Dashboards 101

Turning Data Into Knowledge

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Contents

Introduction

Dashboards Enable Business Leaders to Spot Trends Early

In today's light-speed business environment, keeping a pulse on the key activities of the enterprise has never been more essential—or more challenging. Despite the plethora of technology available to executives and managers, getting the right kinds of top-line performance information at the right time isn't always easy.

Organizations can benefit from business intelligence dashboards designed to reflect actual performance levels against enterprise-wide strategic goals, as well as other key indicators of operational performance. The dashboard is an interface that presents business information in an instantly understandable format, giving users the meaningful data they need at a glance. Whether presented in numerical form or depicted visually in graphical format, the ability to instantly monitor sales, production throughput, inventory levels, cash flow, expenses and other key performance measures is invaluable to executives, managers, and line staff.

Dashboards are especially useful and empowering when it comes to sharing key information, interacting with the data to obtain answers to questions, and updating the information to reflect the latest results. Using the dashboard, key business analytics such as a customer purchasing trend, a geographic shift in sales, an unexpected inventory buildup, or a costly new product stockout can be shared on the Web in minutes with co-workers or business partners. Dashboards can quickly be shared via email, internal social networks, or CRM systems, thereby magnifying their usefulness.

By aggregating information from various sources, the BI dashboard offers a convenient and powerful tool for business decision-makers to spot business performance trends early, while there's still time to take action. This e-book highlights some of the key reasons behind the expanding use of BI dashboards.

Articles

How to Design Dashboards for Business Productivity and Customer Experience

By David Toliver | Information Management | Jun 14, 2012

It's no secret that the customer experience is critical to business success. However, creating a memorable customer experience doesn't materialize from simply having a solid brand or an outstanding product, but rather from using detailed insight into past customer behavior, buying habits and individual feedback.

For a small business, amassing and analyzing this data is a relatively easy task. However, for global organizations that serve upwards of millions of customers and support thousands of customer interactions on a daily basis, accurately pinpointing trends, behavior shifts or forecasting sales figures is much more challenging.

While deploying a business intelligence and analytics solution within the organization is often the best first step, an effective data strategy is only as good as the way the data is presented.

Dashboards are often leveraged within an enterprise to not only present a requested snapshot of accurate data, but also to provide the data in a visually appealing manner, which helps businesses analyze volumes of data from several months or even years.

However, an informative dashboard is much like the white alligator – they certainly exist, but finding one is an extremely rare occasion.

The critical elements of designing a dashboard are presenting data in a visually appealing way and enabling the users to customize their parameters, all while delivering thorough context around the data, including the depth, breadth and accuracy of the information. Additionally, business data needs to be presented with context and also delivered in a way that allows employees to visualize the conclusion and immediately take action that contributes to the bottom line.

Gathering and presenting this intelligence is not easy. This article will address how to design an effective dashboard that enables organizations to make more informed business decisions, improve solutions and allocate business resources to enhance the customer's experience.

Displaying the Data

Dashboards can quickly balance the delivery of historical, real time and even predictive data. That said, the importance of certain sets of information varies depending on the established key performance indicators. While one department may value historical data, another department may need immediate access to current information in order to make actionable decisions.

Established KPIs should be appropriate and valuable for business goals, as well as fit the needs of each user, including the customer. Since KPIs are metrics connected to targets, context is everything. Displaying the data and comparing sets of information can underline how an employee, team or department is performing against prior performance, organization goals and customer feedback. Additionally, the ability to quickly visualize the condition of the KPIs can help users identify and fix any issues, be they internal, product or customerrelated.

If too many metrics are shown, the page can become cluttered and cloud the users' ability to draw clear conclusions. However, presenting the data in a way that is tied to corporate, team and individual objectives can enable each employee to make more data-driven decisions and also enhance productivity.

Articles (continued)

Choosing the Data

Even if a company has only been around for a few years, the business probably already contains enough data to overwhelm even the brightest analysts. Since many organizations have been around for more than a few years, choosing the data to display within a dashboard can be more daunting than pulling or even analyzing the information.

