



Business Intelligence Concepts, Tools, and Applications

Week 3: Data Visualization and Dashboard Design

Lesson 4: Dashboard Design Guidelines and Pitfalls



Dashboard Design Guidelines and Pitfalls

- Learning objectives
 - Understand dashboard design guidelines
 - Understand common pitfalls of dashboard design



Dashboard Design Guidelines

- Identify the audiences, and their interests and business purposes for the dashboards
- Define critical metrics and their components
- Create prototypes, sketches, mockups
- Provide a dynamic and up-to-date view of the data
- Develop a user friendly and customizable dashboard interface

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



Dashboard Design Guidelines: Structure

According to Few (2007), “Information cannot be placed just anywhere on the dashboard, nor can sections of the display be sized simply to fit the available space”.

- Think about the information that you wish to prioritize.
- Give information the space that it deserves.
- Avoid devoting too much space to one data area.
- Consider a simple structure such as a grid.

Adopted From: Stephen Few: Pervasive Hurdles to Effective Dashboard Design, Visual Business Intelligence Newsletter, January 2007

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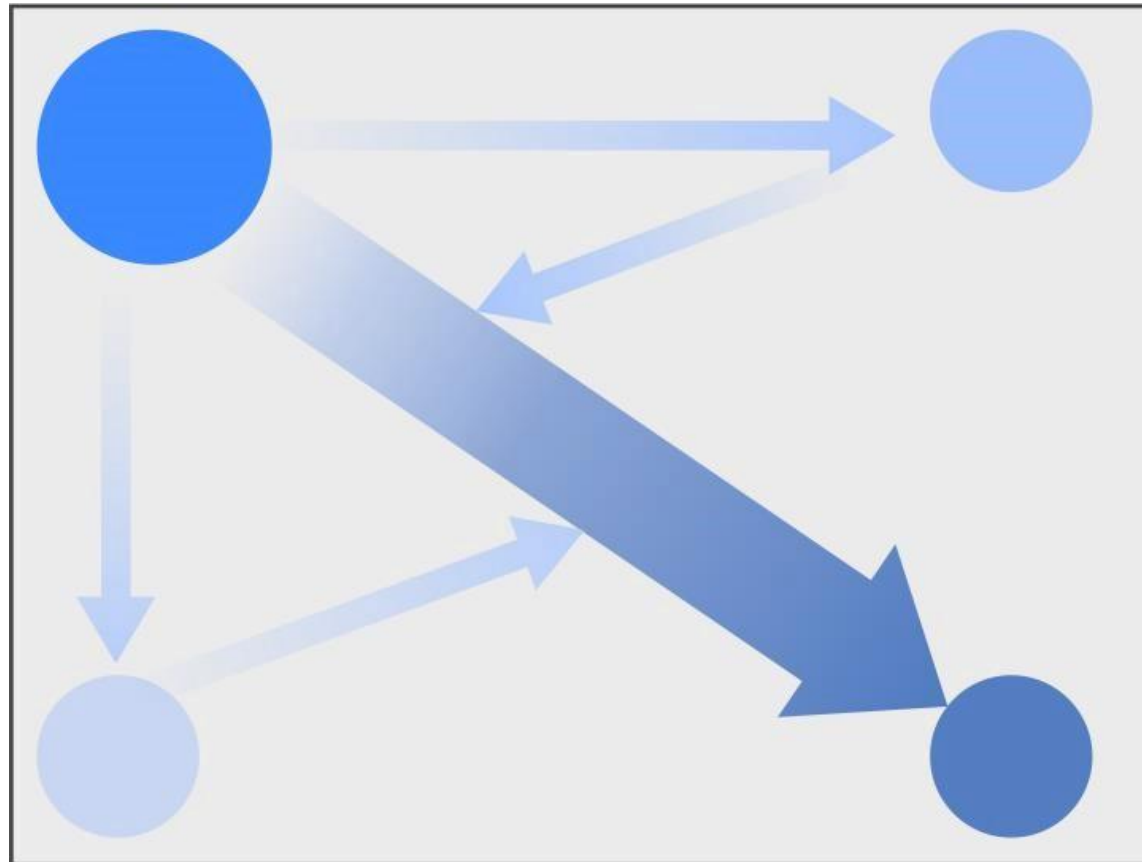
Dashboard Layout

People have a bias in how they read and scan content

Place the Most Important Visualizations in the Top Left Corner

**Primary
Optical
Area**

**Strong
Fallow
Area**



**Weak
Fallow Area**

**Terminal
Area**

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Dashboard Design Guidelines: Structure

- According to Few (2007) one can link data sets together using various forms of structure:
 - *A flow structure* to represent a sequence of metrics.
 - *A relationship structure* to highlight how certain metrics are dependent on one another.
 - *Grouping structure* to group related information into categories or a hierarchy.

