Visualize and Analyze Data with Tableau

PRODUCT HIGHLIGHTS

A SNEEK PEAK INTO TABLEAU DASHBOARDS, STORY POINTS, SERVER AND ADMIN OPTIONS AVAILABLE WITH TABLEAU SOFTWARE.
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Tableau is a visualization tool with a focus on Business Intelligence. It is built on the Visual Query Language for Data, pioneered by Tableau as VizQL™. VizQL™ is a technology that optimally converts the user’s drag and drop action into a database query and outputs the results visually in the form of data visualizations.
Tableau offers an impressive data engine capable of visually querying petabytes of data with billions of rows in mere seconds, or to put it more aptly, at the speed-of-thought. Combined with the drop and drop functionality, it enables users to follow their train of thought in analysing data. It allows users to connect to a data source and obtain the visual analysis without any coding or scripting.

Tableau allows users to connect to data in multiple ways. Using its powerful data engine, users can connect to multiple sources of data at once, connect live or take a snapshot of the databases to take advantage of its breakthrough in-memory architecture etc. The types of data sources that can be connected to Tableau can be found here.

Why Tableau?
Tableau has been the industry leader in Business Intelligence products and solutions for the past two years. Each year, Gartner analyses every vendor in the Business Intelligence and Analytics market. Their research has particular significance because it often identifies the innovations that drive the market. As part of that report, Gartner also releases the Magic Quadrant, which shows the relative positions of the market's competitors.
Tableau is has been recognized as a Leader in the Magic Quadrant for two successive years. To read the complete report, click here.

"IT IS VERY LIKELY THAT 2014 WILL BE A CRITICAL YEAR IN WHICH THE TASK OF MAKING 'HARD TYPES OF ANALYSIS EASY' FOR AN EXPANDED SET OF USERS, ALONG WITH ENSURING, GOVERNANCE, SALES AND PERFORMANCE FOR LARGER AMOUNTS OF DIVERSE DATA, WILL CONTINUE TO DOMINATE BI MARKET REQUIREMENTS."

- GARTNER
Product Offerings
Tableau offers three types of products namely, the Public, Personal and Professional Edition. The Public Edition is a free edition that allows workbooks and dashboards to be published ONLY to Tableau’s public website. The personal edition, while allowing workbooks to be saved locally, does not have the ability to connect to databases. The Professional edition is the full-fledged product from Tableau.

The table below illustrates the differences between the three editions:

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Dashboards are a combination of individual data visualizations. Using Tableau, users can create interactive real-time dashboards and stories. Tableau Dashboards have data visualization best practices built in.
Users can interact with a dashboard by filtering data, drilling down on specific elements etc. Sharing of dashboards is also very simple and is just a click away from embedding them into company portals, websites etc..
A sample interactive dashboard created using Tableau Desktop is shown below. The dashboard displays the sales and profits of various products of a fictitious store. It displays the following visualizations:

**Sales per product category as a “Tree Map”**

![Tree Map visualization]

The size of each box represents the sales value of each product category.

**Sales per product sub-category as a “Heat Map”**

![Heat Map visualization]

This visualization shows the distribution of sales value of different product sub categories over the course of a year.
Profits per product category as a pie chart

The profit share of each product category is represented by the size of its section.

Profits per product sub-category” as a Bar Chart

The profits for each sub-category is shown as bars.
The sales and profit values for different consumer segments like Corporate, Home Office etc. across different regions like East, south etc. are visualized using bar charts. The length of the bar represents the sales value and the colour shade represents the profit for that particular segment in a region.
Tableau goes one step beyond the dashboards with the introduction of Story Points. Using Story Points, users can build a narrative or a story using the data visualizations and dashboards for easier sharing with others. People find it easier to grasp and remember concepts when told in the form of a story like in case of books or movies. Story Points enables users to share data in the form of a story.
As said by Francois Ajenstat, Tableau’s director of product management, “People tend to remember concepts through stories. It’s the oldest form of communication. You can highlight interesting points in your views, and put it together in a sequence with a narrative.”

Most data visualization presentations today using other Business Intelligence involve users copy pasting the visualizations to a PowerPoint presentation. Tableau’s story point template has the option of having multiple blocks with captions arranged in the form of a strip at the top and a pane for arranging visualizations and dashboards. Visualizations can be easily added, removed and arranged in the pane with simple drag and drop motions, and required coding or programming knowledge. Users can click through the blocks sequentially to move through the panes. As in the case of dashboards, story points are fully interactive with options for filters and other controls.

Example
A sample interactive dashboard created using Tableau Desktop is shown in the next few pages.

