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

Module 3 Bonus Materials
Lesson 3: Performance Dashboards

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

- *"Dashboards are not a new concept. Their roots can be traced at least to the EIS of the.1980s. Today, dashboards are ubiquitous. Currently they are used as reporting tools, largely for the purpose of **evaluating a company's performance, and are often tied with business performance methodologies like** Balanced Scorecard or Six Sigma.*
- *Performance dashboards provide visual displays of important information that is consolidated and arranged on a single screen so that information can be digested at a single glance and easily drilled in and further explored.*
- *They are common components of most, if not all, performance management systems, performance measurement systems, BPM software suites, and BI platforms.*
- *Dashboards pack a lot of information into a single screen, which is one reason for their popularity……"*

"Dashboards can include many kinds of visual widgets, including charts, performance bars, sparklines, gauges, meters, stoplights, geographic maps, etc. These help to highlight, at a glance, the data and exceptions that require action. A picture tells a thousand words, and through the use of many graphical widgets, a dashboard can convey a wealth of information to decision makers in a short time.

- *They use visual components (e.g., charts, performance bars, sparklines, gauges, meters, stoplights) to highlight, at a glance, the data and exceptions that require action.*
- *They are transparent to the user, meaning that they require minimal training and are extremely easy to use.*
- *They combine data from a variety of systems into a single, summarized, unified view of the business.*
- *They enable drill-down or drill-through to underlying data sources or reports, providing more detail about the underlying comparative and evaluative context.*
- *They present a dynamic, real-world view with timely data refreshes, enabling the end user to stay up to date with any recent changes in the business. And they require little, if any, customized coding to implement, deploy, and maintain…."*

"The specific visualizations in a dashboard (charts, graphs, and maps) will evolve over time, and the technology platforms may change. For example, with virtual reality, holographic and immersive technologies, the user experience may change considerably. But the purpose of a dashboard to monitor company performance and respond to warnings and events will continue.

> *Dashboards can exist at all levels of the organization. They do not always require top management sponsorship and can be developed using a bottom-up approach Departmental or operational dashboards are called Business Activity Monitoring (BAM)…."*

Dashboard Types

Scope	• **Broad:** Displaying information about the entire organization • **Specific:** Focusing on a specific function, process, product, etc.
Business role	• **Strategic:** Provides a high-level, broad, and long-term view of performance • **Tactical:** measure the business's progress according to related trends, in accordance with each strategic initiative • **Operational:** Provides a focused ,near-term, and operational and business processes view of performance
Time horizon	• **Historical:** Looking backwards to track trends • **Snapshot:** Showing performance at a single point in time • **Real-time:** Monitoring activity as it happens • **Predictive:** Using past performance to predict future performance

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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"For example, Quicken Loans uses operational dashboards to monitor the performance of its more than 500 mortgage experts at its Web call center. Because dashboards can exist at any level, they do not always require top management sponsorship and can be developed using a bottom-up approach. A department can implement dashboards on its own, and if it's successful, other departments may choose to do the same. Departmental or operational dashboards are receiving considerable attention because of their ability to monitor operational systems through the use of enterprise information intégration (EII), Enterprise application integration (EAI), and real-time data warehousing technologies. This is often referred to as business activity monitoring (BAM) and is analogous to process control in manufacturing….."

Industry Leaders Have Deployed Successful Dashboards at Unparalleled Scale

Retail	900 Store Managers One large DashboardApp distributed daily Content: Store Ops, KPI performance, benchmarking
Retail	3,000 Retail Managers Dashboard delivered daily Content: Manage inventory, improve margins
Government	Open to public access 40+ million Medicare hospital admissions data, growing every month Content: Detailed insights into Medicare spending per State
Financial Services	15,000 Branch Managers One large DashboardApp delivered daily Content: Production data, Customer data, Financial
Financial Services	2,000 Bank branches employees Dashboard delivered daily Content: Banking and retail operations
Food & Beverage	4,000 Store Managers 30,000 DashboardApps delivered daily Content: Store operations

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What was significant about all of these projects is that the dashboards were not typical dashboards. They didn't just contain 3-4 gauges, a list of KPIs, and a graph or two. Instead they contained hundreds of megabytes of data and dozens or hundreds of views of that data…. In fact they contained all the data that the recipient needed to make all of their operational decisions each day.

