DASHBOARD BEST PRACTICES: HOW TO DERIVE THE MOST VALUE FROM YOUR DATA AND IMPROVE YOUR BUSINESS

Dashboards are a core component of any business intelligence strategy. While adoption for traditional BI implementations is still low, dashboards have become the go-to access point for business visibility and analytics. Dashboards make decision-making faster and easier allowing a wide variety of business users to interpret and interact with them, and not just power analysts. Users are immediately able to see whether targets are being met, understand performance discrepancies, identify opportunities and threats, and drill-down on issues that require further analysis. While previous BI implementations entailed extensive development efforts but offered limited flexibility of use, modern dashboards enable organizations to take advantage of their data on a more immediate and widespread scale.

Of course it is possible to create a meaningless dashboard that does nothing to further intelligent decisionmaking and organizational improvement. Therefore, to develop effective and valuable analytics requires the following:

- A strong understanding of the data sources, including business rules, latency, and how information interrelates
- A data warehouse or data repository to manage historical and real-time data that supports trends identification and forecasting
- Defined metrics and targets to achieve various business goals
- A high level of data quality to ensure that information is valid and accurate (and also trusted by information consumers)
- A user interface and level of interactivity that matches the skill sets of those accessing the information
- The ability for users to take immediate action on the insights gleaned to improve business performance

The promise of BI was the ability to use information assets as a way to identify opportunities and increase competitive advantage. The skyrocketing demand for simple, easy-to-use dashboards, however, highlights the fact that BI has failed to deliver for most organizations. Particularly as data velocity and the number of disparate data sources increase, the focus of BI is shifting from pre-defined questions (where static, historical reporting may be appropriate) to user-directed analysis (where real-time, intuitive, and interactive data visualizations are needed). We will discuss each of the major market drivers in more detail to explain why dashboards have become the de facto access point for BI, and how to design dashboards so that organizations can derive the most value from their data.
Better Data Access and Flexible Deployments

Data warehousing platforms now support broader data sources, more complex analytics, and more flexible delivery of information. Even though it is all dependent on the platform, businesses can stream real-time data, access information in-memory, and take advantage of more storage for less. Additionally, organizations can also store their data (or parts of their data) on the cloud and deploy solutions to mobile devices giving organizations more control over how they store, access, and manage their information assets. All of this is key for dashboard delivery. Aside from market demands and the need to access information constantly, user choice means that information can be accessed and stored anywhere, making BI deployments more flexible and data easier to interact with. In addition, end users can store dashboard views on their devices and store data in-memory to conduct analytics while not connected to the Internet. Data can then be updated when a connection becomes available. These changes in data management enable broader analytics and higher levels of flexibility in design and delivery, increasing overall BI effectiveness.

Supply chain issues, however, need to be identified immediately; otherwise product delivery and sales can be affected. These cases require real-time data feeds to identify discrepancies and to make sure that targets and service levels are being met. This type of agility is best represented within a dashboard based on visualizations used to help see what is occurring as opposed to having to decipher a set of numbers. In both examples, the case for an agile dashboard environment is to make sure that each of the needs addressed are met based on their specific requirements.

Demand for Agility

Not only has data access become easier, but demand for current and predictive analytics has become a must for many organizations. Businesses require the ability to act on information and that means accessing different types of data in a way that best supports decision makers. For instance, identifying trends in the past and linking information with external data sources can help identify what might occur in the future, which in turn can help a business predict the outcome of marketing campaigns or changes to its products.

Business User Adoption And Self-Service

The increasing use of dashboards and the market shift towards enabling more interactivity means that business users want to control their interactions with BI. It is no longer good enough to rely on submitting a request to IT for changes or new data additions and waiting for weeks or months to gain access to the requests for change. End users want to control their
own dashboard experience. Self-service dashboard design provides ease of use and flexibility by creating interactive and autonomous interactions that allow people to control how they analyze information. Mobile BI takes self-service to the next level by putting apps in the hands of end users irrespective of where they are. This level of access brings BI beyond the firewall and gives people choices that include when and how they will access their work. This broader flexibility in use and general access points create an opening for employees that used to see BI as out of their reach. Now business users without technical savvy can interact with analytics in a way that makes sense to them.

Organizations need to arm their key decision makers and front line managers with information to make informed decisions. This means taking these market drivers into account, but also understanding how organizations are taking advantage of the opportunities offered through dashboard adoption.

