

Tableau Software Inc
Form 10-K
February 26, 2018

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2017

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from ____ to ____

Commission File Number: 001-35925

TABLEAU SOFTWARE, INC.
(Exact name of Registrant as specified in its charter)

Delaware 47-0945740
(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification Number)
1621 North 34th Street
Seattle, Washington 98103
(Address of principal executive offices and zip code)

(206) 633-3400
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of each exchange on which registered
Class A Common Stock, par value \$0.0001	New York Stock Exchange

Securities registered pursuant to Section 12 (g) of the Act: None

Indicate by a check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

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Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the Registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer
Non-accelerated filer (Do not check if smaller reporting company) Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

The aggregate market value of common equity held by non-affiliates of the Registrant on June 30, 2017, based on the closing price of \$61.27 for shares of the Registrant's Class A common stock as reported by the New York Stock Exchange for such date, was approximately \$3.8 billion. The Registrant assumed a stockholder was an affiliate of the Registrant at June 30, 2017 if such stockholder (i) beneficially owned 10% or more of the Registrant's capital stock (on an as-converted basis), as determined based on public filings, and/or (ii) was an executive officer or director, or was affiliated with an executive officer or director of the Registrant, at June 30, 2017. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 21, 2018, there were approximately 67,902,696 shares of the Registrant's Class A common stock and 13,633,546 shares of the Registrant's Class B common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Information required in response to Part III of Form 10-K (Items 10, 11, 12, 13 and 14) is hereby incorporated by reference to portions of the Registrant's Proxy Statement for the Annual Meeting of Stockholders to be held in 2018. The Proxy Statement will be filed by the Registrant with the Securities and Exchange Commission no later than 120 days after the end of the Registrant's fiscal year ended December 31, 2017.

TABLEAU SOFTWARE, INC.
 ANNUAL REPORT ON FORM 10-K
 For the Year Ended December 31, 2017

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PART I.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, and section 27A of the Securities Act of 1933, as amended. All statements contained in this report other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans and our objectives for future operations, are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "seek" and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in the "Risk Factors" section of this report. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. We are under no duty to update any of these forward-looking statements after the date of this report or to conform these statements to actual results or revised expectations.

As used in this report, the terms "Tableau," "Registrant," "Company," "we," "us" and "our" mean Tableau Software, Inc. and its subsidiaries unless the context indicates otherwise.

Tableau and Tableau Software are trademarks of Tableau Software, Inc. All other company and product names may be trademarks of the respective companies with which they are associated.

ITEM 1. BUSINESS

Overview

Our mission is to help people see and understand data.

Our software products put the power of data into the hands of everyday people, allowing a broad population of business users to engage with their data, ask questions, solve problems and create value.

Based on innovative core technologies originally developed at Stanford University, our products dramatically reduce the complexity, inflexibility and expense associated with traditional business intelligence applications.

Our software is designed for anyone with data and questions. We are democratizing the use of business analytics software by allowing people to access information, perform analysis and share results without assistance from technical specialists. By putting powerful, self-service analytical technology directly into the hands of people who make decisions with data, we seek to accelerate the pace of informed and intelligent decision-making. We believe this enables our customers to create better workplaces, with happier employees who are empowered to fully express their ingenuity and creativity.

Our products are used by people of diverse skill levels across all kinds of organizations, including Fortune 500 corporations, small and medium-sized businesses, government agencies, universities, research institutions and non-profits. Organizations employ our products in a broad range of use cases such as increasing sales, streamlining operations, improving customer service, managing investments, assessing quality and safety, studying and treating diseases, completing academic research, addressing environmental problems and improving education. Our products are flexible and capable enough to help a single user on a laptop analyze data from a simple spreadsheet, or to enable tens of thousands of users across an enterprise to execute complex queries against large and complex data sets.

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Underpinning our innovative products is a set of technology advances that spans the domains of sophisticated computer graphics, human-computer interaction and high performance database systems. These technology innovations include VizQL and our Hybrid Data Architecture:

VizQL—Our breakthrough visual query language, VizQL, translates drag-and-drop actions into data queries and then expresses that information visually. VizQL unifies the formerly disparate tasks of query and visualization and allows users to transform questions into pictures without the need for software scripts, chart wizards or dialogue boxes that inhibit speed and flexibility. This capability is designed to enable a more intuitive, creative and engaging experience for our users. VizQL can deliver dramatic gains in people's ability to see and understand data, and we believe it represents a foundational advancement in the field of analytics.