While the priorities for each organization are vastly different, it's critical to get in the mindset of the employees to best determine which information to display.

Asking the following questions can help narrow the range of data to be displayed:

- Why would employees need to visit the dashboard?
- How often would employees utilize the dashboard?
- What types of data would be pulled the most?
- What kinds of decisions will the employee be making once they have said information?
- With whom will the employee be sharing the data (i.e., customers, partners and/or internal audiences)?

By answering these questions, businesses can identify what data needs to be included, outline their business priorities for the dashboard and identify the audiences that will see this information. Gearing information delivery toward decision-making, instead of reporting for reporting's sake, will ensure its value.

Designing the Data

Visually displaying the data is a delicate balancing act. For example, employees should be able to drill down into the tiniest details, but also shouldn't be overwhelmed by the volume of data. The ability to interact and customize the dashboard will allow employees to clarify and expand the context. Too many personalization capabilities can defeat the purpose of the dashboard and can begin to turn employees into analysts.

The ultimate goal of the dashboard is to highlight KPIs through visual data representations and support these images with the ability to provide context, be it additional visuals, drill downs or other methods. Ideally, employees should be able to fire up a dashboard and quickly make observations and conclusions, without scrolling, drilling or even leaving the initial start screen.

Visuals

Designing a dashboard places a great deal of emphasis on the visual layout. The trick is to highlight just the right amount of data in the most efficient way to avoid information overload and to prompt action. Regardless of how flashy or cool a certain design or color scheme may be, data clarity should always win over embellishment.

Additionally, dashboards that take a more minimalist design are effective because they clearly communicate the important metrics, rather than ancillary information.

Color—Leverage color to highlight sets of data or underline what data needs to be grouped together. Bright and subtle colors can be used in myriad ways, and the hue of each specific color should be considered individually as well as within context of other colors. As mentioned above, avoid using color simply as decoration.

Branding—While branding a dashboard is important to maintain ownership of the data, especially if the information is being shared with external audiences, eliminate any branding that distracts the user from drawing conclusions from the dashboard.

Dashboard format—Aim to include all necessary data on one page, or the size of one screen. In addition to color, use varying shapes to highlight specific sets of data or to make some information jump out to the user.

Data format—Line charts, bar graphs, pie charts and gauges help convey important data trends. However, these visualizations convey only select parts of the story; extra elements, such as extra grid lines and 3D bars, can be more distracting than productive.

Workflow organization—Consider how employees and other users will interact with the dashboard and embed this expected workflow accordingly. Place data, objects and shapes so the information can be analyzed from the top left to the bottom right.

Articles (continued)

Value

The dashboard must be more than just luxury; it must provide accurate, real-time data, which can lead to actionable intelligence and insight into decision-making.

The data displayed needs to be frequently updated and match how employees access information. In addition to eliminating outdated data, the dashboard design and KPIs need to be adjusted as the goals of the business change.

The data should also become more detailed and granular toward the bottom of the dashboard. Ideally, data values should be presented in a way that easily illustrates where there were significant changes during a certain period of time.

Context

Being able to understand the breadth, depth and accuracy of information sets provides users with the context to make observations of trends and draw conclusions. Efficient design will lead the employee through the workflow of the dashboard.

The level of context a dashboard provides depends on the level of data interactions and personalization. For example, more interactive dashboards can help reduce the need to jam several images into one dashboard, enabling users to pull up specific sets of data when needed. The following interactive features can be included to give users the ability to easily customize their dashboard based on metrics, elements and additional filters:

- Pop-ups
- Sliders
- Drill downs
- Annotations
- Tabs

Another interesting way to make a dashboard interactive is to set multiple "views" of one dashboard, showing different data based on user. For example, you can set up a single dashboard for sales reps that only shows the rep their own data, but directors can see all data.

