analytics



Source: Constellation Research

grained microservices architectures to flexibly embed data, key performance indicators (KPIs), visualizations, or entire dashboards outside the analytics/BI system itself.

- **Cloud deployment options** enable customers to harness embedded analytics and BI platforms as a service, so they are liberated from deployment and ongoing administrative tasks.

- **Development trends**

- **Fine-grained application programming interfaces (APIs) and RESTful interfaces** support DevOps approaches that bridge the gap between development and operations with continuous integration and continuous deployment (CI/CD). These approaches enable developers to weave together services programmatically and automate testing and deployment of apps.
- **Low-code/no-code (LC/NC) options** are flourishing to democratize application development and more. Such options enable nondevelopers to build or extend applications, and they're emerging in BI and analytics offerings.

- **Data integration trends**

- **Low-latency options** are now a routine expectation for customers, partners, and internal users. Change-data-capture, microbatch, and streaming data options are gaining ground. Embedded analytics offerings should offer low-latency delivery options.
- **Automation** is on the rise, so BI and analytics vendors are exposing events and triggers based on analytics thresholds and alerts. In some cases, they're adding workflow capabilities tied to analytics or broader integration systems.

- **BI and analytics trends**

- **Embedded insights** bring analytics to people who lack the skill, time, or interest to navigate to separate reports or dashboards. Taking advantage of their granular APIs, evolved embedded options support the delivery of KPIs and concise, action-driving KPIs and visualizations into collaborative apps, productivity apps, and enterprise apps, such as customer relationship management (CRM) and enterprise resource planning (ERP).
- **Predictive analytics** go beyond the descriptive and diagnostic insights BI has traditionally delivered. Organizations increasingly want to know what will happen, so they can do something about it. Predictive insights formerly were left to data scientists, but Constellation is increasingly seeing augmented options for delivering predictive insights via analytics and BI platforms.

Constellation's analysis: Actionable analytics and embedding have come a long way, with many vendors pursuing the trends described above beyond the ISV/SaaS market. Leaders are providing insight activation and embedding options within productivity and collaboration platforms, enterprise apps, custom LC/NC apps, and business processes.

Augmented Options Mature, With GenAI at the Cutting Edge

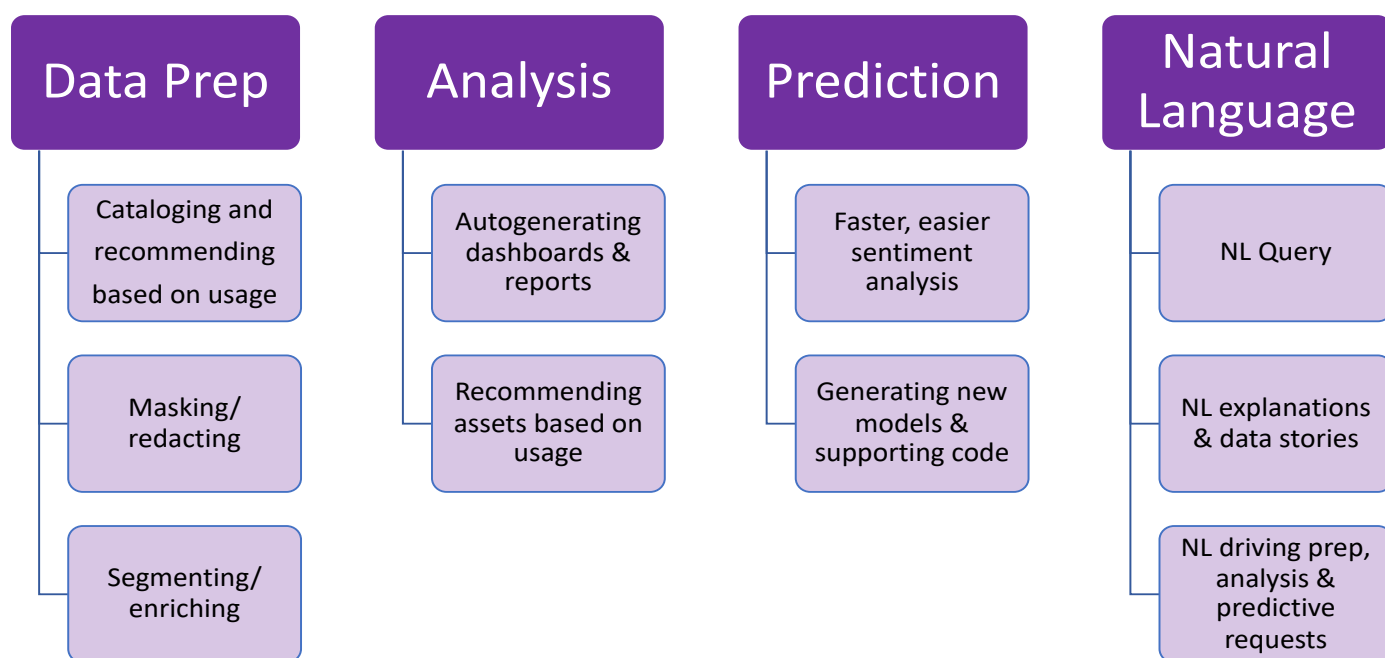
The next generation of analytics/BI products is harnessing heuristics, ML, and AI technologies and GenAI to improve data access, suggest data sources and analyses, uncover latent insights, and predict