Opportunities and Common Use Cases For Organizational Dashboards

In order to get the most out of dashboards it is important to identify how other organizations are successfully implementing their BI strategies. Even though the push towards dashboard adoption is strong, there are still challenges that exist that businesses need to overcome to take advantage of potential opportunities. The reality is that challenges and opportunities run hand in hand because each opportunity that exists negates specific challenges and vice versa. For instance, leading a successful BI implementation and designing successful dashboards require identifying where there is a lack of visibility into operations, any inconsistent information, or the inability to access relevant information, and the inability to meet performance goals.

Consequently, business opportunities are an extension of how information is accessed, managed, and leveraged. Being able to interact with information in a manner that supports the way people think helps empower decision makers to act upon analyses and justify their actions.

However, getting to this point is not always intuitive. Support for a BI project needs to go beyond developing a data warehouse and identifying which kind of dashboards to use. Gaining a broad understanding of design and the general business questions that are asked provide a starting point to enable self-service access to dashboards. By looking at standard use cases, organizations can identify the BI drivers that lead to successful implementations and can avoid common pitfalls. Dashboards provide the most intuitive way to do so based on their visual and intuitive nature, flexible deployment to any mobile device, and visual nature. Three common areas that companies struggle with are operations, planning and forecasting, and strong performance management.
Visibility Into Operations

Many businesses struggle with their data. Customers, suppliers, partners, social media and product feedback, intranets, budgeting, and AR/AP are just some of the areas requiring analyses. In many cases information required lives in disparate sources, across multiple servers, both internal and external to the organization. Traditional reporting takes individual data points and provides reports and visibility into the supply chain, or into overdue accounts. This is why analytics within operational applications don’t provide adequate insights into the overall organization. Understanding whether the supply chain is running smoothly doesn’t identify whether products are being allocated to stores in the amounts that best meet demand, or the number of defective products, how customer service handles complaints, or the level of repeatable business and loyal customers. Visibility into the supply chain alone also doesn’t provide insight into the customer lifecycle or whether marketing campaigns are leading to higher sales. Essentially, analytics built within an application will only provide visibility into the data housed within that application.

To gain visibility across the organization, businesses need to consolidate data and create a broader view of how information interrelates. This means understanding what visibility into multiple data sources actually translates into. For instance, understanding the customer lifecycle requires insights into finance, sales, customer, product, etc. Aspects of each of these areas are required to create analyses into potential challenges and/or opportunities that exist within the organization now. The ability to move beyond now and project goals into the future provides the next level of benefit from a consolidated view of data assets.

In the case of CarePartners Health Services, a not-for-profit health care organization servicing Western North Carolina, they lacked insight into their customer visits, which directly affected their revenues. They needed to provide employees tools to “make things visual and provide reports that were simpler, while also allowing users to drill-down into them,” stated Brian Arldt, Director of IT, CarePartners Health Services. This included creating “three main clinical care systems to document care delivery, including all patient billing and admissions” consolidating a variety of data access points. The new dashboard provided real-time data in a visual way allowing people to act on issues immediately within a single set of views.

This example highlights the importance of identifying the data requirements and looking at which data sources need to be joined to get a broader view of the organization. Without this, companies may be flying blind. An incomplete view of information will provide an incomplete view into operations and lead to less than accurate visibility and insight. With a centralized data access point, information can be delivered in an easy way to digest and interact with. People who may not have access to information because they don’t use each system or because they have to look at information separately based on siloed storage, can now interact with data in a secure environment to access what is required and to make inquiries by drilling down and drilling through data.

Planning and Forecasting

Enhanced visibility leads to better planning. The adage knowledge is power especially rings true within an analytics environment. Identifying trends and forecasting into the future requires a great deal of data, developed algorithms, and a deep understanding of data relationships. Extra visibility generally means that
decision makers are better able to plan and implement changes more effectively. With the ability to show colleagues information based justifications, coming to agreements and acting upon what is happening becomes more of a reality than leaving the planning of business units to individual department heads. Data validation supports trust in information assets and allows disparate decision makers to have the same access points to data and to understand any discrepancies with the ability to justify where information originates, why any changes have been made, and what the implications are of acting upon something or waiting it out to see if something changes.