Sharing

Incorporating sharing and collaboration tools within the dashboard allows the information to quickly travel among specific audiences and easily extends the value of the data. Enabling the dashboard to be quickly shared via email, internal social networks, customer relationship management systems or even within external networks can be an easy way for businesses to communicate conclusions with several audiences, while still maintaining the integrity of the data. Also the dashboard can be extended to mobile or tablet devices. While there are many different creative avenues businesses can take when it comes to dashboards, it's important to keep in mind that designing dashboards is hard. Identifying the types of data included within the dashboard, establishing the goals around a dashboard and then determining how this intelligence is presented can be a daunting task, regardless of the sophisticated tools available to the user.

Despite these challenges, visually compiling a huge amount of data from disparate sources in a way that makes sense and gives it value is one of the best ways to support business goals and identify how the organization can enhance its customer experience. Dashboards are the most effective ways to establish a line of communication between the organization and its partners and customers. By keeping the dashboard uncluttered while still providing a comprehensive, intelligence-rich snapshot of the business information, employees will gain the context to make data-driven decisions and improve the customer experience. ■

Articles (continued)

Who in the World Uses Only Words and Numbers in Reports?

By Shaku Atre | Information Management | APR 7, 2011

The fundamental premise of business intelligence has traditionally been "to provide the right information to the right people at the right time and at the right cost." While this statement is irrefutable, it would be more accurate if we changed the word "information" to "actionable information."

The fact is, most users have difficulty identifying critical metrics within the reports they receive. This is a major problem. It is important to clearly convey performance activity to decision-makers of organizations in order to help them make data-driven, actionable decisions.

Are users at fault for their difficulty identifying critical metrics? Not necessarily. If most students are failing a test, maybe something within the test is the cause of the problem rather than the knowledge of the students. Similarly, maybe the metrics are not clearly communicated.

So, the question is, how can the metrics be communicated more effectively? Words and numbers may have failed in relaying actionable messages, but this is where effective dashboards are useful. A dashboard is an interface that presents information in an easy-to-understand and easy-to-relate, often graphical way, providing users with a lot of meaningful information at a glance. Dashboards can be an incredibly valuable and empowering tool for understanding critical business data in the metrics.

The metrics used in the dashboard vary by industry and business function, as well as by the type of decision-maker and level of skill and tool used. They can be used for many functions, including planning, resource allocation, budgeting/forecasting, reporting, monitoring, and analyzing as well as strategy setting.

Dashboard Components

Dashboards are made up of two main components:

Key performance indicators: An enterprise performance scorecard (see below) and dashboard are based on meaningful and well-defined KPIs, which show whether an organization is meeting its stated objectives. They apply to the performance of the organization as a whole, so if there are multiple divisions, it should be determined whether each division will also need a scorecard and a dashboard.

KPIs can be financial, customer, internal process and employee-related. Many KPIs are interrelated - they don't stand alone. For instance, common examples of KPIs include debt to equity ratio, asset turnover, and profit margin - and all the three are interrelated. The nonfinancial KPIs should have a cause-and-effect relationship with the financial indicators.

Scorecards: A scorecard is a set metrics (or KPIs) that presents current performance data for a business process or for a strategic goal toward a target value. These indicators direct the business on key tactical objectives and goals. This will ultimately shape the vision and strategy for the organization for that particular time period.

Challenges and Pitfalls

There are many potential challenges of implementing scorecards and KPIs. These include maintaining balance across multiple perspectives; determining and developing a few, solid important objectives and metrics; ensuring a mix of cause-and-effect and decomposition metrics; and combining the multiple dimensions of a matrix organization (such as business units, functions, processes).

- 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.
- The dashboard design is poor (not user-friendly).
- Multiple logins are required to get to the right dashboard.
- It needs an extensive amount of user training. The software tool has to be intuitive, resulting into almost zero necessary training.
- It lacks executive sponsorship and funding.
- The user must wait 10 seconds or longer to retrieve information.