future outcomes. Augmented features extend self-service to a broader base of users and speed data prep and analysis for advanced users.

On the cutting edge, analytics/Bi vendors are working to put augmented capabilities on steroids by using GenAI. As shown in Figure 2, these generative features will address new and existing use cases and may save immense amounts of time and effort. Constellation sees the following augmented capabilities maturing or emerging:

- **Augmented data prep, cataloging, and governance.** These features start with automated data profiling, guided cleansing and formatting, data source recommendations, join recommendations, and assisted data segmentation. Data catalogs index data sources and assets such as models, reports, and dashboards and then use ML to map usage and query patterns to drive recommendations. Certification features steer users to reliable metrics, sources, and assets, and lineage and policy-based management features help with governance. GenAI has the potential to automate many data prep activities, including labor-intensive tasks such as data redaction/masking,

Figure 2. Promising Use Cases for Generative AI To Advance Analytics/Bi



Source: Constellation Research

segmentation, and enrichment. GenAI also has the potential to refine and further automate the development of catalogs, data models, and data recommendations.

- **Augmented discovery and analysis.** The options here include recommended insights, recommended visualizations, key influencer/driver analysis, and intent-driven recommendations based on content/source popularity or more sophisticated analysis and learning of behavior patterns by user, group, or role. GenAI has the potential to extend analysis through NL interaction and analysis with generation of dashboards, reports, data visualizations, summaries, and data stories.
- **Automated trending, forecasting, and prediction.** These capabilities start with simple push-button trending and forecasting features that can be harnessed by data-savvy analysts. More-advanced analytics and BI products have introduced AutoML features and prebuilt algorithms that yield predictive results. GenAI has the potential to provide more types of predictions as well as predictions accompanied by rich explanations. LLMs can train on unstructured data and graphs of interactions to handle sentiment analysis, for example, more quickly and accurately than currently possible. This could dramatically improve the ability to identify unhappy customers and to proactively cross-sell, upsell, and prevent churn.
- **Natural-language interaction.** Natural-language interaction includes both NL generation and NL query. NL generation adds detailed textual descriptions to KPIs, charts, and dashboards to provide more context and improve human understanding. NL query turns typed (or speech-to-text) questions into SQL code that supports data exploration and analysis. NL is a sweet spot for GenAI, promising much more verbose and nuanced NL explanations while eliminating much of the manual setup and administrative work previously required to curate language. GenAI also can generate SQL code, but language models have limited understanding of structured data and math. Vendors must combine search and GenAI capabilities with their existing analytical prowess and capabilities, such as semantic layers with domain-specific language, to ensure that answers are accurate and trustworthy.