Hybrid Data Architecture—Our Hybrid Data Architecture combines the power and flexibility of our Live Query technology and Hyper, our new in-memory data engine technology. Our Live Query technology allows users to instantaneously connect to large volumes of data in its existing format and location, including databases and cloud applications. This capability allows customers to leverage investments in their existing data platforms and to capitalize on the capabilities of high performance databases. Hyper, our in-memory data engine technology, is designed for fast data ingestion and analytical query processing on large or complex data sets. With enhanced extract creation and refresh performance, customers can choose to extract their data based on the needs of the business without concern for scheduling limitations or data volumes. Our Hybrid Data Architecture gives users the flexibility to access and analyze data from diverse sources and locations, while optimizing speed and performance for each source.

Our distribution strategy is designed to capitalize on the ease of use, low up-front cost, flexible deployment and collaborative capabilities of our software. To facilitate rapid adoption of our products, we provide fully-functional free trial versions of our products on our website and offer a flexible pricing model. After an initial trial or purchase, an organization has the flexibility to expand adoption of our products at any scale.

As of December 31, 2017, we had over 70,000 customer accounts across a broad array of company sizes and industries. Some of our largest customers include Bank of America, ExxonMobil, Honeywell, Johnson & Johnson and various United States ("U.S.") Government Agencies. In addition, we have cultivated strong relationships with technology partners to help us extend the reach of our products. These partners include database vendors such as Amazon.com, Inc., Cloudera, Inc., Google Inc., International Business Machines Corporation ("IBM"), Microsoft Corporation, Oracle Corporation, Snowflake and Teradata Corporation.

For the years ended December 31, 2017, 2016 and 2015, our total revenues were \$877.1 million, \$826.9 million and \$653.6 million, respectively. We had net losses of \$185.6 million, \$144.4 million and \$83.7 million for the years ended December 31, 2017, 2016 and 2015, respectively.

We have generated positive cash flow from operating activities of \$226.9 million, \$177.3 million and \$142.4 million for the years ended December 31, 2017, 2016 and 2015, respectively. Cash flows from operating activities for the years ended December 31, 2016 and 2015 each reflect retrospective adjustments made related to our adoption of Accounting Standards Update ("ASU") 2016-09 in the first quarter for 2017. Our adoption of ASU 2016-09 is described later in this report.

Growth Strategy

Our mission to help people see and understand data presents a broad market opportunity. We intend to continue to invest in a number of growth initiatives to allow us to pursue our mission. Our strategies for growth include:

Expand our customer base—We operate in a rapidly growing analytics and business intelligence software market. We believe that Tableau is well positioned in the market to expand our present customer base of over 70,000 customer accounts. We are expanding our online and offline marketing efforts to increase our brand awareness. We are also making investments in growing both our direct sales teams and indirect sales channels.

Further penetrate our existing customer base—We intend to continue to increase adoption of our products within and across our existing customer base, as they expand the number of users and develop new use cases for our products in the enterprise. Our sales and marketing strategy and focus on customer success help our customers identify and pursue new use cases within their organizations. As this expansion occurs, we believe that our products will also increasingly supplant incumbent legacy platforms to become the standard platform for analytics and business intelligence for our

customers.

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Grow internationally—With approximately 31% of our total revenues generated outside the United States and Canada in the year ended December 31, 2017, we believe there is significant opportunity to grow our international business. Our products currently support eight languages, and we are expanding our direct sales force and indirect sales channels outside the United States. We have international operations in Australia, Canada, China, France, Germany, India, Ireland, Japan, Singapore and the United Kingdom, and we intend to invest in further expanding our footprint in these and other regions.

Relentlessly innovate and advance our products—We have sought to rapidly improve the capabilities of our products over time and intend to continue to invest in product innovation and leadership. Building on our foundational technology innovations, we continue to expand and improve our feature set and capabilities. Our most recent release in January 2018, Tableau 10.5, included Hyper, our new in-memory data engine technology designed for fast data ingestion and analytical query processing on large or complex data sets, and Tableau Server on Linux, which enables customers to combine Tableau's analytics platform with Linux's enterprise capabilities. We plan to continue to invest in research and development, including hiring top technical talent, focusing on core technology innovation and maintaining an agile organization that supports rapid release cycles. We intend to focus on further developing our cloud capabilities, offering faster data analysis, continuing to enhance our self-service platform and making data preparation easier.

