



CHECKLIST REPORT

2017

Six Strategies for Enabling Users to Advance Faster with BI and Analytics

Using Adaptive Technologies to Facilitate Business Users' Evolution from Data Consumption to Interactive Analytics

By David Stodder

Sponsored by.



AUGUST 2017

TDWI CHECKLIST REPORT

Six Strategies for Enabling Users to Advance Faster with BI and Analytics

Using Adaptive Technologies to Facilitate Business Users' Evolution from Data Consumption to Interactive Analytics

By David Stodder



555 S. Renton Village Place, Ste. 700
Renton, WA 98057-3295

T 425.277.9126
F 425.687.2842
E info@tdwi.org

tdwi.org

TABLE OF CONTENTS

- 2 **FOREWORD**
- 2 **NUMBER ONE**
Aim for flexibility so users can address changing requirements
- 3 **NUMBER TWO**
Provide users with automated guidance and collaborative functionality
- 3 **NUMBER THREE**
Deliver embedded BI and analytics to provide insight in context
- 4 **NUMBER FOUR**
Streamline data preparation for adaptability and integration
- 5 **NUMBER FIVE**
Scale and expand infrastructure for self-service BI and analytics
- 5 **NUMBER SIX**
Manage self-service to balance governance and adaptability
- 6 **A FINAL WORD**
- 7 **ABOUT OUR SPONSOR**
- 7 **ABOUT THE AUTHOR**
- 7 **ABOUT TDWI RESEARCH**
- 7 **ABOUT TDWI CHECKLIST REPORTS**

© 2017 by TDWI, a division of 1105 Media, Inc. All rights reserved. Reproductions in whole or in part are prohibited except by written permission. Email requests or feedback to info@tdwi.org. Product and company names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

Inclusion of a vendor, product, or service in TDWI research does not constitute an endorsement by TDWI or its management. Sponsorship of a publication should not be construed as an endorsement of the sponsor organization or validation of its claims.

This report is based on independent research and represents TDWI's findings; reader experience may differ. The information contained in this report was obtained from sources believed to be reliable at the time of publication. Features and specifications can and do change frequently; readers are encouraged to visit vendor websites for updated information. TDWI shall not be liable for any omissions or errors in the information in this report.

FOREWORD

All organizations, no matter how big their budget, must overcome barriers in order to realize value from data faster. Some barriers are due to existing applications and technologies that are too rigid and have not been revised to keep up with trends in user demand. Other barriers involve weaknesses in culture, stewardship, and governance, which become more glaring as broader user populations make more decisions based on data.

The changing nature of how users interact with data and apply analytical insights highlights the importance of having flexible and adaptable business intelligence (BI) and analytics applications and services. Systems architected for the relatively unchanging patterns of enterprise BI reporting are under pressure because self-service BI and visual analytics are rapidly expanding. Processes for preparing and transforming data for BI and analytics are equally under pressure as users seek control over data and are less willing to wait for data prepared by IT analysts and developers.

This TDWI Checklist discusses six strategic areas that organizations need to address to enable users to gain more value sooner from BI and analytics. The revolution in self-service BI and analytics is, of course, a major factor and is a trend unlikely to weaken. Thus, to realize value faster, organizations that have historically experienced centralized, IT-centric BI implementations must transition to environments that embrace increased use of self-service technologies.

In the BI and analytics marketplace, solutions are competing to provide the most adaptable experience, whether as standalone systems or as embedded functionality in purpose-built applications and Web services. Leading solutions provide easier-to-use, graphical interfaces for selecting data sources to analyze—blending the data and using data visualization to discover insights and share them with others. With the growing popularity of the cloud and software-as-a-service (SaaS) options, it's important that organizations examine how these options can offer flexibility for scaling BI and analytics and extend functionality to more users.

Technology adoption prospers when organizations build a culture that supports analytics. Strong cultures provide mentoring and guidance for users so they understand how to use technologies as well as how to work with data and develop analytical insights. As this checklist discusses, governance, stewardship, and mentoring are important to building this culture.



NUMBER ONE

AIM FOR FLEXIBILITY SO USERS CAN ADDRESS CHANGING REQUIREMENTS

As BI and analytics users grow diverse, so do their requirements. Organizations need to support greater diversity in how users work with data as part of their roles and responsibilities. They must ensure that their chosen BI and analytics solutions have the flexibility to handle a range of needs.

For many users, the starting point for BI and analytics technology is a spectrum from a combination of personal spreadsheet applications and desktop databases to IT-directed enterprise BI reporting systems. However, in many cases, neither provides satisfactory flexibility. Doing more than routine work with spreadsheets and desktop databases can be difficult; these generally offer limited functionality for querying, analyzing, and visualizing the large volumes of data needed for analytics and data discovery.

Although enterprise BI systems provide access to greater quantities of trusted data, the focus is typically on providing “one size fits all” reporting for data consumption. These systems force users to accept limits on data interaction and ad hoc querying. When users need different reports, visualizations, data transformations, or queries, they must wait for IT developers to make revisions or develop completely new applications.

With interest growing in analytics beyond simple data consumption, user workflows and patterns of activity are changing; they are different from those for consumption-oriented enterprise BI reporting. TDWI research finds that most users want to dig into the data behind reports and dashboards to find answers to their “why” questions about what they are seeing. This includes data discovery to unearth relevant data relationships, patterns, and trends that are often hidden in tabular BI reports. Digging into data and examining data relationships enables users to examine data from different perspectives and answer their “why” questions. Data visualization is important to this flexibility of analysis. Organizations should evaluate how well users' solutions implement data visualization to support varied data discovery.