Constellation's analysis: Self-service data prep has become commonplace. Features that offer suggested or guided approaches to cleansing, formatting, and joining data and masking sensitive information are less common, as are data enrichment capabilities. GenAI has the potential to automate data cleansing and enrichment via NL requests.

Augmented discovery and analysis features that spot exceptions and do root cause analysis are now commonplace, as are trending and forecasting features. Predictive capabilities are becoming more plentiful, but many remain targeted at data scientists and data engineers and fewer are usable by analysts and power users. NL query and explanations are must-have capabilities, and here's where GenAI should be harnessed to do away with labor-intensive language curation.

GenAI has the potential to transform many aspects of analytics/BI products and related administrative and analysis tasks. Caution is advised, with data privacy and cost concerns needing to be addressed and the accuracy of AI-generated content demanding ongoing monitoring and human review.

IMPORTANCE TO BUYERS

The analytics/BI market is shifting from the era of self-service to the era of cloud services, embedded analytics, and augmented advances. Three years ago, many customers managed their own cloud deployments, but today most want SaaS options. Three years ago, embedded capabilities were largely aimed at ISVs and SaaS vendors and, in many cases, were limited to static reporting. Now companies of every description want to deliver analytics in the context of enterprise apps, custom apps, mobile apps, and productivity and collaborative apps. Three years ago, augmented features were in their infancy, but it's now routine to see features that uncover exceptions and root causes and offer predictions. NL query features are easier to set up and administer, and NL explanations are more nuanced, yet big differences in usability and scalability remain.

A continued key challenge for buyers is understanding how capable they can expect their users to be and how receptive users with different skill levels will be to adopting various analytics/BI tools. Fortunately, most organizations aren't starting from scratch and have a frame of reference as to

which types of tools and workflows are embraced by which types of users. Answering the following questions is a good starting point from which to consider cloud, embedded, and augmented options:

- What's our organization's level of cloud migration and maturity, and is it time to embrace analytics/BI services available on one or more clouds?
- Can we embed or surface concise decision-supporting analytics into enterprise apps, custom apps, mobile apps, and/or productivity and collaboration platforms?
- If we have confidence in analytics and what they mean for the business, can we use alerts to trigger or automate actions and kick off business processes without requiring any human analysis or intervention?
- Can we augment the skill of workers with ML and AI or possibly even GenAI, liberating staff from tasks that previously required administrative support and repetitive manual effort?

No matter how experienced organizations may be with analytics and BI, Constellation recommends hands-on review and testing by a broad base of would-be users whenever a significant new investment is being considered.

THOUGHTSPOT VENDOR PROFILE

This independent vendor assessment is a July 2024 update of a Constellation Research analysis originally published in the April 2023 report “Analytics and Business Intelligence Evolve for Cloud, Embedding, and Generative AI.” ThoughtSpot was one of 17 vendors analyzed in the report, each with Constellation’s overview and assessment of the company’s strengths, weaknesses, and overall strategy.

THOUGHTSPOT

Company: ThoughtSpot
Headquarters: Mountain View, California
Founded: 2012
Type: Private company
Company size: ThoughtSpot’s revenues are not disclosed. As of the end of 2023, the company had more than 1,000 customers.
No. of Employees: 900+
Website: www.thoughtspot.com

Overview: ThoughtSpot offers a search and AI-powered analytics platform designed to make it easy for anyone to ask and answer questions with data. The platform was originally introduced

as a server-based product in 2012, but the company rewrote ThoughtSpot in 2020 to deploy on “the modern cloud data stack,” meaning cloud-based analytical data platforms, including Amazon Redshift, Databricks, Google BigQuery, Microsoft Fabric, and Snowflake as well as Denodo, Dremio, Oracle, Presto, SAP HANA, Starburst, and Teradata. ThoughtSpot’s key differentiation remains its patented guided NL-powered search engine, which works on live queried cloud data via in-memory data subsets. The search approach appeals to business users as well as experienced analysts, and the SpotIQ insights engine adds augmented analysis.