This story point narrates the Analysis of Shipping Costs and Identification of Problem Areas of a fictitious store. The story point consists of four panes each with a dashboard with a particular topic. Users can hover over or click on individual data elements to get more data or get the underlying raw data that forms the visualizations.
The three charts in this pane (Shipping cost by Product category, Shipping cost by Product sub-category and Furniture shipping cost by shipping mode) are all simple bar charts comparing shipping costs of various items against categories.
This pane shows the geographic distribution of shipping costs across the country in an interactive map and a bar chart showing no. of discounts given to customers per state. Users can click or mouse over the states to see the raw data. From this pane, it becomes clear that California has abnormally high shipping costs compared to the rest of the country.
This pane drills down further into shipping costs per city in California. Shipping costs are represented by the colour shade of the circle and the corresponding sales from that city is represented by its size. From this visualization, it can be easily deduced that California is the problem city with abnormally high shipping costs and also the highest sales value. This pane also shows the list of customers in California and their corresponding sales, profits and shipping costs to identify problem customers.
The final pane summarises the deductions based on the data analyses in previous panes.

**Problem Areas Identified:**

1. Sales in California as a whole are running on high losses inspite of having the highest sales volume in the country.
2. Californian customers are given the highest no. of product discounts inspite of the losses.
3. Transportation of Tables to Los Angeles, California has abnormally high Shipping Costs compared to other regions.
4. Sale of tables are currently running on abnormally high losses, one factor contributing to this being abnormally high shipping costs.
5. Shipping by delivery trucks results in the highest shipping costs.
6. Our Customer Ms. Jenny Gold from Los Angeles, California has the highest shipping costs. Sales to Ms. Jenny has also resulted in the biggest losses.
Tableau Server is browser- and mobile-based insight anyone can use. Publish dashboards with Tableau Desktop and share them throughout your organization. It’s easy to set up and even easier to run.
FEATURES

Flexible data architecture
Tableau Server leverages fast databases through live data connections, or can extract and refresh your data in–memory with its blazing fast data engine.

Automatic updates
Refresh local data on schedules, at set intervals, or incremental levels. Or just refresh it all. Get alerts when data connections fail. Set up subscriptions so you get your data when you want it, as often as you want it.

Embedded analytics
Embed dashboards within your organization’s existing workflow. Whether you need native database connectors, APIs or a suite of authentication methods, it’s in the bag.

Scalable
It scales with both hardware and memory, and comes with many features to ensure it is a reliable enterprise backbone.

Mobile
Author a dashboard once; view it anywhere, on any device. All dashboards are automatically optimized for mobile tablets without any programming. Use familiar tablet gestures to view and interact with dashboards in mobile web browsers or using native iPad and Android apps.
Shows all the workbooks user has permission to view.
This page lists all the projects managed in the enterprise.

“Default” Project Page

The top tab has options to set user permissions and owner for workbooks in this project.
User management: Permissions

Permissions available for Users & Groups – View, Web Edit, Write/Web Save, Download/Web Save As, Delete, Filter, Add Comment, View Comments, View Summary Data, View Underlying Data, Export Image, Share Customized, Move, and Set Permissions.

Users can be assigned as Viewer, Interactor, Editor or we can create a custom user assignment.
Each workbook is shown as a thumbnail by default. Users can change the view to lists. Hovering over the thumbnails, gives all the details regarding the worksheet like name, owner, project etc.
Worksheet View page

Clicking on worksheet in the previous page brings the user to this page. The top of the view page has options to share, edit, export, refresh data source and download the worksheet.
This page lists all the connected data sources. In this case, we have extracted the data locally and uploaded a packaged workbook, so no live connection is available. Users can schedule periodic updates to the packaged workbook so the extract can update data from local sources.
Users have the following preferences - Change Email, Edit Subscriptions, Edit subscribed worksheets, Start Page: Change the default landing page upon login, Language and Locale, Manage Your Account: Change Password, Workbooks: List of workbooks the user has access, Tags and Comments.
CHAPTER FIVE

TABLEAU SERVER ADMIN OPTIONS
Admin Home Page

This page gives an overview of the server status to the admin.

Sites Page

This page lists all the sites being administered by the admin.
This page has the license status of Tableau Server.

This page lists all the current users. The admin can add users, delete users, add/remove users from user groups etc. Clicking on a user name brings the admin to the above page, where they can edit email, add/remove subscribed workbooks for the user etc.
Groups Page

Here, the admin can create user groups and add/remove users to the groups.

