Data Warehousing for Business Intelligence
Course 4: Business Intelligence Concepts, Tools, and Applications

Lesson 4: Dashboard Design Guidelines and Pitfalls

Excerpt from Brath R. and Peters M. "Dashboard Design: Why Design is Important". DM Review Online October 15 2004-

- **"Know your audience and their interests:** *Determine which questions your dashboard will answer and for whom these answers are pertinent. Visual communication is only effective when it is aligned with the way people see and think.*
- *Identify critical metrics (with critical KPIs): Determining which metrics are most pertinent to the users is essential. Also, business users should be capable of drilling down into the KPIs for lower level details.*
- *Use of visual components to highlight data and exceptions that require action. Should be transparent to the user, meaning that they require minimal training and are extremely easy to use. Designers, need to find ways to pull in end users so they don't simply ignore the data being presented to them.*
- *Make the dashboard easy to read: Don't clutter the screen. Instead, draw attention to the core content in the dashboard. Provide space for the audience to send questions or comments.*
- *Have up-to-date data: It is important to know what data is current and still relevant to the needs of your audience. Dashboard implementations are considered faulty if the following conditions exist:*
  - *Data has to be entered manually or "refreshing" the data proves very time consuming.*
  - *Calculating and/or aggregating data is tedious.*
  - *The user has to navigate multiple tools in order to answer a question*
  - *Present a dynamic, real-world view with timely data Require little coding to implement/deploy/maintain.*

- **Think "dynamic":** *Make the dashboard as interactive as possible, and make it easy to create content on an ad hoc basis. Consider moving (or removing) the categories that are used less frequently. Creatively and expertise Business goal of the dashboard is as important as individual metric and graphic. Users bring insights, experience and business objectives which are the most important factor in starting to design a successful solution.*
- *Provide a customizable dashboard interface: Business users should be able to easily customize their dashboards without any assistance from IT. Also, provide a facility so that business users are able to create their own dashboards….."*

According to Stephen Few (Pervasive Hurdles to Effective Dashboard Design, Visual Business Intelligence Newsletter, January 2007),

"*there are the following action items to consider:*
1. *Think about the information that you wish to prioritize.*
2. *Give information the space that it deserves d by the human eye.*
3. *Unnecessarily large images can take space away from more important data.*
4. *Large tables can often take up significant amounts of space. It may be a better use of space to consider presenting this data in a chart/graph. Charts that represent multiples data sets may require more space than those that contain only a small number of values. Data legends can be extremely important. However, they should never take excessive amounts of space away from the data visualization itself.*
5. *Do not devote too much space to one data area No matter how important a topic is, it probably shouldn't take up the whole dashboard.*

6. *Consider a simple structure: An extremely simple structure may therefore be the best option if you want to present large volumes of data in a way that does not overawe the reader.*
7. *Consider structures that link data:* **A 'flow-based' structure could be used to represent a** *sequence of events that occur over time, or a chain of events that are simultaneously linked to one another. Directly linking different sections of the dashboard can be an effective way of highlighting the rela*tionships between certain pieces of data….."

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- *A flow-based structure emphasizes a sequence of events or actions across time. Systems that fit this model include leads moving through a sales pipeline, stages of customers support and operational processes.*
- *Relationship structure of a dashboard can also emphasize the relationships between entities or measures. These relationships or connections may be mathematical, geographical, organizational, or functional.*
- *Grouping structure of last resort is to group related information into categories or a hierarchy. The simple act of putting similar things together can bring some logic and accessibility to an otherwise* **haphazard dashboard…."**

According to A Guide to Creating Dashboards People love to use, Juice, 2009-2010.
"The advanced functionalities includes the following:

- *Text-based summary: Automatically generated textual description of the key information in the dashboard.*
- *Starring/tagging: Ability for users to identify things in the dashboard that are important to them.*
- *Annotation: Allow users to add commentary to specific numbers or charts.*
- *Advanced visualizations: A few visualization types to consider include geographic map, treemap, network diagram, tag cloud, scatterplots and bubble charts. But be careful, using complex* **visualizations incorrectly can leave your audience feeling lost and confused…."**

According to Eight Best Practices in Dashboard Design Radha R April 10, 2008.
"One needs to consider the following eight action items:

- *Doing a gap assessment with industry benchmarks aligns you with industry best practices.*
- *Some Key Performance Indicators (KPIs) are more important than others. Using this information, strategically place what you consider to be the most important content in the top left quadrant, and the bottom right quadrant as this area is significantly de-emphasize.*
- *Wrap the Dashboard Metrics with Contextual Metadata*
- *Often when a report or a visual dashboard/scorecard is presented to business users, many questions remain unanswered. The following are some examples:*
  - o *Where did you source this data?*
  - o *While loading the data warehouse, what percentage of the data got rejected/ encountered data quality problems?*
  - o **Is the dashboard presenting "fresh" information or "stale" information?**
  - o *When was the data warehouse last refreshed?*
  - o *When is it going to be refreshed next?*
  - o *Were any high-value transactions that would skew the overall trends rejected as a part of the loading process?*
- *Validate the Dashboard Design by a Usability Specialist: Upfront validation of the dashboard design by a usability specialist can mitigate this risk.*
- *Prioritize and Rank Alerts/Exceptions Streamed to the Dashboard: A business rule can be coded into a program, using database-stored procedures.*
- **Enrich Dashboard with Business Users' Comments:** *A small text box can be provided to capture the comments from an end-user perspective.*

- *Present Information in Three Different Levels: Information can be presented in three layers depending upon the granularity of the information: the visual dashboard level, the static report level, and the self-service cube level. When a user navigates the dashboard, a simple set of 8 to 12 KPIs can be presented, which would give a sense of what is going well and what is not.*
- *Pick the Right Visual Construct Using Dashboard Design Principles: Once the dashboard design principles are explicitly documented, all the developers working on the front end can adhere to the same principles while rendering the reports and dashboard.*
- *Provide for Guided Analytics: Need to guide the "average" business user in order to access the same navigational path as that of an analytically savvy business user….."*

See following web resources for more information
- *[A Guide to Creating Dashboards People love to use, translating Delicious Data into a Beautiful Design](#) Version 2.0. May 2015 –*
- *[Best Practices in Data Visualization](#), by Vihao Pham 2014-*
- *Few S., [Dashboard Design for at-a-glance monitoring.](#) http://www.perceptualedge.com/, (2) Few, S. [Pervasive Hurdles to Effective Dashboard Design](#), Visual Business Intelligence Newsletter, January 2007.*
- [Designing and Building Great Dashboards](#)
- [Images for Dashboard Design Guidelines](#)
- [Top Business Intelligence dashboard design best practices (Part One) -](#)
- [Top Business Intelligence dashboard design best practices (Part Two)](#)
- [Business Intelligence Dashboard Design Best Practices](#)