Smarten
Advanced Data Discovery
Powered by ElegantJ BI

Dashboard Design
Best Practices

Business Intelligence & Advanced Data Discovery

www.Smarten.com

Document Information	
Document ID	Smarten-Dashboard-Design Best Practices
Document Version	4.0
Product Version	5.0 and above
Date	10-December-2018
Recipient	NA
Author	EMTPL

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Disclaimer

This document is intended to support administrators, technology managers or developers using and implementing Smarten. The business needs of each organization will vary and this document is expected to provide guidelines and not rules for making any decisions related to Smarten. The overall performance of Smarten depends on many factors, including but not limited to hardware configuration and network throughput.

Contents

1   Introduction

The purpose of this document is to provide high level guidelines and explain best practice for Smarten dashboard design to help designers and developers to design high impact, high performance and functional dashboards to users.

2   Getting Started

The basic function of an information dashboard is to monitor key information that impacts work on regular basis. A dashboard using Advanced Data Discovery provides the additional ability to query the information displayed for the purpose of analysis, performance measurement and decision making.

The design of an effective dashboard must begin with clearly defining the purpose of the dashboard and how the data will be used.

2.1   WHO – WHAT – WHY – HOW

The dashboard design must adequately support the needs of the end user. Knowing who will be using the tool, what content will be accessed and how the data will be used will create parameters on which the dashboard design will be built. A user on the shop floor will have very different design and functionality requirements for the dashboard than the CEO will, or an outside salesperson.

WHO – WHAT – WHY - HOW

The WHO is important as it indicates the context in which the data will be viewed. WHAT provides the content and WHY provides the purpose of the dashboard. HOW indicates the delivery method or device or resolution used in viewing the data.

HOW the data is to be viewed must be considered. For example, a dashboard with embedded KPIs to be circulated by email using the publisher needs to be designed with this in mind as it will impact the size, placement and the number of objects in a single dashboard. Another case would be if the dashboard is going to be viewed on a mobile device only, which differently impacts design considerations than that of the email example.

A WHO – WHAT combination can lead to many WHYs, and a list of these will determine the data that is put in a dashboard. The HOW will impact the design and number of objects in the dashboard. Spacing and placement of the dashboard is determined by the resolution in which the dashboard is normally going to be viewed.

Examples of the above are:
Regional Sales Manager – Business Performance – Daily Action
Chief Buyer – Inventory – Order Planning – normal PC 800 x 600
CEO – Unified corporate key indicators – For discussion with divisional heads – Tablet or mobile phone
Sales Representative – Daily Sales Report – For sales related action in his own areas – email- excel sheet

2.2   Functionality

Before creating the dashboard it must be known whether the dashboard is going to be reused in other tabbed dashboards or is independent of the other dashboards. The appropriateness of the data and the objects are defined based on this parameter.

For example, the sales department, collections department and accounts department in a particular company all use accounts receivable information for different purposes. To maintain reusability for all departments it is important that irrelevant data not be embedded in this dashboard. The sales department may want to see sales revenue analysis along with receivables, but if such a request is incorporated into the dashboard there will be limitations on the usefulness of the data for the collections department.

2.3   Logical Flow

The logical flow of the dashboard will impact its ease of use. Users will naturally scan the dashboard similar to the way they scan a newspaper. In English, the design will be scanned from left to right. For an English dashboard, logic dictates that the left side will have actionable items such as filters for time and dimensions. In Arabic or other right to left languages, the filters should be on the right. Ranking filters are best when kept at the top of a dashboard.

2.4   Headers

The header of the dashboard needs to be in bold text and indicate the purpose of the dashboard. Key performance indicators (KPIs) make the most effective headers. For example, in Smarten three key indicators in the performance view can form a row at the top of the dashboard. A sales manager's dashboard can have a performance indicator for sales achievement, number of days of inventory and days of receivables as the top row. Using KPIs lowers the reusability of the dashboard but provides more focused data.

3   Design Mistakes

Many design mistakes can be avoided, giving the dashboard good aesthetic design while keeping it simple to use. Sometimes user preferences will require a balance to be found between functionality wants and needs while continuing to meet the standard business needs.

3.1   Clutter

Avoiding clutter and disconnected data is one of the most important driving principles of good dashboard design. A dashboard needs to be designed to show key information, not all information.