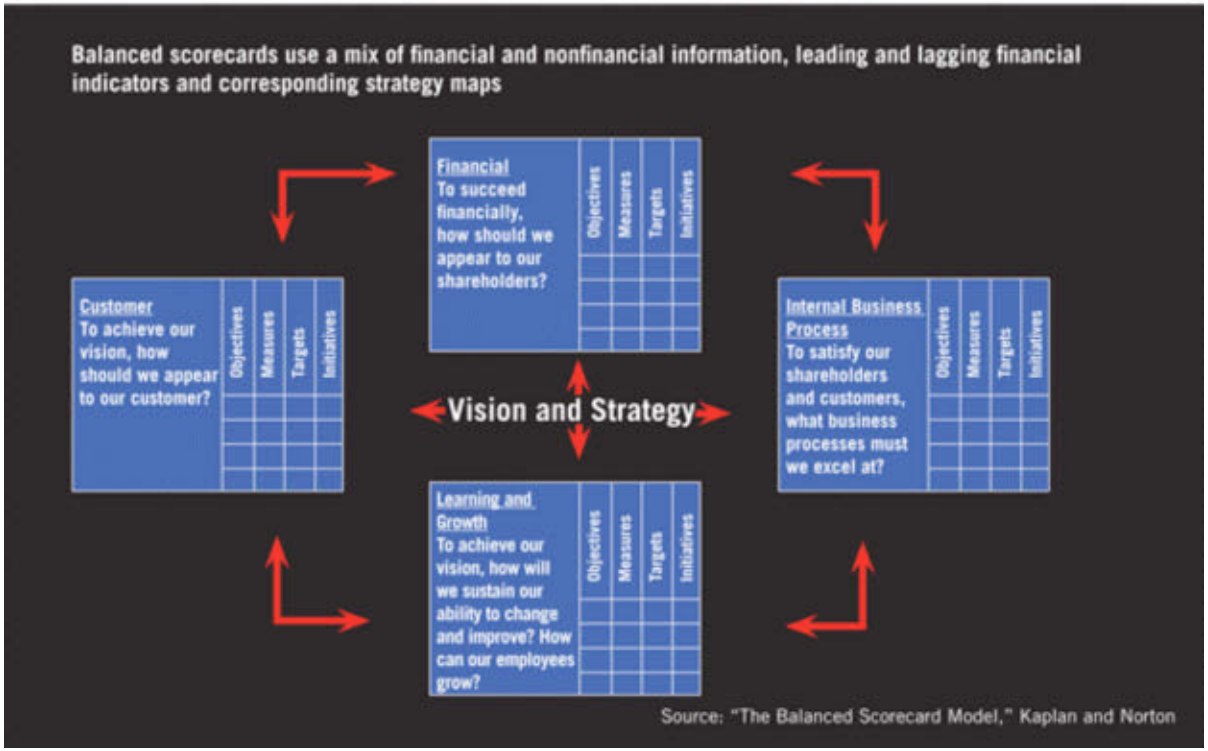
Articles (continued)

Types of Dashboards

There are several different types of dashboards, including strategic, tactical and operational.

Strategic dashboards can reflect enterprise-wide strategic goals, as well as corresponding KPIs. Features on this type of dashboard include global, external, trends and growth measures, all of which are related to or based on the Balanced Scorecard Methodology (see Figure 1). The data on these dashboards is highly summarized and presented graphically, without too many details. However, details should be available when someone wants to drill down. This type of dashboard requires updates less frequently.