Using dashboards to gain visibility into business and to support better decision making may seem obvious, even if taking advantage of data visualization to plan may not. Planning requires access to easily dissected information that is not available unless data is consolidated and connections can be identified. And although many forms of analytics and BI delivery methods can accomplish this, dashboards appear to be the most effective way of doing so on a regular basis. Spreadsheets can support higher level information or provide broader support, but most people can digest information better when it is visual. Based on this fact alone, using dashboards helps people with the decision making process by laying out the relevant information in a way that can be processed and looked at more in-depth intuitively.

It is not always the case that operations and planning go hand in hand. Their interrelation starts with the data itself and, as dashboard use becomes more mature, can become an extension of one another. The two main reasons companies fail in this endeavor are due to a lack of proper information visibility and a lack of proper dashboard design. In essence, having the data isn’t enough if the dashboards do not display the proper information and enable a mix of pre-set algorithms to identify planning goals and self-service design to provide the flexibility needed to ask relevant business questions and make necessary changes as needed.

Performance Management

In reality, the bottom line benefit of using dashboards is the ability to manage performance. Finance, sales, customer relations, and partnerships are just some of the areas that require accurate performance management.

Real-time streaming of call center or help desk data provides a good example of how both managers and staff can make sure they are staying on track of targets and identifying potential issues as they occur, creating a proactive work environment. Dashboards can help management evaluate performance over time, identify discrepancies, and take advantage of opportunities. When looking at employee performance specifically, understanding who outperforms and under what
conditions can help identify ways to motivate staff to keep performance levels high.

Although reports and other types of analytical interfaces can also do the job, many managers and c-level executives do not have the time to decipher what a report or chart means. Designed right, dashboards provide an intuitive look into who is doing what, how well, and where they fall short. Whether people, processes, or revenue oriented, quick glimpses at valuable information points make this type of information easy to digest, and this leads to decision makers being ready to take action.

The trick to successful performance management is to develop a set of targets that are actionable and repeatable. Supporting this through a visual interface combines data and action. To make this work across the organization, targets need to reflect the overall goals of the organization and move down from there. What this means is taking a holistic approach to performance management, as looking at a single department or business process may lead to overlooking other strategic goals.

Considerations For Dashboard Deployments

Once you’ve decided on a use case, established the proper data access points, and honed in on targeted goals, there are several important considerations to ensure a successful implementation. After all, one of the worst things that can happen within a dashboard project is spending time and money to develop solutions that are not used or that do not meet the needs of end users. Therefore, even though looking at how to deal with dashboard considerations may be a strange segue after looking at common use cases, the reality is that unless business and technical users can interact with the technologies deployed within their departments in an easy way, investments may be wasted. In addition, although many dashboards may be easy to create and maintain, ensuring their effectiveness still requires adequate analysis. The following considerations focus on business requirements as a precursor to looking at the components of an effective solution.

Resistance To Adoption

Sometimes organizations live by the adage “build it and they will come.” This is a fallacy. Dashboard adoption takes work because there are many people who don’t want to change the way they do things unless their current way of doing things is tedious, time consuming, and ineffective. In some cases, even when people understand that the way they have to complete a task isn’t as productive as it could be, they may still resist change.

In one particular case, an American university knew they would encounter some resistance to adoption and wanted to, not only ensure that stakeholders had a say in design, but that they would use the dashboards implemented and be advocates for expansion of use. To do this, they launched an internal training and marketing campaign and built a series of posters, emails, and interactive videos with the goal of getting employees excited about use. When the solution was rolled out, the end user base crept up to over 400 people even though the initial intention was 35 users.

This example alone highlights the fact that organizations looking at dashboards can’t make assumptions about adoption without the involvement of stakeholders in the design process. For adoption to occur, end users need to be shown how dashboards
will benefit them. Whether saving time, gaining better visibility, or supporting job functions, employees need to feel empowered and this includes designing their own interactions with the technology they are required to use on a daily basis. After all, stale weekly reports no longer provide the value they once did. Whether real-time or not, dashboards can provide the steady information needed, but only if people actually use them.

Aligning Business Needs With Design

In some cases, adoption becomes a challenge due to the delivery of all-purpose dashboards. For instance, even if people use overlapping datasets, the way they interact with and interpret data will be different. This means looking at each user group and the business challenges they face to design solutions that match individual use. In many cases, this is actually quite easy. Vendors provide out-of-the-box templates that meet many of the needs being addressed through dashboard adoption. Most of the time there is a little something for everyone, with the ability for business users to build out their own views and develop their own metrics.