Source: Adapted from: Stephen Few: Pervasive Hurdles to Effective Dashboard Design, Visual Business Intelligence Newsletter, January 2007

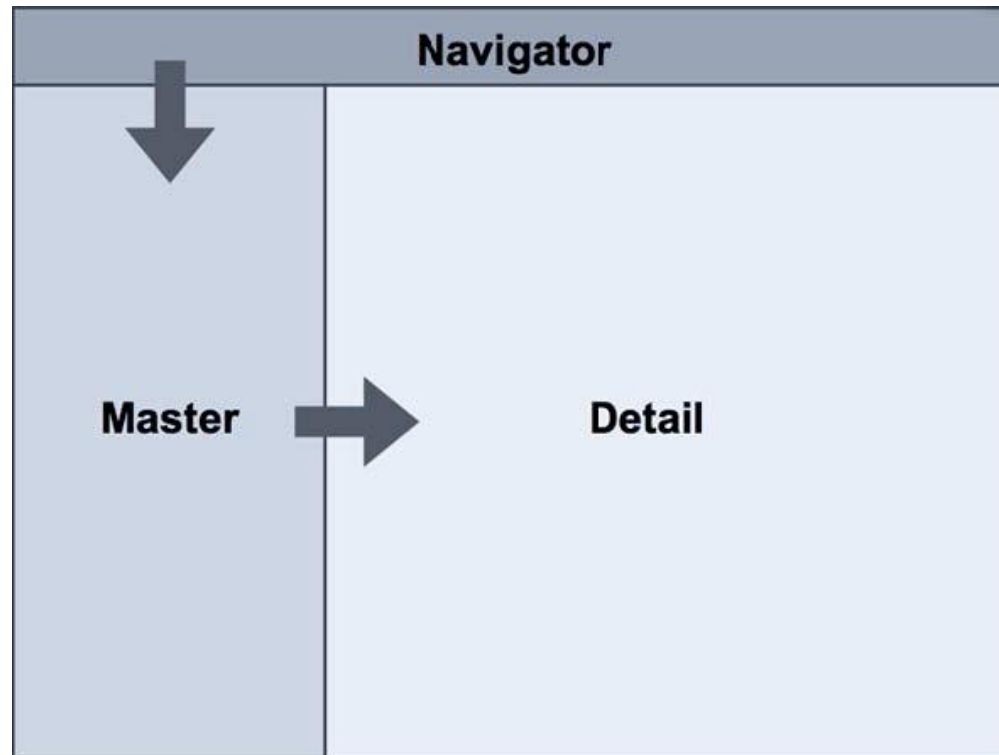
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Dashboard Layout

Place High-Level Visualizations to the Left, Detail Visualizations to the Right and Bottom

Present Data Hierarchically



Source: Adapted from Best Practices in Data Visualization, by Vihao Pham 2014



Dashboard

Quantity and Ranking of data included

Customization

- ***One-size-fits-all:*** Presented as a single view for all users
- ***Customizable:*** Functionality to let users create a view that reflects their needs

Level of Detail

- ***High:*** Presenting only the most critical top-level numbers
- ***Drill-able:*** Providing the ability to drill down to detailed numbers to gain more context

Point of view

- ***Prescriptive:*** The dashboard explicitly tells the user what the data means and what to do about it
- ***Exploratory:*** User has latitude to interpret the results as they see fit

Source: Adopted from: [A Guide to Creating Dashboards](#)
[People love to use, translating Delicious Data into a](#)
[Beautiful Design](#) Version 2.0. May 2015

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Design Principles

- Use modularity to compact information
- Present information in increasing levels of detail
- Use visual cues to guide attention
- Support casual use and minimize barrier to entry for new users
- Guide users and lead their actions based on their results
- Use filters to allow flexibility and customization
- Provide explanation and context before information

Adopted from A Guide to Creating Dashboards People love to use, Juice, 2009-2010.

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Dashboard Design Pitfalls

According to Few (2013, 2007) dashboard designers need to avoid the following:

- Exceeding the boundaries of a single page
- Exceeding the Boundaries of a single Screen
- Supplying inadequate context for the data
- Displaying Excessive Detail or Precision
- Expressing Measures indirectly
- Choosing inappropriate display media
- Introducing Meaningless Variety
- Using Poorly Designed Display Media
- Encoding Quantitative Data Inaccurately
- Arranging the Data Poorly
- Ineffectively highlighting what's important
- Cluttering screen with useless decoration
- Misusing or overusing color
- Designing an unappealing Visual Display

Adopted from: (1) Few S., Dashboard Design for at-a-glance monitoring, /, (2) Few, S. Pervasive Hurdles to Effective Dashboard Design, Visual Business Intelligence Newsletter, January 2007.



Dashboard Design Guidelines

Functionality

Various dashboard design guidelines (Matillion 2015, Juice 2009) points to the importance of the following functionalities

- Drill down
- Filters
- Comparison
- Alerts
- Edit/Save
- Creating Reports

Sources: Adopted from “How to Create Compelling Business Dashboards - Complete Guide, (2) [A Guide to Creating Dashboards People love to use](#), Juice, 2009-2010.

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Dashboard Design Guidelines

Advanced Functionality

According To Juice (2009), the advanced functionalities include the following

- Text-based summary
- Starring/tagging
- Annotation
- Advanced visualizations

Source: Adopted from A Guide to Creating Dashboards People love to use, Juice, 2009-2010.

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Dashboard Design Action Items

According to Radha (2008), there are eight actions that are important to consider:

- Benchmarking KPIs with industry standards
- Wrapping the metrics with contextual metadata
- Validating the design by a usability specialist
- Prioritizing and ranking alerts and exceptions
- Enriching dashboard with business-user comments
- Presenting information in three different levels
- Picking the right visual constructs
- Providing for guided analytics

From the book: **Eight Best Practices in Dashboard Design** Radha R April 10, 2008.

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Exercise 4: Embedded Self-Service



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