ThoughtSpot can complement incumbent analytics and BI products to make insights more accessible to business users, and the company has bolstered the platform in recent years so it also can replace legacy platforms. For example, ThoughtSpot has enhanced its dashboard-style Liveboard views and report-style Answers and has added more of the tools that analysts expect, such as a SQL view editor, dbt integration, custom charts, and enhanced Liveboard note tiles as well as verified Liveboards for improved governance. In addition, the platform offers embedding and app-building capabilities, and there’s a growing list of prebuilt SpotApps supporting third-party applications.

On the augmented front, ThoughtSpot introduced its ThoughtSpot Sage GenAI feature in 2023, and in 2024 it improved the feature with advanced search features, advanced human-in-the-loop curation and feedback capabilities that ensure GenAI accuracy, and conversational capabilities to support iterative exploration and analysis. ThoughtSpot Sage is also exposed through a “Watchlist” mobile experience that enables users to ask questions about user-customizable key metrics.

Cloud: ThoughtSpot Cloud is the vendor’s managed SaaS offering, which runs on AWS and Google Cloud. Customer-deployed marketplace offerings on AWS, Azure, and Google Cloud give customers the option to deploy into their own virtual private clouds. Customers can apply their cloud marketplace credit expenditures toward their ThoughtSpot deployment. Customers also can deploy ThoughtSpot on Amazon Linux 2 images, Red Hat Enterprise Linux images, Oracle Enterprise Linux images, or VMware images.

Embedded: One thrust of ThoughtSpot's embedded strategy is delivering prebuilt SpotApps developed with reusable ThoughtSpot Blocks built on the ThoughtSpot Modeling Language (TML) scripting language. Blocks are available for ThoughtSpot Worksheets, Liveboards, Answers, Monitor, Actions, and functions and can be combined and packaged as code to deliver customizable use-case-specific analytic apps. SpotApps are available for analyzing storage, performance, and compute consumption on Amazon Redshift, Databricks, Google BigQuery, and Snowflake. There are also SpotApps for analyses related to Facebook Ads, Gainsight, Google Ads, HubSpot, Jira, LinkedIn, Okta, Salesforce, ServiceNow, Zendesk, and Zoho.

ThoughtSpot Embedded is the vendor's formal embedded offering. It enables developers to embed ThoughtSpot components into web applications and pages via a Visual Embed software development kit (SDK), available in JavaScript, React, and TypeScript or via REST API endpoints. Modular low-code packages are available for ThoughtSpot functions, and the REST API endpoints support automated deployment and version control from GitHub, addressing authentication, administration, access control, granular embeds, multitenancy, and more.

Developers can create embedded apps by coding and previewing them directly within ThoughtSpot. In the Developer Playground, developers can interact directly with ThoughtSpot objects within the instance, modify code, and preview expected outputs in personalized sandboxes. Every SDK and API function is also accessible here, along with expected inputs, outputs, and relevant documentation. Additionally, developers can use AskDocs, an AI-assisted bot, to ask coding questions in natural language and get instructions and coding examples.

The ThoughtSpot Action Framework is used to create custom actions to send data, insights, or triggers to external apps or business processes. ThoughtSpot Sync adds a no-code method for automatically pushing data from Liveboards or Answers to external business apps, such as Gainsight, Google Sheets, HubSpot, Microsoft Teams, Salesforce, ServiceNow, Slack, Zendesk, or Zoho. Also supported is write-back to data platforms such as AWS Redshift, Google BigQuery, and Snowflake.

Augmented capabilities: ThoughtSpot has its own data modeling worksheets, but it also works with dbt Labs and Google's Looker Data Modeler service to support data modeling. Once data from a cloud platform is brought into ThoughtSpot, it's automatically profiled and indexed so users can immediately start searching and asking questions. The relational search query engine translates (typed or spoken) NL questions into SQL queries behind the scenes. The SpotIQ insights engine autodetects anomalies and outliers, suggesting aspects of the data to explore and highlighting root causes of performance issues and exceptions. SpotIQ insights can be shared with the aid of ThoughtSpot Monitor, which supports alerting tied to changes in KPIs and key drivers of changes.