Therefore, to achieve project success, it is important to start small and focus on a few key areas based on anticipated dashboard use. This general use will increase over time anyway as end users become more proficient with the tools and start to ask more questions due to the better insights they are getting through their access to analytical data visualizations. In most cases, expansion of use and future challenges that may arise cannot be determined in advance. This means that dashboards need to be built based on what is being experienced now, while still being able to support future expansions. Individual departments may see some holes in data based on their inability to consolidate all of the data they require. This type of challenge does not have to be addressed right away, but does need to be taken into account when looking at how to deal with potential future problems.

Assessing Roi and Validating Dashboard Investments

Another challenge organizations face is being able to justify dashboard development. For organizations with mature BI infrastructures there may be some reluctance to change things, add to current investments, or look at business processes in a new light. Traditional BI deployments were generally based on the development of large IT infrastructures and the ineffective delivery of information. The transition from limited technologies towards solutions that meet business needs more effectively may require taking a new approach to BI. For instance, instead of using a traditional data warehouse, organizations may choose an operational dashboard and stream data or may...
decide to add to or change a current IT infrastructure to accommodate the dashboards.

New investments might create a challenge in identifying the ROI and whether it outweighs the risks and/or expenses. After all, explaining the value proposition of dashboard adoption may be difficult if past BI investments have come up short. And although this may be the case in some organizations, others, such as Pathway Chicken [name changed for privacy reasons], a $5 billion poultry product producer in North America, actually provides a good example of how quantitative ROI can be measured. To support its just-in-time production strategy, Pathway Chicken developed a set of four dashboards that displayed near real-time information on temperature, pickup, weight, pack, etc. they were able to determine if they were on target immediately. Because of the bold graphics and rich colors they selected, they were able to achieve a high level of adoption and have estimated savings of more than $2.4 million annually by being able to better respond to information affecting their operations.

Satisfying Varying Business User Needs and Service Levels

Dashboards can give all employees access to better information to support decision-making and help them get their jobs done more proactively. The problem however, is that flexibility in design and addressing broader audiences also mean that designing dashboards targeting the needs of various types of business users can be a challenge. After all, some users are very familiar with interacting with BI while others have turned to dashboards due to the promise of self-service and greater agility. Irrespective of the reasons why, organizations looking at deploying dashboards are tasked with developing solutions that can be used by employees with diverse skill sets.

Add to this the fact that disparate departments will require information at different times – some weekly, some daily, some hourly – and the management of expectations need to be met. In some cases this type of infrastructure already exists, as dashboards are just another aspect of a broader BI project. In other cases, organizations will need to re-evaluate their service levels and how information is delivered based on the needs of different decision makers throughout the organization. After all, not all information is required on a real-time basis, and some information applies algorithms in order to show its value.

What all of this really means is that effective dashboard delivery requires accurate and timely information delivered in a way that is digestible by users of all comfort levels with technology. And this is more challenging than it sounds. It may mean providing more than one dashboard with different levels of interactivity and data access. Or it might mean looking at the same dashboard in different ways as different people may require the same information for different purposes or with disparate latency needs.

Taking dashboard considerations to the next level means evaluating this information and applying it to dashboard design to develop a framework that can be reused as dashboard expansion occurs within the organization.

Dashboard Design: How To Develop Successful Solutions

By now an organization will have a good idea of what they hope to achieve and how to leverage use cases and general considerations. Even though this is a good
start it's not an effective way to help organizations understand what they need to design an effective dashboard and take advantage of the best practices that pave the way to higher performance. This is where having a framework for creating effective dashboards through rules of design come in. This section takes you to the next level by looking at the essential aspects of dashboard design.

Using Screen Real Estate Effectively

When people first think of dashboards, many think of the “sexiness factor.” Compared to traditional BI deployments and reports, dashboards look great. Interactive charts, graphs, and the ability to drill through to analyze an issue more in depth, give dashboards a feel of ease of use and high level of interactivity that doesn't exist in other forms of business intelligence delivery. In a sense, the ability to accomplish the delivery of analytics in a visual format effectively is an art form.

Dashboards need to be concise and show information points in a way that can be digested and acted upon immediately. Doing this while taking into account mobile devices – both smartphones and tablets – and online access, requires the ability to decipher the amount of information that can be digested properly and interacted with depending on the size of the screen. Obviously, designing an application for a smartphone will look different than one being used on a desktop. Consequently, many dashboards accessed online will have tabs to identify different types of information, whereas mobile devices will have a single chart or summary details to get a glimpse at what is occurring within the organization. Overall effectiveness can be debated either way, but one thing is certain, the reason many online dashboards are designed with a series of tabs or various pages for different purposes is that people can only digest a certain amount of information with ease.