Extend our distribution channels and partner ecosystem—We plan to continue investing in distribution channels, technology partners and other strategic relationships to help us enter and grow in new markets while complementing our direct sales efforts. We are actively growing our indirect channels, particularly in international markets. Our most important technology partnerships are with database vendors, such as Amazon.com, Inc., Cloudera, Inc., Google Inc., IBM, Microsoft Corporation, Oracle Corporation, Snowflake and Teradata Corporation, with which we have collaborated to develop high performance and optimized connectivity to a broad group of popular data stores. We intend to continue to invest in partnerships that enable us to build and promote complementary capabilities that benefit our customers. We also offer application program interfaces ("APIs") to further empower our developer and original equipment manufacturer ("OEM") partner ecosystem to create applications that embed Tableau functionality. Foster our passionate user community—We benefit from a vibrant and engaged user community. We are investing in initiatives to further expand and energize this group, both online, through our online community site and through events such as our annual customer conferences, including our U.S. Tableau Customer Conference, which had 14,000 registered customers and partners in 2017.

Treasure and cultivate our exceptional culture—We believe our culture is a core ingredient of our success. Our employees share a passion for our mission, and our mission stands at the top of a list of eight core cultural values that govern our approach to our business. Our other core values include: teamwork; product leadership; using our own products; respect; honesty; simplicity; and commitment to delighting customers. Our values permeate our organization and drive our identity as a company. For example, we strive to simplify all aspects of our business, including product user interfaces, pricing models, business processes and marketing strategies. Our culture is consistently cited in employee surveys as a key reason for their satisfaction with Tableau, and we have been publicly recognized as one of the best workplaces in the State of Washington.

Products

Our products help people see and understand data. They offer the power and flexibility required to serve a broad range of use cases, from answering questions with small spreadsheets to completing enterprise business intelligence projects involving massive volumes of data. We currently offer four key products: Tableau Desktop, a self-service, powerful analytics product for anyone with data; Tableau Server, a business intelligence platform for organizations; Tableau Online, a hosted software-as-a-service ("SaaS") version of Tableau Server; and Tableau Public, a free cloud-based platform for analyzing and sharing public data.

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Tableau Desktop

Tableau Desktop helps knowledge workers make sense of the many kinds of data they encounter every day. The defining capability of Tableau Desktop is the interactive experience it provides for exploring and analyzing data. By fundamentally integrating data analysis and visualization, our products provide a visual window into data trapped in spreadsheets and databases, fostering greater engagement with data and allowing people to better answer questions, develop insights and solve problems. The result is a self-service analytics environment that empowers people to access and analyze data independently and at a rapid pace. Tableau Desktop's key capabilities include:

Visual analytics—Tableau Desktop empowers people to ask sophisticated questions by composing drag-and-drop pictures of their data. Tableau Desktop's easy-to-use interface is built on VizQL, which is capable of describing thousands of easily understood visual presentations of data including tables, maps, time series, dashboards and tables of graphs. The combination of a sophisticated language with a simple user interface means users can explore many different perspectives of their data. We believe being able to quickly view data from different perspectives inspires creative thinking and helps people find the right view to answer a question.

Analytical depth—An important aspect of Tableau Desktop is its ability to marry powerful visualization with deep analytics. Users can filter and sort their data, create sophisticated calculations, drill into underlying information, define sets and cohorts, perform statistical analysis and derive correlations between diverse data sets with agility and relative ease. For example, with a few clicks, users can generate sophisticated forecasting models. This combination of simplicity and usefulness, ease of use and analytical depth is what makes it possible for Tableau Desktop to empower a whole new group of people to become data analysts.

Data access—Tableau Desktop lets people access and query a large number of common data sources, from database systems such as Amazon Redshift, Google BigQuery, Hadoop, Microsoft Azure Database, NoSQL, Oracle, Snowflake and SQL Server, to Web applications like Google Analytics and Salesforce, to spreadsheets and files. Users can connect to more than 65 data connectors with a few clicks, without any scripting or programming.

Live query—Tableau Desktop translates users' interactions into live queries. As people use the drag-and-drop interface to examine information, they are automatically generating sophisticated queries against their database. Tableau Desktop can generate queries in a range of query languages including Structured Query Language ("SQL"), Multidimensional Expressions ("MDX") and Salesforce Object Query Language ("SOQL"). Each query is optimized for the target platform and its unique performance and analytical characteristics. This live query approach allows customers to leverage their investments in database infrastructure and enables them to take advantage of query-optimized databases.

