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BEST PRACTICES

# Tech Buyer's Guide: Tableau Versus Power Bl

How To Open the Eyes of Budget Hawks Who Don't Recognize the True Cost of 'Free' Licenses





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# **EXECUTIVE SUMMARY**

Tableau is an innovator and market leader in the analytics and business intelligence (BI) market that almost single-handedly introduced the era of self-service analytics and BI. Ever since that time, two decades ago, Tableau has been the target of imitators, lower-cost "good enough" solutions, and want-to-be disrupters declaring "the death of the dashboard."

Microsoft, for one, has made big inroads into the analytics and BI market in recent years, in large part by leveraging its IT buying relationships and by packaging Power BI with its widely used Microsoft 365 productivity suite. No matter which other analytics and BI products organizations are using today, when it comes to upgrade or renewal time, there's invariably at least one purchase decision-maker—typically from IT—who suggests using Power BI. How do you make sure there's a real qualitative assessment rather than capitulate to the inaccurate argument that Power BI is "free"?

This report examines the various reasons customers cite for choosing Tableau, renewing with Tableau, doubling down on Tableau Server to meet their on-premises needs, and/or deploying in the cloud with Tableau Cloud. The research considered factors including setup and deployment time; administrative burdens; ease of use and training requirements for analysts and business users; and the appeal of innovative new features, including generative artificial intelligence (GenAI) capabilities. The report also shares advice from buyers and Constellation Research on how to get more value from Tableau investments. Analytics and BI platform buyers should use this report to gain insights from their peers and from Constellation Research as they head into analytics and BI selection projects and contract renewals.





#### WHY CUSTOMERS CHOOSE TABLEAU OVER POWER BI

This report is aimed at analytics and BI buyers and buying influencers who are considering purchasing Tableau for the first time or considering an upgrade from Tableau Server to Tableau Cloud. The choice of an analytics and BI platform is significant, so it's usually a committee decision. A pattern that has emerged in recent years in BI purchases is that there's often an advocate, usually from IT or an enterprise purchasing team, who champions using Microsoft Power BI. That person's assertion typically is that Power BI is "free," because certain licenses are often included with other Microsoft purchases. It can be a tough argument to counter, but in interviews with multiple buyers, Constellation Research has uncovered a variety of reasons why customers are choosing or sticking with Tableau as their data and analytics platform.

#### Power BI License Deals Don't Always Appeal

In the world of enterprise technology, it's an old maxim, at least among vendor executives, that "suites beat best-of-breed." And so it follows that innovative products that break new ground and capture large and passionate fan bases—an apt description of Tableau—can be ousted by tech bundles and packaging schemes aimed primarily at technology buyers rather than technology users.

The vendor that practically invented this playbook, back in the late 1980s, was Microsoft, which used the all-in-one package appeal of Microsoft Office to push out best-of-breed rivals such as Lotus 1-2-3 and WordPerfect.

Microsoft continues to use the suite and packaging playbook, leveraging its scale and IT buyer relationships to try to dominate markets. In some cases, it has succeeded, as in the developer tools market, where Visual Studio and GitHub make Microsoft a top choice. In other cases, Microsoft has not succeeded. For example, Microsoft is second to Amazon Web Services (AWS) in cloud computing; a distant second to Salesforce (which acquired Tableau in 2019) in customer relationship management (CRM); and a distant fourth, behind Snowflake, Amazon Redshift, and Google BigQuery, in data warehousing, with Azure Synapse and the new Microsoft Fabric offering.



Figure 1. Seven Reasons Customers Choose Tableau Over Power BI

#### Power BI license inclusions don't always fit the customer.

- Customer doesn't use Microsoft 365 or qualify for the E5 license level.
- Customer doesn't want/has chosen alternatives to Microsoft Fabric.

#### Free and paid Power BI options come up short.

- Customer discovers the limits of the free or Pro version of Power BI.
- Customer discovers that Power BI Pro/Premium don't match Tableau functionality, ease of use.

### Promised Power BI innovations are slow to appear.

- Promised innovations such as copilots and cloud capabilities take a long time to show up.
- Power BI security and auditability features raise concerns, particularly for desktop clients.

#### The cost of switching platforms and retraining staff is steep.

• For those already using Tableau, the prospect of re-creating content and retraining staff is prohibitively expensive.