ThoughtSpot was an early mover in embracing GenAI in 2023 when it introduced ThoughtSpot Sage. The feature initially worked in conjunction with OpenAI's GPT 3, and ThoughtSpot has since added support for GTP 3.5, GPT 4.0, and Google Gemini, and it will soon support other LLM options. The feature engages model APIs without sending customer data to the LLM, thereby ensuring data security and privacy.

In 2024 the company bolstered ThoughtSpot Sage with updates such as the following:

- **Advanced search** capabilities to support NL requests for percentages, ratios, and common conceptual synonyms such as *growth*.
- **Human-in-the-loop feedback**, which gives users visibility into how AI answers are generated and enables users to provide feedback and suggested changes in the curation of terms to improve accuracy and consistency. Changes might include matching the phrases of a sentence to relevant search tokens. This patent-pending approach enables the user to provide—and admins to promote—precise, granular feedback. Suggested changes can be approved and applied in specific contexts or globally by administrators.
- **Conversational BI**, enabling users to ask iterative follow-up questions of ThoughtSpot Sage about any AI-generated answer.

In short, ThoughtSpot Sage builds on the vendor's depth in search-and-AI-based analytics to deliver state-of-the-art NL query and explanation capabilities powered by GenAI.

Constellation's analysis: The ThoughtSpot Cloud SaaS offering is available on AWS and Google Cloud, and the platform is also available for customer deployment on any public cloud or container-based deployment. The flexibility offered by all these options puts ThoughtSpot on Constellation's 2024 "Multicloud Analytics and BI" ShortList™. ThoughtSpot's prebuilt apps, custom-app-building options, and embedding options put it on the 2024 "Embedded Analytics" ShortList as well. Finally, ThoughtSpot's no-extra-cost SpotIQ augmented capabilities and its industry-leading ThoughtSpot Sage GenAI capabilities put it on Constellation's 2024 ShortList for augmented analytics and BI. In 2024 (as was the case in 2023), ThoughtSpot is the only analytics and BI vendor to appear on all three of the Constellation Research ShortLists noted above.

RECOMMENDATIONS

How To Take Advantage of Cloud, Embedded, and Augmented

Cloud. Not every organization will take advantage of multicloud or cross-cloud deployment options, but if a vendor offers only one choice, customers might feel locked in. Some customers, such as retailers avoiding AWS, might not like a vendor's one-cloud choice for its SaaS service for competitive reasons, because it doesn't happen to be the cloud the customer has standardized on or because that provider doesn't have a cloud region in a crucial desired country (for either performance or data sovereignty reasons). What's more, deploying and managing software on another cloud increasingly is not something organizations—particularly smaller organizations that are less likely to have the IT bandwidth and skills required to deploy and manage software—want to do.

For larger organizations, cloud choice is more crucial, because they are far more likely to have data and workloads on multiple public clouds. They are also more likely to still have on-premises data centers and interest in private-cloud deployment options. Analytics/BI choices are rarely the proverbial tail that wags the dog when it comes to companywide cloud choices and standards. But for

chief data officers, chief analytics officers, and leaders of analytics centers of excellence, the ability to have people trained on and familiar with one analytics/BI product (or just a few) that can be used on multiple clouds (as well as on-premises, if required) reduces training costs and provides flexibility. Therefore, Constellation is a fan of multicloud and cross-cloud deployment options.

Having more choices is better, and having easy options (or at least easier ones such as SaaS) is better. If a vendor has fewer options but those options happen to work for your organization today, that's fine. Just keep in mind that mergers and acquisitions, changing requirements, and changing laws might mess with your best-laid plans down the road.

Embedded. The days of consuming analytics and BI exclusively through dashboards and reports are over. Constellation now encounters organizations in which more than half of their users are consuming insights more granularly and contextually within websites, collaboration platforms, productivity apps, enterprise apps, custom apps, and workflows. These are the companies that are expanding the community of data-driven decision-makers beyond the ceilings of adoption that have long hampered traditional BI.