In-memory query—Tableau Desktop contains Hyper, an in-memory data engine technology that can be used for rapid analysis. By extracting data to Hyper, customers can analyze large or complex data sets faster. A core Tableau platform technology, Hyper uses proprietary dynamic code generation and parallelism techniques to achieve fast performance for extract creation and query execution.

Data integration—Many questions require combining data from multiple sources. Tableau Desktop provides a number of ways for people to combine data without requiring a typical data loading and transformation project. A Tableau workbook can connect to many different data sources, with each source independently leveraging either a live query or in-memory approach. Users can then combine the data in a single dashboard, visualization, filter or calculation using our data blending functionality. This approach can greatly extend the scope and depth of questions a person can answer.

Sharing and presentation—Tableau Desktop allows users to author and distribute visualizations and dashboards with the ease expected of everyday office tools like spreadsheets. Content created in Tableau Desktop can be embedded in documents and presentations, or the workbooks can be distributed for viewing by people who have Tableau Desktop or Tableau Reader, a free product to view and interact with visualizations built in Tableau Desktop. Alternately, users can publish their workbooks to Tableau Server or Tableau Online enabling others in the organization to access them using a Web browser or a mobile device.

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Tableau Server

Tableau Server is a powerful business intelligence platform with enterprise-class data governance and scalability. The collaborative features of Tableau Server are designed to foster more sharing of analytics to improve the dissemination of information across an organization and promote improved decision-making. Tableau Server's key capabilities include:

Shared content—Tableau Server provides an easy-to-navigate repository of shared visualizations and dashboards within an organization. Any user with appropriate credentials can view, interact, create data-driven alerts, edit and author new visualizations from published data using a Web browser. Users can also view and interact with published visualizations using a mobile device or tablet. The ability to publish dashboards and easily share impactful visual analysis increases awareness of business data and promotes improved decision-making. In addition, allowing others to interact with an analysis gives them deeper understanding of the information, which leads to an improved grasp on the problem and hence greater confidence in the solution.

Shared data—Organizations can use Tableau Server to centrally manage enterprise data sources and metadata enabling knowledge sharing, efficiency, governance and data consistency. Business users or IT professionals can create rich data models, containing calculations, hierarchies, field aliases, sets and groups of interest, and publish them to Tableau Server to be shared across an organization. Others can use these models as a starting point for analysis while extending them to meet their own specific analytical needs. While centralized data models are not a pre-requisite for analysis in Tableau, they provide flexibility and increased productivity while maintaining control and security of data.

Universal access—We have designed Tableau Server to enable seamless sharing of content across desktop, mobile and Web clients. Once users author and publish analytical content to the server, people across an organization can consume it on different browsers and devices. Further, Tableau Server automatically detects the device being used and adapts the content to take advantage of the device's capabilities including native touch experience and form factor. Tableau Server allows users to actively subscribe to content for automatic delivery on their devices or pull content on demand.

Integration and Embedded Analytics—Tableau Server offers APIs that help developers, customers and partners embed and control our software from portals, websites and other enterprise applications. Our APIs can also be used to construct in-memory databases, upload content and add users to the server programmatically. In addition to APIs, we also offer command line utilities to automate management tasks, and data upload tools to move data rapidly into Tableau Server.

Scalability—Tableau Server's distributed multi-tier architecture allows it to scale to tens of thousands of users, across desktop, Web and mobile clients, meeting the needs of some of the largest organizations globally.

Security—Tableau Server provides a security model that encompasses authentication, data and network security. Tableau Server is also built on a multi-tenant architecture that allows administrators to logically partition a single system across user populations, providing for separation of content.

Administration—We believe the ease of administering a system is tremendously important to its adoption. While Tableau Server's management interface is designed to be simple enough for a line-of-business user, we also provide APIs to allow administrators to automate routine management processes.

Tableau Online

Tableau Online, a hosted SaaS version of Tableau Server, is built on the Tableau Server platform and provides ease of use, speed and availability without requiring customers to manage physical infrastructure. Tableau Online is a fully-hosted solution that can be accessed by clients remotely using Tableau Desktop, a browser or a mobile device. In addition to offering the same capabilities as Tableau Server, Tableau Online's key capabilities include:

Hybrid data connectivity—Tableau Online supports both live connectivity and in-memory extracts of cloud databases including Amazon Redshift, Google BigQuery and Microsoft SQL Azure. Users can access real-time data from cloud data sources without requiring data snapshots.