Source: Constellation Research

What about analytics and BI? Microsoft Power BI burst onto the scene in 2015, and within less than five years, it became the market share leader (in terms of the sheer number of users, if not software revenue). Power BI's quick path to adoption is thanks in part to the popularity of Microsoft Excel, which remains, hands down, the most widely used data analysis tool worldwide. But Microsoft also has included Power BI licenses with other products to win over buyers seeking more-robust analytics and BI capabilities.

Microsoft's main licensing approach has been to include Power BI Pro with Microsoft 365 (formerly known as Office 365), specifically starting at the E5 license level (which, at this writing, costs \$54.75 per user per month, not including the Teams collaboration platform).

A second, more recent Power BI packaging approach has been to tie it to Microsoft Fabric, the vendor's new multiengine distributed data platform introduced in 2023 (and an attempt to use the all-in-one-package formula to gain ground in the data management market). Fabric includes the free version of



Power BI, which is limited to creating reports for personal use on desktops. Those wishing to publish and share reports with others will need Power BI Pro, which is included only at Fabric's F64 licensing level, which starts at around \$5,000 per month for the platform with a reserved-instance licensing commitment. (Alternatively, Power BI Pro is included

"We weren't interested in Microsoft Fabric, because the capabilities we would have used are essentially what we stood up leveraging Snowflake and Informatica."

> Data governance and enablement manager, regional bank

with the Microsoft 365 E5 or higher license level mentioned above or can be purchased à la carte for \$10 per user per month.)

F64 also happens to be the license threshold customers must reach to gain access to the Power BI Copilot in Fabric, with its GenAI capabilities. Alternatively, buyers can add Copilot by upgrading to Power BI Premium at the P1 level, which is also about \$5,000 per month for the platform at this writing.

There's no question that Microsoft's packaging strategies have attracted the attention of the more than 3.7 million organizations worldwide that use Microsoft 365, but plenty of customers haven't let their choice of word processing, spreadsheet, and email tools sway their analytics and BI choices. In fact, many organizations use Power BI for departmental needs while continuing to use third-party products as their enterprise analytics and BI standard. What's more, many third-party products, including Tableau, integrate with Microsoft 365 and Microsoft Teams.

Of course, Microsoft doesn't have a purchasing foot in the door at the 20% to 25% of organizations that have standardized on Google Workspace or other options, such as Apple iWork or Zoho Workplace. And then there are the organizations that don't use productivity suites much at all. Think of factory workers on shop floors, doctors and nurses interacting with medical records and patient care apps, or financial services employees working with highly specialized applications.

Another case in point is a 500-employee regional bank that Constellation Research recently interviewed. Tellers and managers at this bank's more than 30 branches spend most of their time in core banking applications, so the firm doesn't use Microsoft 365, much less at the E5 level.



The bank was upgrading an aging BI deployment combining Microsoft SQL Server, for data warehousing; Microsoft SQL Server Reporting Services (SSRS); and IBM Cognos. The bank's list of upgrade candidates eventually narrowed to Power BI and Tableau. Because it lacked a Microsoft 365 license, the bank was referred by Microsoft to more than a dozen resellers to propose the Power BI deployment. The multiplicity of buying relationships and the complexity of the infrastructure sizing and cost proposals turned project leaders off.

"We couldn't deal directly with Microsoft, which made things difficult," said the bank's data governance and enablement manager. "We ended up working through our usual reseller, but they didn't have expertise in Power BI, so they had to bring in another partner and the project took on a life of its own. We were concerned that we'd have to go through multiple parties to get support and assistance with Power BI down the road."

Microsoft's Fabric packaging also didn't fit the bank, because it had already decided on Snowflake for data warehousing and Informatica for data integration. "We weren't interested in Microsoft Fabric, because the capabilities we would have used are essentially what we stood up leveraging Informatica and Snowflake," the executive explained.

"Power BI is free like a puppy is free. To do what we wanted it to do, we discovered we needed to upgrade to Power BI Pro or Power BI Premium, and it happened everywhere we turned."

> Director of analytics, casino hotel resort

The ease of the Tableau buying experience (without resellers), Tableau's ease of use, and the promise of better performance were among the reasons the bank cited for choosing Tableau Cloud. "Some of our reports developed in SSRS have quite a bit of logic and calculations, and they can take up to 10 minutes to run," said the bank's business performance reporting analyst. "We're trying to move as much of the work as possible into Snowflake so it handles all the difficult workloads. Now when users go into Tableau, the access to insights is almost instantaneous."