Even if an organization doesn't identify as a software or SaaS provider, it may now be using embedded approaches. It might be as easy as using iframes to inject visualizations into an app or a website or as sophisticated as harnessing SDKs to build two-way data exploration and interactive analysis into a transactional application. More-sophisticated organizations are harnessing formal embedded offerings to take advantage of licensing models that enable their customers to consume insights and make data-driven decisions without having to procure or deploy software. For the reasons cited above, it's important to seek out next-generation embedding options.

Augmented capabilities. To drive deeper data analysis and understanding across the organization, consider emerging augmented capabilities for data prep, data discovery and analysis, NL interaction, and automated prediction. These advances promise not only to take some of the drudgery and doubt out of analytics but also to democratize more-advanced challenges such as prediction and proactive action.

The most tantalizing advance in augmented analytics over the past two years—and perhaps ever—has been the emergence of GenAI capabilities. Lots of vendors have announced features and have been talking about the possibilities, but far fewer companies have made those features generally available or introduced upgrades and refinements based on extensive user feedback. Look for features that have seen broad adoption and, ideally, 2.0 upgrades. In particular, look for features with robust privacy safeguards and human-in-the-loop feedback mechanisms that ensure GenAI accuracy.

Start With Best Practices

To embrace cloud, embedded, and augmented analytics/BI offerings more effectively, follow these best practices:

- **Build a culture of data proficiency.** As you consider how broadly to deploy an analytics/BI platform, it's a good time to promote a culture of data-driven decision-making. Analysts may have no problem building reports, data visualizations, and forecasts, but ensure that they collaborate with business leaders and business users to understand what insights would be most valuable. Good BI and analytics guide executives and business users to next-best actions and data-driven decisions.
- **Win executive support.** Given all the buzz about all things ML and AI, leaders may have little trouble attracting an executive sponsor for an augmented analytics pilot project, but choose the executive carefully. The best choice is someone who has influence and credibility in both the business sphere and IT.
- **Build a broad cross-functional team.** Don't just strive for the proverbial business/IT partnership; also ensure that there's well-rounded representation of top executives, line-of-business leaders, analysts, and ordinary users on the business side and data scientists, data professionals, and developers on the IT side of the house. It's crucial to get a clear understanding of the skill levels of the users you plan to support and, further, which user types will be expected to use which tools. Make sure that the selected product aligns with and supports your deployment and consumption expectations.

- **Pick the right project.** Whatever the augmented features or vendors being considered, be careful to choose the right project as the pilot test case. Apply the Goldilocks principle: Go for a project that is not too big, time-consuming, or risky yet not so small and inconsequential that it will go unnoticed. If possible, start with easy, quick wins that have notable payoffs. At the same time, make sure you're not throwing softballs at the candidates. You'll want to put the products through their paces and test the nuances of their augmented and other features.
- **Take an agile approach.** Agile DevOps approaches are characterized by rapid, iterative development cycles; frequent reviews by cross-functional teams representing the business and IT; and the application of automation and monitoring wherever possible. This approach has been proven to deliver fast results that match the needs and expectations of the business.
- **Address trust and transparency.** Organizations must address trust and transparency as they embrace augmented capabilities powered by ML, AI, and GenAI. Assume that change management practices and training will be required before implementation of these capabilities. People will more readily trust and embrace augmented features if they understand how they work. That's where transparency comes in. Augmented features should be explainable, not magical.

The danger is that “black box” (nontransparent) predictions and recommendations may not be in the best interests of an organization or its customers. Business ethics and, in many cases, regulations in the United States and elsewhere hold organizations accountable for showing that variables such as age and race are not inappropriately used in decisions. And when applicants or transactions are rejected, regulated organizations must be able to explain their decisions. Not all industries are legally held to such standards, but Constellation believes that ML- and AI-based systems and applications should be as transparent and explainable as possible. The truly smart augmented features are those that can be understood and trusted.