Clutter is usually a result of information overload where the users want all of their business data on one screen. A possible work-around for this issue is to create a multi tab dashboard. Clutter also happens when the same data displayed as an analysis in a tabular form and also in a graphical format. Instead of having both the tabular report and the graph in the dashboard, include a graph or an analysis with proper focus on key data.

3.2   Unnecessary elements

Avoiding unnecessary elements in smaller views, especially smart phone views is important for a good dashboard design. For example, there is no need to have dashboard elements such as company logo or other elements such as border or other images that are used for desktop view of a dashboard. Having such unnecessary elements on a small device interface increases number of clicks and navigation time, and affects quality of user experience.

3.3   Duplication

Avoid duplication as much as possible. A target column is not needed everywhere that   a sales column appears. A function that highlights a deviation off target may suffice.

3.4   Information out of Context

Avoid data that is not a part of the overall context of the dashboard. Displaying sales data and HR KPI of a sales manager on the dashboard would limit the use of the dashboard.

3.5   Common Filters

Avoid data that cannot have common filters. Dashboards use filters that are applied across all objects and provide context to the data being viewed.

Viewing sales and receivable data in a dashboard, the customer filter will filter both of these data objects based on the selected customer. If in the same dashboard contains inventory data, the filter will have no impact. Filters can be an indicator of how contextual the data may be.

3.6   Rarely Used Data

Avoid rarely used data. If purchase data is not required for the last 5 years, do not show it. Display data only for the period that is relevant.

3.7   Report Data

Avoid objects with large numbers of rows and columns. Dashboards are for snapshot views and not for reports. Having sales performance data for 100 sales people does not make sense to have in a dashboard view. Display instead only the top 10 and bottom 10 performers in the dashboard.

Maintain adequate space in between analysis that is expected to list long results on drill down.

A product category may have 25 products, but it is a good practice to at least have 10 visible rows before the user has to scroll down the page rather than having only 2 rows or all 25.

4   Ranking

Ranking is filtering by a measure for the lowest or the highest values and provides effective analysis for decision-making. While this is an enormously powerful tool, the data on which ranking is being applied and the expectations of the user must be known before choosing to use this type of filter. For example, ranking the top selling products in a 100 product offering is a valuable analysis if 20% of sales come from the top products and there is a significant deviation from the median. On the other hand top or bottom analysis will not apply for a company where 90% of employees are in the age group of 30-35 and the user needs to see the top 10 salespeople ranked by age.

Ranking can be applied on the dashboard or the object it has been associated with.

Ranking has a unique impact when used in combination with other filters. For example, in an effectively designed dashboard, displaying the top 10 products in a specific region is a two-step process which requires the selection of the region and a filter to rank the top 10. Conversely, the user may be confused by having too many filters and then applying a top 10 ranking to the data. For example, filtering for a region, product category and customer type and then applying a top ranking has to be clearly communicated to the user.

Use ranking judiciously. Ranking impacts other filters on the dashboard and requires understanding of the data.

5   Filters

The power of deep diving into data is in the filters. Selecting of combination of filters will let users apply root cause analysis. A very critical component of the design of a dashboard is selecting the filters in line with the context of the data being displayed.

One of the most common mistakes made in choosing filters is limiting the selections to information that is already visible on the dashboards or that is available at granular level of data displayed on the dashboard. For example, if you have a region displayed on the graph, crosstab or tabular that can be drilled down to a city, is it not likely important to also have a city filter on the dashboard.

Incorporating filters on a dashboard that do not impact all the components of the dashboard can lead to confusing the user. Filtering should not lead to a display where it will not be clear what data is being viewed.

Use simple filter values that can be understood by new users as well as regular users. For example, a filter for a customer name is a far better choice than using a customer code. One of the most common and very essential filters that are used in most of the dashboards is a Time Series filter. This type of filter usually impacts all data. As a key component of the dashboard it should be appropriately located and displayed in the style and format that is meaningful to the user. If the data is not be filtered weekly or is to be filtered only monthly avoid showing the weekly level filter. If a dashboard is showing sales performance and growth over the period, choose a relative time series display instead of an absolute time series display, keeping the dashboard relevant in future use.

If Time Series filtering is the heart of the dashboard, the filter cannot be in an obscure corner and should be prominently displayed below the menu or take up a prominent section, usually top left of the screen.

It is important to keep the different filters together in a certain area on the dashboard. This logical grouping of the filters will enable ease of use, provide clear information on the status of data, and allow for multiple filter selections for effective drill down analysis.