#### 'Free' Seen as Limited, Pro/Premium Not as Capable

There's no doubt that budgetholders love to hear words such as free and included, but free options can end up costing more than anticipated. A casino hotel resort with more than 2,500 employees and 400 analytics and BI users selected Tableau Cloud in late 2023 after a failed attempt to implement Power BI.

The hotel's BI/analytics team wanted a tool for self-service ad hoc needs to complement a Cognos reporting deployment used by the hotel operations department. The Cognos deployment is closely tied to the hotel's lodging management system, and more than 2,000 reports have been built out, "so we're not going to try to replace all that," explained the hotel's director of analytics. The need for exploratory analysis and decision support was another matter, so three years ago, the hotel started looking at options. It was then that corporate IT suggested Power BI, because it was included in the hotel's enterprise license agreement.

"Let me tell you, Power BI is free like a puppy is free," quipped the director of analytics. "When we tried the free version, a lot of things just didn't work. To do what we wanted to do, we discovered we needed to upgrade to Power BI Pro or Power BI Premium, and it happened everywhere we turned."

For example, the hotel initially set up a few dashboards, and people wanted to get them via email, because they were used to that with Cognos. "To set up an email distribution group, we discovered you need the BI Report Server, but there was no way we would have paid to license that for the entire organization," said the analytics executive.

The hotel encountered another constraint when it created a dashboard on linen cleanliness for the housekeeping department but discovered that the free version of Power BI could not connect to the cloud-based repository used by the hotel's linen scanning device.

The final straw that led the hotel to switch to Tableau Cloud was what the analytics director describes as the "rudimentary" metrics capabilities of Power BI. "Sure, you can do sums and counts in Power BI, but to do anything sophisticated, you need to be a DAX [Data Analysis Expressions] wiz," the



director explained. "We gave Power BI a fair shake, experimenting with it for three years, but we weren't happy with it."

The hotel's analytics director says the combination of ease of use and more sophisticated capabilities led to the selection of Tableau Cloud. "Tableau is easy to learn, and you can do the easy stuff right away," the

"We've put them head to head, and the functionality available in Power BI is not comparable to what we get in Tableau unless people know how to write in DAX."

 Chief data and analytics officer, university medical center

exec said. "To create metrics where you need a baseline, you just right-click to get month-over-month or year-over-year. Even Map visualizations are easy to figure out yourself."

#### **Innovation Promises Don't Match Product Realities**

The chief data and analytics officer (CDAO) at a major university medical center whom Constellation Research recently spoke to championed the choice of Tableau Server over Power BI in 2019, and here in 2024, the exec is making a case for Tableau Cloud over Power BI. In both cases, the debate boiled down to cost versus functionality.

"My IT friends, who are very Microsoft-centric, want to use Power BI, but we've tested them head-to-head, and the functionality available in Power BI is not comparable to what we get in Tableau unless people know how to write in DAX," said the CDAO. "The thing is, I don't have programmers; I have analysts and data visualization people, and I couldn't take the time to train them on DAX."

The executive described Tableau as "something designed by people who visualize data that added data management features on the back end," and Power BI as "something designed by people who build databases that tacked data visualization capabilities onto the front end."

One crucial area where the underlying design has made a difference is in handling high-scale data. "We deal with pretty big datasets, because we have more than 65,000 discharges each year," said the CDAO. "If I want to look at the length of stay versus the patient's age, I want all 65,000 data points



there, because I want to see all the outliers. In Power BI, they're going to sample that data [to maintain performance]. If you only care about what's happening in the middle of the distribution, that's fine. In healthcare, you always want to know what's going on in the edge cases, because those patients might be sicker and there might be something interesting happening."

The medical center is now planning a move to the cloud, and the CDAO is making a case for Tableau Cloud versus Power BI, which is, once again, being championed by IT. This time around, data governance has emerged as a red flag.

"We went through a security audit last year, and the way that access and security controls are put together for Power BI would require significant work in order to be compliant with our standards," the executive explained. "We were not able to track what files were downloaded and at what granularity. If you're talking about patient data, I have no way to know who took it down when and what they took down."

One frustration for the CDAO is having to make the case for features that are already available in Tableau Cloud, versus capabilities that are being promised, at some point in the future, in Power BI.

"My observation, when it comes to anything, whether it's visualization software, metadata software, or cloud capabilities: Microsoft is very 'we're going to get that feature to you in the next release," the CDAO said. "It usually takes a lot longer, so we end up in a holding pattern. Will Power BI be able to do X five years from now? Sure, but I can't take on that risk for five years."