Figure 1: A Balanced Scorecard Model



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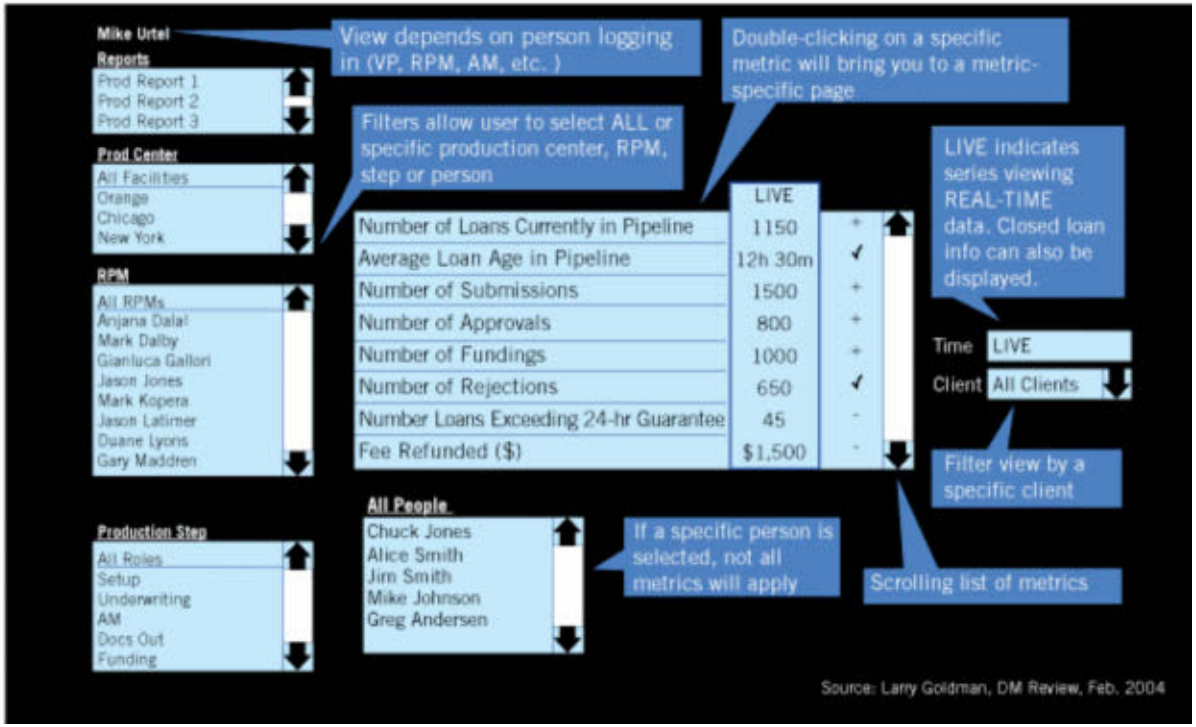
Tactical (also called analytical) dashboards measure the business's progress according to related trends, in accordance with each strategic initiative. Progress is measured against a preset goal, such as a budget or a certain target. Drilldowns reveal details and break down data for analysis. For example, they help determine why certain targets were not met and where a potential problem might be.

Figure 2: Example of a Dashboard Evaluating Customer Fulfillment Processes in Real Time: Refresh