On-premises data sync—Tableau Online provides easy syncing of on-premises data such as Microsoft Excel and Oracle to the cloud through the Tableau Bridge feature. This enables customers to keep their data up-to-date.

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Always up-to-date—Tableau Online includes the latest maintenance releases and versions of Tableau Server. Customers do not need to worry about upgrading their infrastructure or deploying the latest patches.

Reliable and scalable—Tableau Online is a SaaS analytics application built on the same enterprise-class architecture of Tableau Server.

Tableau Public

Tableau Public is a free cloud-based offering that is available for anyone to use with public data. This offering allows users of diverse backgrounds, from bloggers and journalists to researchers to government workers, to easily visualize public data on their websites. People who visit these websites can interact with the visualizations and share them via social media.

Using Tableau Public, data can be transformed into interactive graphs, dashboards and maps for the world to see on the Web. For example, a blogger focused on economic issues may want to blog about changes in the U.S. unemployment rate. Using Tableau Public, the blogger can quickly build an interactive visualization using data from the U.S. Bureau of Labor Statistics and embed it in their blog. Every time the blog is viewed, Tableau Public serves up the data as a dynamic visualization.

Tableau Public enables us to test new product features and engage in user research as well as generate greater awareness of Tableau and increase community engagement. In addition to offering most of the features of Tableau Desktop and Tableau Server, Tableau Public offers the following capabilities:

Web scale—Tableau Public meets the massive performance requirements of serving dynamic content on top tier websites including media channels, social media and other consumer internet services. Through a combination of proprietary software and optimized hardware, we have designed a highly scalable, multi-tenant, online infrastructure. Our Tableau Public service has reached over 1 billion cumulative views worldwide.

Social reach—Anyone viewing or interacting with a Tableau Public visualization can share it on Facebook or Twitter. The ease of social sharing has facilitated greater conversations around data on Tableau Public.

Embedding—Tableau Public views can be embedded in Web pages and blogs. Authors can enrich their websites and engage their audience with interactive visualizations based on Tableau Public.

Users—Tableau Public has been used by hundreds of thousands of people to make public data easy to see and understand. People have used the product to visualize and share data about government budgets, school performance, economic policy, sports statistics and box office trends. Visualizations from Tableau Public have appeared in many news organizations' publications such as BBC News and CNBC, as well as publications from bloggers and researchers.

Technology

Visual Query Language (VizQL) for Databases

At the heart of Tableau's products is our proprietary and breakthrough technology called VizQL. VizQL is a visual query language for data that simultaneously describes how to query data and how to present it visually. VizQL can deliver dramatic gains in people's ability to see and understand data. We believe VizQL is unique in several important aspects:

Extensibility and flexibility—VizQL is a computer language for describing pictures of data, including graphs, charts, maps, time series and tables of visualizations. VizQL unifies these different visual representations into a single framework. Conventional component architectures that underlie reporting packages and charting wizards contain a fixed number of computer procedures, one for each type of picture. VizQL, in contrast, is a language for creating pictures. Each type of picture is a different statement in the language. The extensibility and flexibility of VizQL makes it possible to create a virtually unlimited number of visualizations.

Transforms database records to graphical representations—VizQL statements define the mapping from records returned from a database to graphical marks on a screen. Some fields in the record control the geometric properties of the mark, including position, size and orientation while other fields control visual attributes like color, transparency and shape.

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Declarative language—VizQL is a declarative language like other database languages, including SQL. The advantage of a declarative language is that the user describes what picture should be created, not how to make it. The user does not need to be aware of underlying implementation as query, analysis and rendering operations run behind the scenes. The result is a portable and more scalable system.

Defines and controls queries—VizQL procedures define both the resulting picture and the database query. Our Live Query Engine generates efficient queries for external databases of many types from many vendors. VizQL also controls execution of our optimized in-memory data engine technology to perform calculations in real time.

Optimized—VizQL's interpreter is optimized for interactive use, enabling visualization and drawing of large data sets.

VizQL is specifically designed to take advantage of modern computer graphics hardware, such as the fast rendering chips developed for gaming that are standard on personal computers.