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The CDAO's observation on time to delivery fits with the time it took Microsoft to deliver on promised GenAI capabilities designed to tackle the burden of using DAX. A natural-language-to-DAX feature based on GPT-3 was initially announced and previewed way back in 2021. Yet the feature, later called Quick Measure Suggestions, wasn't released until September 2023, more than two years after the initial preview (and currently is available only in Power BI Pro and Premium).



#### The Cost of Switching Platforms and Retraining Is Steep

The most obvious and budget-impactful reason customers stick with incumbent platforms is all the investment they've put into training people and creating analytical content. That's not a factor for buyers that are starting from scratch, but technical debt is a very real and persuasive argument for continuing to invest.

The director of data visualization at a major Blue Shield healthcare provider said that it "just wouldn't have made sense" for her organization to switch to a different tool, either in 2019, when the company standardized on Tableau, or, more recently, when the organization decided to move to Tableau Cloud. "When you spend years and years building out stuff in Tableau, it's really hard to switch," she explained. "We'd have to retrain everyone on a new tool and retool every single existing report to be a Power BI report or a Qlik report or a Looker report. The cost of retraining people and then rewriting everything is too high."

The Blue Shield provider also had to consider its integrations with Salesforce capabilities and partnerships with other major Blue Cross/Blue Shield organizations, with at least 15 such organizations having standardized on Tableau, according to the data viz executive. In some cases, as in healthcare, Tableau is entrenched within industries as well as within individual organizations.

#### **HOW TO GET MORE FROM A TABLEAU INVESTMENT**

For organizations choosing Tableau for an initial deployment or moving existing Tableau Server deployments into the cloud with Tableau Cloud, detailed below are points of advice shared by customers on how they're getting the most from their deployments and more bang for the buck. It starts with choosing the right licensing level, and it ends with driving a hard bargain with Salesforce, particularly if you're choosing a higher licensing tier.



#### **Take Advantage of Innovations and Cloud Advantages**

Several Tableau customers that Constellation Research spoke to are moving from Tableau Server deployments to Tableau Cloud, specifically to take advantage of performance gains and innovations such as Tableau Pulse and the AI capabilities of Tableau Agent. Yes, they're also interested in the advantages of using a cloud-based service for which the vendor will administer and handle software upgrades, but those advantages were seen as secondary.

The university medical center's current Tableau Server deployment, supporting 2,500 users, requires only 1.5 full-time equivalents (FTEs) to administer it, according to the CDAO, so moving to a cloud service will bring "a modest decrease in admin costs," with much of that effort being unnecessary in the cloud. The more important benefit, said the CDAO, will be performance benefits that are tied to cloud deployment.

"On-premises I have to scale to the biggest requirement while living within my budget, so when the executives all come in at 7:30 in the morning, the dashboards crawl," the exec explained. "The cloud scales as needed, so I'm anticipating better performance."

Figure 2. Seven Ways To Get More Value out of Tableau

#### Take advantage of Tableau Cloud innovations and advantages.

- Tableau Pulse, Tableau Agent, and Teams/Slack integrations promise broader, data-driven action.
- Admin and security are simplified, making upgrades and mobile deployments easier.

#### Upgrade to Enterprise or Plus to access Tableau Prep and other features.

- Consider replacing expensive third-party tools with included Tableau Prep.
- Take advantage of included Data Management, Advanced Management, and elearning features.

#### Take advantage of packaging with Salesforce Data Cloud.

- Customers tapping the Data Cloud customer data platform capabilities will get breaks on Tableau.
- Data Cloud powers artificial intelligence features and new analytical capabilities with semistructured/unstructured data.

#### Press Salesforce for discounts.

• Volume discounts have always applied in the tech industry, and it's well known by Salesforce customers that the more you buy, the more leverage you have when asking for discounts.

**Source:**: Technology buyers interviewed by Constellation Research



The CDAO plans to use Tableau Pulse, the platform's new data experience for delivering personalized, contextual insights directly within the user's flow of work, to give executives and business leaders self-service capabilities and the ability to answer follow-up questions. "The current Tableau Mobile app offers data slices, but you can't drill," she explained. "Tableau Pulse will get them to the second and third question."

The director of data visualization at the Blue Shield organization is excited about using Pulse to liberate insights from dashboards and to enable data-driven action. "People will quickly realize that they won't have to waste time figuring out which dashboard to choose, logging in, and so on when they can just open their phones and click, click, bam, there's the answer," she said. "When they open up their phone and see that a KPI [key performance indicator] is messed up, they'll explore [using Pulse] and, bam, see what the problem is attributable to and then shoot off an email to the right person."