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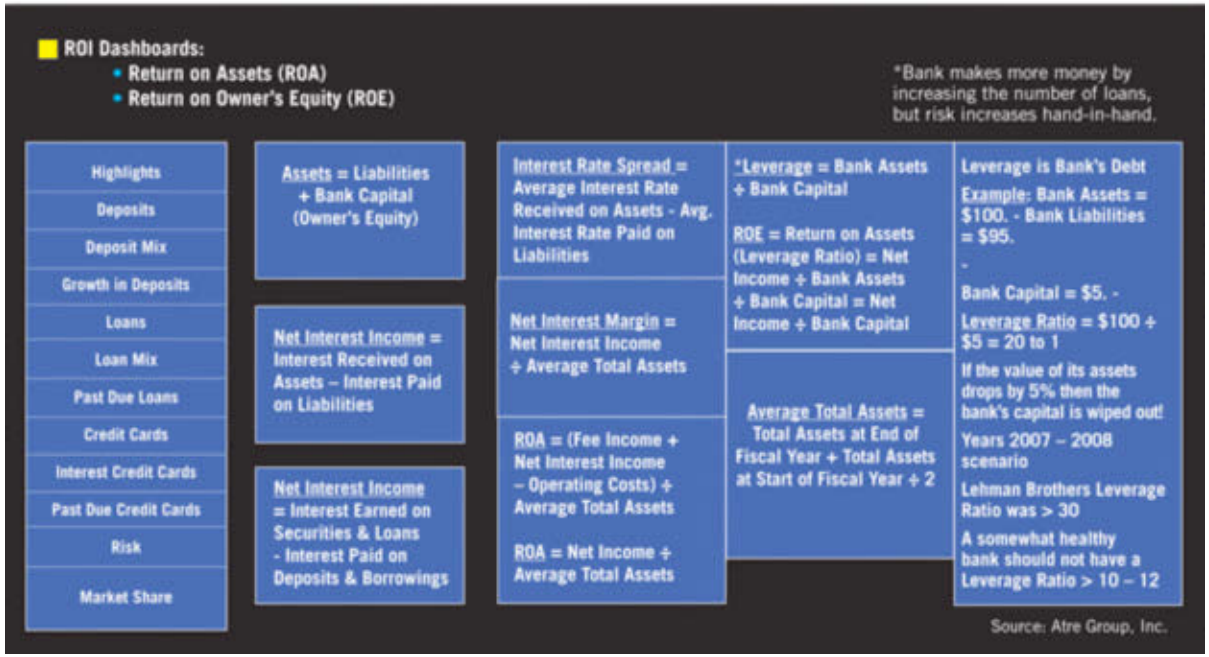
Operational dashboards monitor specific business processes, such as order processing and shipping. They are mainly used at the departmental level, where operations take place. Updates are tracked daily or weekly using real-time charts and reports, and detailed data is presented with strong analytical functionality in order to perform a root-cause analysis.

No matter which type of dashboard you're implementing, the ideal placement of the dashboard is the enterprise portal, because this is the central point from which organizations can distribute various BI applications. The portal enables everyone to access their dashboards, documents, presentations, online discussions and other applications from a single location. Additionally, within the portal users can discuss observations and concerns identified from their dashboards and can propose ideals and potential solutions.

Figure 3: Banking Profit Dashboard



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Implementation

To properly implement a dashboard, it is important to enlist proven project management practices. Like any major project, there are both people and technology issues, and the people issues need to come first.

People-related issues:

- Choose a sponsor and determine what is expected by him or her in return for the funding. Find out whether the sponsor has sponsored any other projects and if he or she has been steadfast when the going gets rough (for instance with deadlines, budget and "scopecreep"), because these problems are likely to creep in. Based on all of this, select a suitable sponsor and ensure funding is approved.
- Identify key users and determine their expectations and what they need to know.
- Gather an implementation team that will cover functions such as project management, business analysis, integration expertise, data warehouse expertise and metrics development, including KPIs and scorecards.

Technical issues:

- Determine which data sources will be used for each dashboard.
- Identify main KPIs used in the dashboard.
- Determine how often the dashboard needs to be updated.
- Identify needed hardware and software.

Determine whether a screen designer needs to be assigned to aesthetically organize the dashboard for details such as selecting colors and determining placement of charts and diagrams. Keep this person on your team, because he or she can play a role in maintaining the storage used by the dashboard (which will be excessive with all media converging on one dashboard) and in handling the the time requirements of transmitting the dashboard around the globe.

Dos and Don'ts of Effective Dashboards

Just because you have a dashboard doesn't mean it's an effective one. Here are some tips to create a dashboard that conveys actionable information to users.

Do:

- **Know your audience and their interests:** Determine which questions your dashboard will answer and for whom these answers are pertinent. Also, consider the variety of devices (laptop, mobile phones and mobile "gadgets") through which to deliver the dashboard and what will be most accessible as well as useful to the greatest number of people.
- **Develop accurate and consistent dashboards:** Minimize the redundancy of the data that you are using for the dashboard. Most inaccuracy and inconsistency is due to redundantly stored data.
- **Have up-to-date data:** Not all data is produced or updated in real time. It is important to know what data is current and still relevant to the needs of your audience.
- **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.
- **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.
- **Think "dynamic":** Make the dashboard as interactive as possible, and make it easy to create content on an ad hoc basis. Identify approximately 25 percent of the metric categories that have remained on the dashboard for an extended amount of time that have provided some kind of constant support to the viewers. Consider moving (or removing) the categories that are used less frequently.
- **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.