5.1   Combination Filters

As a general rule, the design of a dashboard should be such that the user can reach the desired piece of data with only a couple of actions. This means that filters and dimension hierarchy need to be designed in a way that a couple of combinations of selections and clicks will get users to their destination.

Filtering data should be global across the dashboard irrespective of the data cube providing the data.

Filters can be associated with each other to provide contextual data such as when selecting a state will show the cities in that state for next combination.

You should also make best use of context filters, to avoid cluttering dashboards with too many filter controls. For example, if you have one pie chart for region and another for product category in a dashboard, then instead of putting filter controls for region and product category in the dashboard, use context filter on these two pie charts to filter other dashboard components on the dashboard. This will help you save space and also offer intuitive user experience to the users.

5.2   Filter Display

Often a dashboard is used for meetings and presentations, or the same dashboard is used by multiple users in a multi-user environment. In such a scenario, it is important for users to know what filters are already applied to the dashboard and the current state of those filters to avoid any confusion or misinterpretation.

6   Responsive Design or Fixed Size Rendering

Choose the rendering (responsive or fixed size) based on your use case. Certain use cases – e.g. displaying a dashboard on a large monitor on reception or displaying a dashboard on particular size of tablet with as is view, will require fixed size dashboards.

Most of the use cases would require responsive / adaptive design to have seamless user experience across desktop, tablet and mobile devices.

Also, carefully select options for responsive rendering based on type of devices. E.g. if your use case requires that your tablet view should display fixed size dashboard and not the responsive display, then do not select responsive rendering option for tablet view.

7   Aesthetics

The number of objects, such as graphs, analysis or KPI on a dashboard, is best determined by what combination of objects provides the most complete picture. Cluttering the space by placing too many objects in the dashboard should be avoided. The challenge in designing the dashboard is having a few objects and communicating the entire picture.

A good path is to strive to design a dashboard with 4 to 5 objects (KPI, Graphs, analysis etc.,) with two sets of filters that will allow the user to reach any possible scenario or deep dive to any level of data.

A minimalist aesthetic dashboard comprises of 4 BI objects with two sets of filters.

The dashboard is a tool for monitoring, and appropriate data highlighted based on context serves this core purpose. It is a good idea to highlight data based on what it is expected to signal the user, and what makes a dashboard comprehensible at a single glance. A simplest example would be the growth column in a sales analysis. A product line that is underperforming would have lower growth and should be highlighted with red background, while a product line that is doing well should have a green background. Efficient use of highlighting identifies trends and signals alerts to the users.

Aesthetic aspects of a good dashboard are dependent on the opinion of the viewer. Some common principals that usually determine the design are:

- *Consistent colors for highlighting*
  If red means threat, use that across all dashboards.

- *Consistency in color templates*
  All the dashboards or dashboards used in tabs need to have objects using the same color templates which may be driven by branding and theming across an organization.

- *Consistency in position of filters*
  Particularly in tabbed dashboards, but consistent position will be preferred across all dashboards.

8 Analysis

Power users who want to analyze the data further should have the opportunity to open an object such as an analysis and drill down further. For example, consider a scenario where a user is looking at sales data per region and would like to analyze it by product. While designing objects, this aspect must be considered and having at least one object that can be used for root cause analysis is recommended.

Creating deep diving analysis functionality with the security rights to save objects has some challenges. For example, a user may change the analysis by filtering the data, adding one more computed column and saves the analysis after this. After this user has saved their version of the analysis, all other users accessing the dashboard will see the analysis as saved by this user. Saving rights for users have to be assigned with this understanding.

9 Summary

A good dashboard needs to please the eyes of the user for the first 10 days of use and the functional business needs from then on.

Supporting this is the fact that a dashboard can be rejected in the first 10 days of use if it is not found aesthetically pleasing. Designing dashboards is a classic balance between these two.
Never let a persistent irritant pass. If there is something seemingly insignificant, yet annoying happening at regular intervals, for example a title overflowing from the dashboard or a distorted graph which happens in a unique combination of circumstances, fix it. This will deter the success of the dashboard more than any other design components.

10 Product and Support Information

Find more information about ElegantJ BI-Smarten and its features at www.smarten.com
Support: support@smarten.com
Sales: sales@smarten.com
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Support & Knowledgebase Portal: support.smarten.com