In the case of dashboards, sometimes less is more. This is why there is a focus on key performance indicators (KPIs) so that they can be reflected in a reasonable way, without trying to identify hundreds of metrics and assuming they all need to be highlighted on the same screen. Understanding that there is a limited amount of space to display analytics can make design more effective. After all, that's the best way to identify what is most important. In some cases, this might include having separate tabs for individuals that want to look at a variety of information, as placing finance, sales, and help desk metrics on the same page will only confuse a user and not provide the data correlations required to make the best decision possible.

Choosing The Right Visualizations

The next step is to identify which visualizations are most effective for the type of analytics being looked at.
Luckily for business users and developers alike, vendors are making this much easier as solutions mature because many provide suggestions as to what type of gauge, dial, chart, graph, heat map, etc. will best suit the type of data being accessed. Then it is up to the user and/or designer to customize and create their own visualizations.

Alternatively, some dashboards are customized based on specific needs or to incorporate non-traditional visualizations. The important thing to remember whether selecting standard or unique dashboard design is that unless developing a solution for a specific job skill, such as a statistician, it is always more effective to be simple and straight to the point. End users need to be able to glance at their dashboard and understand what they are looking at, whether targets are on track, and if not, how to take action. The only way to achieve this is to ensure simplicity, or by giving users the freedom to select individual design through self-service guidance.

There has been debate over the ability for business users to get the most out of visualizations without understanding the underlying data. This may be true in some cases. The implication of this is that organizations that design dashboards in such a way that provides flexibility, also need to build in context for the underlying data to ensure that users will be able to get the most out of the dashboard designs.

Working With Disparate Data Sources

Getting the most out of data requires consolidating disparate sources and applying business rules to transform data into information. Many businesses complain about data silos and look to dashboards as a way to overcome this challenge. To do so effectively requires an understanding of how different information sources are interrelated, which requires collaboration between those who will be using the tools and those developing them. Understanding the data layer becomes important when trying to consolidate data across business areas to get a broader view of what is happening within the organization. With the increasing importance surrounding social and geographic data, simply looking at one data source no longer provides the value it once did.

Organizations need to develop a framework that manages data on the back end to enable effective delivery on the front end. After all, if the data is not valid and reliable, the dashboard will not have any value. Design itself provides the interactivity, but the information being accessed provides the actual value. In some cases, organizations will not want to create a data warehouse or centralized data access point, but some form of database is required to maintain data relationships and quality over time. Without this, dashboards will be limited to real-time data streams or one source of data. In some cases, business users only want to look at one data source, such as sales amounts, but to get more value out of sales data it becomes important to understand the customer, product life cycle, environmental factors, competitors, etc. All of this information resides in a variety of data sources and requires a consolidated view to get the proper value out of sales information.

Working With Real-Time Data

Although not all organizations require insights into realtime analytics, the reality is that more and more companies have mission critical business applications that require operational insights. This means that the ability to access and analyze data in real-time is
becoming more important. When developing dashboards, looking at latency requirements helps identify both design as well as required delivery. What this means is as follows:

- **Real-time data feeds** will require different visualizations than historical type data. For instance, traditional charts will only confuse users if updated regularly without a way to identify context. End users need to understand why they are looking at sales over time, or financial transactions. Unless there is context and a way that they can compare performance at multiple points in time, it becomes challenging to achieve the desired value. Therefore, design considerations will be specific and probably different for real-time delivery.

- **Delivery itself** is also an issue. The term real-time can mean different things to different people. For some organizations real-time will be every hour, whereas for others, it may be per second. Meeting these demands requires back-end support. This means making sure that whether on-premise or in the cloud, data can be sourced and delivered within the timeframes required.

Overall, the ability to provide real-time dashboards requires more than design considerations. It requires the ability to manage the appropriate data, meaning that real-time dashboards can be much more complex than other forms of dashboard delivery. The concept of operational intelligence is also relevant for real-time because it focuses on operational data that is generally transactional in nature. In some cases this might not require the need to update dashboards automatically, but may focus on updating changes in the system as they occur to identify performance against targets.