The initial development of VizQL began at Stanford University in 1999. Stanford University has granted us an exclusive license to commercialize the software and related patents resulting from that research. The software and related patents generally relate to three subject areas: (1) architecture for creating table-based visualizations from relational databases; (2) graphical user interface for creating specification for table-based visualizations; and (3) an environment for rapid development of interactive visualizations. Our license from Stanford University is exclusive in all fields, worldwide and sublicensable. The license agreement provides for Tableau to own all improvements to and derivative works of the software that it develops. The license agreement also provides for enforcement of the licensed patents against alleged infringers. If Stanford University and Tableau agree to jointly enforce the licensed patents against an alleged infringer, the parties equally share the costs and the recovery or settlement for such enforcement. If Stanford University and Tableau do not agree to jointly enforce the licensed patents against an alleged infringer, Stanford University and Tableau will each have the right to enforce the licensed patents against the alleged infringer. If Tableau files such a suit in a United States court, Stanford University joins such suit only for standing purposes, and Tableau wins an award of damages for, or receives a settlement payment for, infringement of a United States licensed patent, Tableau would retain that award or settlement payment and would be required to negotiate in good faith with Stanford University to compensate it for its expenses in connection with the suit. If Stanford University files such a suit in a United States court, Tableau joins such suit only for standing purposes, and Stanford University wins an award of damages for, or receives a settlement payment for, infringement of a United States licensed patent, Stanford University would retain that award or settlement payment. The license agreement does not expire and can be terminated by Stanford University only if Tableau breaches the agreement and does not remedy the breach within 30 days after receiving written notice of the alleged breach from Stanford University. We have invested substantial research and development in VizQL since obtaining these rights. We have also been granted additional patents related to our core VizQL technology.

Live Query Engine

We have developed a Live Query Engine that interprets abstract queries generated by VizQL into syntax understandable by popular database systems. For instance, our Live Query Engine can compile VizQL statements into optimized SQL and MDX syntax understandable by database systems made by Dell EMC, IBM, Microsoft Corporation, Oracle Corporation, SAP SE, Teradata Corporation and many other database vendors. As a result, our technology provides customers with a way to increase the accessibility, usability and performance of their databases. It also gives them a uniform user interface for interacting with databases of diverse vendors, formats and sizes.

It is common for traditional business intelligence products to import data from the organization's database systems. In contrast, Tableau's Live Query Engine enables people to query databases without having to first import the data into our products. Queries generated by our Live Query Engine are interpreted and run by the database, with only the results of each query rendered. This approach offers many advantages for customers:

Data consistency—Copying data can cause people to work with out-of-date information. Further, each copy of the data may represent information at different times leading to inconsistency. With our Live Query Engine, customers do not need to create additional copies of their data.

Avoids data movement—Moving and loading data is often time consuming and expensive. With Live Query Engine, our customers do not need to move data in order to use our products.

Scalability—Many database vendors provide massively parallel implementations of databases that provide scalable data access to large data sets. These systems can scale in various ways including

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scaling the number of tables in the database, the number of records in each table, the number of columns in each record, the number of users and the number of active queries. These systems also provide powerful computation capabilities for very large data volumes. Our Live Query Engine allows businesses to leverage their investment in scalable data infrastructure.

Security—Transferring data out of a database causes customers to lose the security and permissions models associated with that data. Using our Live Query Engine, customers can leverage the security and permissions models specified in their database systems.

Flexibility—The database industry consists of multiple vendors with competitively differentiated products. Our Live Query Engine enables our customers to choose the appropriate technology for their business.

We focus on ensuring our software is compatible with popular database platforms and that our live query technology works with the most recent releases of those platforms. Our Live Query Engine is compatible with more than 65 data connectors, including those from the top five database vendors in the world.

We believe the size of the data that our customers analyze continues to grow. We will continue to develop our live query technology with the goal of empowering our users to have complete access to any data stored anywhere.

Hyper

Hyper is a high-performance in-memory data engine technology that helps customers analyze large or complex data sets by efficiently evaluating analytical queries directly in the transactional database. A core Tableau platform technology, Hyper uses proprietary dynamic code generation and cutting-edge parallelism techniques to achieve fast performance for extract creation and query execution. Hyper provides users with the following benefits:

Column-based storage—Transactions and analytical queries are processed on the same column store, with no post-processing needed after data ingestion. This reduces stale data and minimizes the connection gap between specialized systems. Hyper's unique approach allows a true combination of read-and write-heavy workloads in a single system, providing fast extract creation without sacrificing fast query performance.

Dynamic code generation—Hyper uses a just-in-time compilation execution model. Hyper optimizes and compiles queries into custom machine code to make better use of the underlying hardware. The end result is better utilization of modern hardware for faster query execution.