The most basic business monitoring tool today are the scorecards and dashboards – typically generated for managers and executives who need an overall view of business performance.

Dashboards: Dashboards allow users to consume a large amount of information at a glance. Dashboards contain rich visual elements like the gauges and dials along with graphs and tables. Dashboards provide an integrated view of business performance by consolidating the data from across the enterprise
The three layers of information found in most dashboards are:

- Monitoring. Graphical, abstracted data to monitor key performance metrics.
- Analysis. Summarized dimensional data to analyze the root cause of problems.
- Management. Detailed operational data that identify what actions to take to resolve a problem.
- Scorecards: Scorecards often adhere to any of the major scorecard methodologies, like Balanced Scorecards, Activity Based Costing, 6 Sigma, or others.
- Managed Metric Reports: MicroStrategy customers are also now beginning to distribute **specialized reports call "managed metrics" reports. They are like dashboards, but with greater** emphasis on comprehensive lists of metrics that let diverse people monitor the metrics that matter to their own contribution to the organizational goals.

Excerpts from Stephen Few, Information Dashboard Design 2013-

- **"**Comparing data against time can allow you to represent trends in the data, and make comparisons against points in the past, or even against future forecasts. Some typical increments used for time include years, quarters, months, week, days, and hours and even real-time. The time increments used depend heavily on individual requirements, and the speed at which action is required in light of the observed data.
- Cross comparison of metrics allows a user to analyze certain variables in relation to one another, to see if there is any correlation between them. This is particularly important when variables are known to directly influence one another. Cross comparison can be an extremely effective tool on a business dashboard, but it can also cause complications, as different variables will typically have differing measures and scales.
- Goal comparison: It is important that a dashboard allows businesses to chart their progress against their predetermined goals and targets. This can help businesses to determine any areas in which they may be over- or under-performing, and can help them to decide which areas may require more immediate attention. It is therefore important that the metrics used are consistent with any specific targets that the business may have, in order to aid comparison with greater ease. ...."

- **"**Operational Dashboards add the best characteristics of traditional reports with detailed information with traditional dashboards that provide embedded interactivity and hundreds of different views of data. Operational dashboards combine all of the reports into a single, easy to understand dashboard application
- Multiple dashboards in a single dashboard book
- Combines all of the information for a specific decision, or job, or role that can be used by the correct operational worker……"

According to the A Guide to Creating Dashboards People love to use, Juice, 2009-2010.

"Assess what information is really necessary, in order to avoid wasting space on your dashboard. Know the components of a 'perfect metric' and refer to some of the example metrics for guidance.

Ask
- How is the dashboard going to add value to my organization?
- What type of dashboard am I creating?
- Who is the audience of the dashboard and what are their needs?
- What is the central thought-line of my dashboard story?
- What are the key metrics that will focus users on actionable information?

If you can answer with confidence the questions we've discussed here, you will have a solid foundation before you get into the details of your dashboard design…."

See the following guides for more information:
- A Guide to Creating Dashboards People love to use, http://www.cpoc.org/assets/Data/guide_to_dashboard_design1.pdf Juice, 2009-2010.
- A Guide to Creating Dashboards People love to use, Translating Delicious Data into a Beautiful Design (https://static1.squarespace.com/static/52f42657e4b0b3416ff6b831/t/55b9117ae4b060a0d84fef15/1438191994754/Dashboards_People_Love_To_Use_Whitepaper_v2.pdf) Version 2.0. May 2015
- Brath R., and Peters M. Dashboard Design: Why Design is Important. http://www.information-management.com/infodirect/20041015/1011285-1.html DMReview October 15, 2004.
- Perceptual Edge Examples
- Few S., Dashboard Design for at-a-glance monitoring. http://www.Perceptual Edge.com

- Free E-Book: How to Create Compelling Business Dashboards. http://info.matillion.com/free-e-book-how-to-create-compelling-business-dashboards-complete-guide: Everything you need to know to design best-practice dashboards and data visualizations. Matillion Business Intelligence.
- Radha R Eight Best Practices in Dashboard Design http://www.information-management.com/news/columns/-10001129-1.html April 10, 2008
- Dashboards 101: Turning Data Into Knowledge, Information Management. Digital edition.
- Dashboard Development and Deployment: A Methodology for Success
- Few S. Dashboard Design: Beyond Meters, Gauges, and Traffic Lights, Business Intelligence.