### Security Requirements

Security concerns are once again at the forefront of BI discussions based on large enterprises evaluating the cloud for their BI platforms. Add to this the debates around whether to standardize on a specific device or only use corporate issued devices to ensure that access remains within the firewall, and organizations are once again looking at security requirements for their dashboard deployments. With the advent of both the cloud and mobile BI, organizations are starting to ask questions about the security they require and what the implications are in relation to the decisions they make.

In the case of cloud computing, many small and mid-sized organizations are already comfortable storing data outside of their firewall and using hosted services. Most already do, whether for sales, payroll, or ERP, the list is endless. Larger companies on the other hand, have spent time, effort, and money on developing robust infrastructures that support their operational and analytical needs. As the market shifts, more questions are asked about the implications of moving...
to the cloud. And although software vendors and solution providers develop their offerings based on strong security access points, some organizations still don’t feel comfortable with that option.

In addition, many organizations are struggling with individuals accessing dashboards and broader analytics on their mobile devices because they are afraid of information getting into the wrong hands, despite the fact that these same individuals have been sharing emails outside the firewall for years. The fact is that security concerns are a perception rather than a reality. Vendors are so cognizant of customer concerns that they make sure to develop their offerings within a framework that meets multiple levels of security. For instance, in the case of CareerBuilder, they were able to establish security settings so that users only see data relevant to them or within a specific group depending on their log in credentials, which many vendors provide as security features to limit unwanted data access. For businesses with specific requirements, it becomes important to identify the reasons behind these considerations and what the implications are of not providing broader access to organizations and what the benefits or downsides might be.

**Designing Metrics, Data Latency, Write-Backs**

Identifying specific targets also means looking at what the outcomes of measuring them should be. Knowing whether targets are being met may only be the beginning of a process for a specific department. What happens once targets are identified may be what matters most. Or it might be important to identify discrepancies between designed metrics and information external to the organization so that this information can be corrected using write-back capabilities. Of course, there needs to be structure and a way of validating anything that is written back to the database, but this type of requirement might be essential for specific business challenges being faced.

Although considerations may differ based on the individual organization, the premise is the same. Understanding latency issues, how the database needs to be designed on the back end and how this affects targets and metrics are extensions of the dashboard itself. Simply deploying a dashboard without identifying the other requirements that make it work is like wearing a watch without the mechanics underneath – it might look pretty, but it doesn’t actually do anything. With write-back capabilities the issue is the same. If an organization is leveraging this feature to complete processes or correct errors, not being able to do so will limit the overall effectiveness of the solution.

**Dashboards For an External Audience**

Many areas discussed already highlight the increasing importance of looking outside the enterprise for information resources. Standard examples include Twitter and Facebook data to identify demographics and trends, geospatial data to identify patterns in behavior in different areas, and social networks to identify who is influential and who they are influencing. All of this information supports broader visibility into customer behavior and market competition. Consequently, many businesses have started to explore what information is important to them and how to leverage it more broadly.

In cases where customers are not traditional consumers, but may be partners or suppliers, organizations are still trying to leverage market data to...
identify where they fit in reference to competition and where performance gaps are to help gain more visibility into the broader market. By designing dashboards that reflect both performance and external data sources, organizations can leverage a broader view of the market place to understand the competitive landscape that wasn't possible in the past. In some cases this might include partner or supplier data or some level of information sharing between multiple bodies. The more information an organization has access to, the better able they are to identify what is valuable and what they need to make better overall decisions.

Conclusion

Dashboards are becoming the de facto access point for organizations using analytics. They are flexible, can be accessed anywhere, and provide a high level of interaction to users. All of these aspects provide better return on investment because people are more likely to adopt the technology. Although there may be broader considerations, the reality is that dashboards are generally less expensive to deploy than broader BI frameworks. And in addition to all of this, dashboards also support broader information related initiatives and better decision-making.

Dashboards can also be deployed quickly and provide business and technical users with ways to customize their interactions with data, making dashboards fit the needs of all different roles within the organization. The benefits of this expand beyond financial expenditures, as one deployment can potentially meet the needs of all users by addressing the data and business challenges while giving people the flexibility they need to answer the questions they have and act upon, without having to develop specific views of each role within the organization. This also frees up IT to support the broader IT architecture as opposed to continuously fulfilling user requests making it a more beneficial way of interacting with technology.

Learn more in the eBook: The Art of Dashboard Design: 7 Fundamentals to Master.