Projects Page

This page lists all the active projects administered by the server. Admin can add, edit or delete projects. The admin can click on any project to view all the workbooks for that project, set, edit permissions for workbooks etc.
This page is an archive of all the data sources that were connected to workbooks. The admin can sort and search the list by different Connection Attributes like connection port, type of database, name of workbook, time etc.

This page lists all the schedules created like data extract refreshes subscriptions etc. The admin can add a new schedule, modify the scheduled tasks etc.
This page is an admin task manager where the admin can manage various tasks, including the schedules from the previous page.

This page is a subscriptions manager for the admins. The subscriptions from the schedules are listed here with further editing options.
CASE STUDY

This is a sample story point to demonstrate the wider capabilities of Tableau Desktop. This is in the form of an annual report on sales by a fictitious store for the year 2013 with a particular focus on profits among others. The entire interactive Story Point is shown below. Users can mouse over or click any data point to get more data or view the underlying raw data.
Annual Sales Report for the year 2013

Date:
Period: 1-Jan-2013 to 31-Dec-2013
Report Prepared By:
Research Conducted By:

The first pane is a simple cover page with information on the date of report submission, Name of the Presenter etc.
“Total Sales for the year 2013” is a simple bar chart showing variation of profit earned by month.

“Order quantity over months” is a simple line chart visualizing the variation of quantity of products ordered over the months. This visualization also provides a forecast of order quantity for 2014.

“Sales over the years” is a simple line graph showing the growth of sales over the years with a trend line showing the growth trend.

“Customers by Sales value/Profits” is a packed bubble representation where each bubble represents a single customer, the size of the bubble representing the sales value and the colour shade representing the profit from the customer.
This pane analyses various aspects of profits performance of the store. “Profit over the years” is shown by a line chart with a trend line showing the growth trend of profits earned over the years.

“Sales/Profit Performance of Regional Managers” is a bubble cart showing the profit share of regional managers. Size of bubbles represents profits earned in the region managed and the colour represents the sales value.

“Total Profits for the year 2013” shows profit variations by month. This visualization indicates that the last two months of 2013 saw a surge in profits.
“Profits per product category” is a Pie chart.
“Profits per product sub-category” is a bar chart showing profit variation among different sub-categories of products.
“Sales/Profit per customer segment” is a distributed bar chart showing profits and sales variation for different customer segments.

This pane analyses sales and profits for the year across various product sub-categories of the store.

“Sales per product category” is a Tree Map which shows the sales value share for each main product category as the size of the box. The colour of each box represents the profits.

“Sales per product sub-category” shows the distribution of sales value of each product across different months in 2013. The size of the circles indicates the sales value of that particular product sub-category in a particular month.
“Profits per state” is another map visualization of profits from the states and provinces.
“Sales/Profit over regions” is a bar chart visualization of profits/sales of different categories.

This pane shows an analysis of sales and profits performance across the country in the form of interactive maps and bar charts.

“Sales per state” is a map visualization showing the sales value distribution among different states using colours. Users may filter the sales distribution for different product categories using the Product Category filter on the left of the map. A close up view of each region may also be viewed using the Region filter. These two filters alters the views of both the maps in the pane.
**Trend analysis of product category/region** uses the same plot described above to separate out the trends for each region and category, indicating that Furniture in the southern region is doing the worst.

Here we see Scatter Plots being used to visualize how products are faring across regions.

“Sales/Profit Trend Analysis” is a Plot of all the products sold in 2013 against its profit and sales values. As shown in the legends, the category of the product is represented in the plot by the colour of the data point and the region where it was sold is represented by its shape. The three trend lines, one for each category shows that Furniture had the lowest profit to Sales ratio.
“Box & Whisker plot analysis of profits by product sub-category” is visual representation of the maximum, median and minimum value of profit of a product in a particular category. In order from top to bottom in every sub-category, the horizontal line indicates the Maximum, Upper Quartile, Median, Lower Quartile and Minimum values of profits.

This pane shows histogram and box plot analyses of share of different profit ranges (like $0 to $1000 & $1000 to $2000) to the whole profit value in 2013. There’s also a Box and Whisker plot showing a visual analysis of maximum, minimum and median values of profits for each product sub-category.

“Histogram Plot Analysis of Profits” is an analysis on how different profit ranges contributed to the overall profit for the year. It can be observed that profit range between - $1000 to $0 & $0 to $1000 had maximum share in the overall profit.
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We at 3E Software Technologies offer a comprehensive set of Data Visualization and Analytics solutions to help you improve performance by generating up-to-the-minute dashboards that identifies business trends and opportunities, product/process improvements, current customer preferences and unexplored markets. Our data analytics solutions eliminates waste by identifying areas of overlap or inefficiency.