ANALYST BIO

Doug Henschen

Vice President and Principal Analyst

Doug Henschen is vice president and principal analyst at Constellation Research focusing on data-driven decision-making. His Data to Decisions research examines how organizations employ data analysis to reimagine their business models and gain a deeper understanding of their customers. Data insights also figure into tech optimization and innovation in human-to-machine and machine-to-machine business processes in manufacturing, retailing, and services industries.

Henschen's research acknowledges the fact that innovative applications of data analysis require a multidisciplinary approach, starting with information and orchestration technologies; continuing through business intelligence, data visualization, and analytics; and moving into NoSQL and big data analysis, third-party data enrichment, and decision management technologies. Insight-driven business models and innovations are of interest to the entire C-suite.

Previously Henschen led analytics, big data, business intelligence, optimization, and smart applications research and news coverage at InformationWeek. His experiences include leadership in analytics, business intelligence, database, data warehousing, and decision support research and analysis for Intelligent Enterprise. Further, Henschen led business process management and enterprise content management research and analysis at Transform magazine. At DM News, he led the coverage of database marketing and digital marketing trends and news.

 [@DHenschen](https://twitter.com/DHenschen)  constellationr.com/users/doug-henschen  linkedin.com/in/doughenschen

ABOUT CONSTELLATION RESEARCH

Constellation Research is an award-winning, Silicon Valley—based research and advisory firm that helps organizations navigate the challenges of digital disruption through business model transformation and the judicious application of disruptive technologies. Unlike the legacy analyst firms, Constellation Research is disrupting how research is accessed, what topics are covered, and how clients can partner with a research firm to achieve success. Over 350 clients have joined from an ecosystem of buyers, partners, solution providers, C-suites, boards of directors, and vendor clients. Our mission is to identify, validate, and share insights with our clients.

Organizational Highlights

- Institute of Industry Analyst Relations (IIAR) New Analyst Firm of the Year in 2011 and #1 Independent Analyst Firm for 2014 and 2015
- Experienced research team with an average of 25 years of practitioner, management, and industry experience
- Organizers of the Constellation Connected Enterprise—an innovation summit and best practices knowledge-sharing retreat for business leaders
- Founders of Constellation Executive Network, a membership organization for digital leaders seeking to learn from market leaders and fast followers



www.ConstellationR.com



[@ConstellationR](https://twitter.com/ConstellationR)



info@ConstellationR.com



sales@ConstellationR.com

Unauthorized reproduction or distribution in whole or in part in any form, including photocopying, faxing, image scanning, emailing, digitization, or making available for electronic downloading is prohibited without written permission from Constellation Research Inc. Prior to photocopying, scanning, and digitizing items for internal or personal use, please contact Constellation Research Inc. All trade names, trademarks, or registered trademarks are trade names, trademarks, or registered trademarks of their respective owners.

Information contained in this publication has been compiled from sources believed to be reliable, but the accuracy of this information is not guaranteed. Constellation Research Inc. disclaims all warranties and conditions with regard to the content, express or implied, including warranties of merchantability and fitness for a particular purpose, and it does not assume any legal liability for the accuracy, completeness, or usefulness of any information contained herein. Any reference to a commercial product, process, or service does not imply or constitute an endorsement of the same by Constellation Research Inc.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold or distributed with the understanding that Constellation Research Inc. is not engaged in rendering legal, accounting, or other professional services. If legal advice or other expert assistance is required, the services of a competent professional person should be sought. Constellation Research Inc. assumes no liability for how this information is used or applied, and it does not make any express warranties on outcomes. (Modified from the Declaration of Principles jointly adopted by the American Bar Association and a committee of publishers and associations.)

Your trust is important to us, and as such, we believe in being open and transparent about our financial relationships. With our clients' permission, we publish their names on our website.

San Francisco Bay Area | Boston | Colorado Springs | Denver | Ft. Lauderdale | New York Metro
Northern Virginia | Portland | Pune | San Diego | Sydney | Washington, D.C.