Use dashboard analytics with visualization:

1. Import your most useful, frequently used and revealing data about your business today, this week, this month.
2. Build a BI dashboard or a BI report with appropriate KPIs for people making the most up-to-date decisions.
3. Publish the BI dashboard or a BI report on cloud servers. This will make the dashboard instantly accessible to a vast number of people at any time.

Articles (continued)

Don't:

- **Don't extend the dashboard beyond one page or screen:** The dashboard should present the most important results on a single page. When unnecessary information is not crammed in, the material is more understandable, and, as a result, the information is more actionable.
- **Don't present data that is dependent on other data:** All data in the dashboard should be fully comprehensive; additional explanations should not be needed to understand it. Inventory data, for example, should be self-explanatory, and it should not be necessary to look up orders to relate to the inventory.
- **Don't provide only one level of data:** In line with the drill-down notion, it's important to present multiple layers of data. Your dashboard design should be able to drill down at least another two to three levels. Even if you don't make that information presentable in the first version of the dashboard, the design and architecture should allow it to be easily expandable and accessible later.
- **Don't present metrics in a vacuum:** There should be context in which to provide valuable insight into the presented data (for instance, high number of house foreclosures in the context of the collapsed real estate market). Use KPIs, goals, benchmarks or even some time series results to give relatable context. For example, if we are told that the revenue this quarter is $XXX million, it is a naked number with no context in which to analyze it. But if we know the revenue for the same quarter from the last two years, then we are able to compare the numbers and make important deductions about the data.
- **Don't expect your first dashboard to be your finest:** Build and learn; there is a learning curve involved. Get into a "release" mentality – and announce it to the audience: develop a mock dashboard and consider it to be on training wheels, observe how it is used and received by your audience, and then build a real one. Notice the benefits of your dashboard, as those are assets that will help boost funding for your next dashboard project. Additionally, use software tools that are flexible and will enable you to make changes easily as you build your first dashboard.
- **Don't try to answer every question with one dashboard:** A dashboard should not be a catchall. You may consider building a number of dashboards with various focal points instead of having only one with all important criteria jumbled into one dashboard. Those various dashboards could be accessible via a company portal on the intranet.
- **Don't have too many metrics:** You are going to miss everything if you try to cover too many important performance metrics in one dashboard. Too many metrics will defeat the purpose of the dashboard because you won't see the trees through the forest. Provide only a few critical metrics.

In today's business world, data and data-driven decision-making are more important than ever. With the information provided in this column, you should have the necessary tips to implement an effective dashboard that will launch your organization into making better decisions to reach its strategic goals. I can confidently say that a dashboard is the new face of BI. ■

White Papers

5 Best Practices for Creating Effective Dashboards– and the 7 Mistakes You Don't Want to Make

Dashboards are powerful because, if created well, they pull together different views of information in a single place, providing one of the most impactful ways to visualize data. To many, the idea of creating an effective dashboard is a pipe dream. They can be hard to configure or take forever for a centralized business intelligence group to create. They can be difficult to update rendering the data meaningless soon after it's built. They can be hard to understand when cluttered with too much – or the wrong – information.

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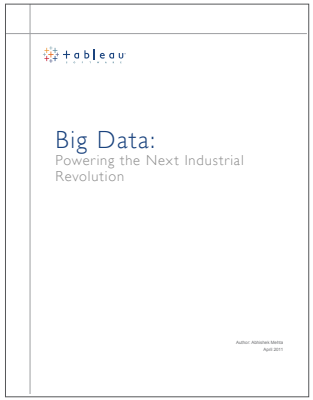

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