## **Upgrade to Enterprise or Tableau+ To Access Powerful Features**

The upgrade from standard Tableau to Tableau Enterprise or Tableau+ comes at a higher cost, but several customers Constellation spoke to mentioned the value of Tableau Enterprise (Tableau+ pricing and packaging had yet to be finalized at this writing). The casino hotel and the regional bank, for example, were both new to Tableau, so they appreciated Tableau Enterprise's inclusion of self-paced elearning resources to help get employees trained. The higher-cost Tableau+ upgrade includes a Premier Success Plan offering additional support programs and guidance.

New and existing customers also expressed interest in the Advanced Management and Data Management capabilities included with Tableau Enterprise and Tableau+. Advanced Management helps customers mature from using Tableau in small workgroup scenarios to using it as an enterprisewide platform that is centrally managed and governed by IT. Data Management simplifies data discovery and connectivity with Tableau Catalog while also enhancing governance. Data Management capabilities included with Tableau Enterprise and Tableau+ also include Tableau Prep Conductor.



Back when Tableau Prep was introduced, in 2018, many customers were already invested in expensive third-party tools for extract, transform, load (ETL) and data pipelining capabilities. Now that Tableau Prep is more mature and can automate processes with Tableau Prep Conductor, many customers are using it to replace tools such as Alteryx to cut costs as part of their cloud migration projects.

Upgrading to Tableau+ is also the recommended path for customers interested in Tableau Einstein, the next generation of Tableau that provides a composable AI analytics platform built with Agentforce.

Tableau Einstein also offers a new Workspace combining connectivity, data prep, semantics, visualizations, and more with reusable components and visibility into data lineage, from data sources downstream to analytics assets.

#### **Take Advantage of Bundling With Salesforce Data Cloud**

Salesforce Data Cloud, the vendor's four-year-old data platform, is an obvious choice for existing Salesforce customers—particularly if they're interested in AI and customer data platform (CDP) capabilities—but also offers benefits for existing Tableau customers.

#### Data Cloud enables customers to:

- Get the benefits of identity resolution and a single view of their customers through its
   CDP capabilities
- Tap clean, consistent, harmonized customer data directly, with no need for a separate platform management team or new skills
- Power personalized customer engagement, Salesforce Flow automations, Tableau Einstein AI, and Agentforce AI agents
- Bring together data from the Salesforce Sales, Service, Marketing, Commerce, and Industry clouds as well as third-party data accessed via zero-copy query federation with Amazon Redshift, Databricks, Google BigQuery, Microsoft Fabric, and Snowflake



- Ingest structured, semistructured, and unstructured data from more than 200 sources via prebuilt connectors
- Have confidence in the compliant and appropriate use of data from Data Cloud to power agents and all other forms of AI via the Einstein Trust Layer

Data Cloud is included as part of Tableau+ and Tableau Einstein as well as being available through a Data Cloud for Tableau Starter Pack bundling that supports customer segmentation and includes zero-copy integrations with Snowflake, Amazon Redshift, Databricks, Google BigQuery, and other sources and prebuilt connectors for data ingestion from more than 200 other third-party data sources. Prices for this starter pack are not published, but, as noted in the next section, package deals are always about getting discounts on combinations of products.

#### **Press Salesforce for Discounts**

Going for license upgrades; starter packs; longer-term contracts; and centralized, consolidated, and simultaneous purchasing of all products from a single vendor are just a few of the tactics customers use to win discounts and pricing and feature-inclusion concessions. Customers also can get deals by serving as a reference customer/product ambassador and/or agreeing to be named in marketing materials. The more you purchase and the closer you get to the vendor, the more leverage you'll have at the negotiating table.

#### **RECOMMENDATIONS**

To get the most from an analytics and BI deployment, 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. Solid analytics and BI guide executives and business users to next-best actions and data-driven decisions.



- Win executive support. Given all the buzz about all things AI, leaders may have little trouble attracting an executive sponsor for a GenAI or AI agent 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 innovative new 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 machine learning (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. AI 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 Europe, the United States, and elsewhere will 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 AI-based systems and applications should be as transparent and explainable as possible. The truly smart features are those that can be understood and trusted.



#### **ANALYST BIO**

# **Doug Henschen**

#### Vice President and Principal Analyst

Doug Henschen is a vice president and principal analyst at Constellation Research focusing on datadriven 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 the 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.



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#### Organizational Highlights

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- · 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.



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