Users also need flexibility so they can perform less-directed discovery of unfamiliar data to see if it has value for more structured reporting and analysis. Users may want to look at data stored in a data lake, cloud storage, or an unfamiliar external application. If the data looks valuable, they will need tools to help them build prototypes, which they can then hand off to experienced IT developers to create applications. Thus, BI and analytics solutions must be flexible enough to support workflows characterized by both directed data discovery and less-directed exploration focused on learning about the data, trying different types of analyses, and building prototypes.

Additionally, organizations should evaluate how well users can tailor BI and analytics solutions to requirements tied to their roles and responsibilities. Of course, the functionality needed per their roles and responsibilities is not fixed. To move faster toward value with BI and analytics, organizations should plan for flexibility. They should anticipate requirements changing as users apply data insights to decision-making processes that can be dynamic given changes in roles and responsibilities.

NUMBER TWO

PROVIDE USERS WITH AUTOMATED GUIDANCE AND COLLABORATIVE FUNCTIONALITY

For users, the appeal of self-service BI and analytics is undeniable. According to TDWI research, users want self-service so they can choose data sources, select and modify visual objects, and compose their own dashboards. Traditional enterprise BI forces users to wait for IT developers to build applications and modify existing ones.

Rather than resist self-service trends, many IT leaders are embracing self-service technologies. Along with increasing user satisfaction, self-service shifts routine tasks to users, so IT leaders now see it as useful. As a result, many organizations are transitioning from strictly controlled, IT-centric enterprise BI to business-driven BI and analytics environments that support the use of self-service solutions.

Two areas that are important to focus on for successful transition are guidance and collaboration. Regarding guidance, organizations need to ensure that as they give users “the keys” to BI and analytics through self-service technologies, they do not leave users isolated and confused. Most users need guidance in both implementing the solutions and working with data and analytics. Organizations can provide guidance by IT mentoring BI teams and by ensuring that users are working with automated guidance provided by the software solutions.

Automated guidance becomes essential as the population of users expands. Often, IT teams are unable to allot the time to work with all the users directly. Bridging the gap, leading self-service BI and analytics solutions are becoming “smarter” by providing automated setup and guidance functionality that helps users create workspaces and perform operations—for example, configuring joins by simply dragging and dropping icons representing data sources onto each other. The software’s automated guidance will perform the join or warn the user of reasons not to perform the join.

Functionality for improving collaboration is essential because most decisions are made by teams and within the structure of a business function’s roles and responsibilities. Users, therefore, need to become proficient not just in analyzing data but in communicating

insights as well. Organizations should evaluate how well solutions support collaboration. One key function is the ability to set up notes on top of shared dashboards and reports so everyone can view them in the same location rather than in email messages, which are frequently ignored or lost. If teams prefer to use email, solutions should enable users to subscribe to email notifications. Solutions should enable scheduled delivery of notifications and the ability to set alerts according to specific conditions (such as data above or below a threshold), which might mean that further investigation by the team is needed.

Data storytelling is another collaborative method that can be supported by software functionality. Data storytelling is about building narratives using data visualizations to describe how analytics conclusions were reached and why they are important. This storytelling can help users and analysts build a case for a decision within the context of objectives and constraints. The narrative structure can also aid colleagues in understanding situations and optimize how users and analysts answer colleagues’ questions.

Organizations should evaluate data storytelling functionality in BI and analytics solutions, particularly to support users doing more than just moving visualizations into presentation programs. Data storytelling functionality should enable users to create narratives that, for example, compare before and after conditions through visualizations. Users should be able to communicate analysis of variables over time periods; use visualizations to highlight differences between segments or categories; and annotate visualizations with notes and references.

Smarter, more automated features in BI and analytics solutions can help users advance rapidly. Organizations should ensure that users apply this functionality. Enterprise IT teams can support users with mentoring, especially as they attempt complex analysis using new data sources.

NUMBER THREE

DELIVER EMBEDDED BI AND ANALYTICS TO PROVIDE INSIGHT IN CONTEXT

Embedded BI and analytics functionality plays an important role in enabling users to progress faster with data-driven decision making for several reasons. First, it is still rare for most users in an organization to have their own standalone BI and analytics tools; TDWI research finds that, on average, less than one-quarter have their own tools. Second, many users are more comfortable implementing BI and analytics functionality, including dashboards and analytics visualizations, from within a familiar business application or a cloud-based SaaS solution. These solutions are typically designed to fit the context of the user’s function, operation, or vertical industry.

A frequent drawback of embedded BI and analytics is that functionality is limited to reporting designed for data consumption and provides little capacity for data analysis. With demand rising for tools that enable users to do more complex analysis, many developers of packaged applications are growing interested in adding deeper BI and analytics functionality as a competitive differentiator.

Service-oriented application architectures are making it easier to integrate and embed BI and analytics functionality. Many solution providers have adopted open application programming interfaces (APIs) for integration and use standard data connectors to allow data to flow between sources and applications or SaaS solutions. Some solution providers are adopting the emerging microservices architecture to support integration of smaller, independent BI and analytics software services via APIs into a single, larger application or service. The use of standards such as HTML5 is making broader BI and analytics functionality accessible on mobile devices, which can be important for frontline users in operations who do not have native BI and analytics tools on their devices.

When evaluating embedded BI and analytics in packaged applications and services, organizations should examine whether open standards are being employed to allow for easier integration, extension, and revision. Standards help reduce the need for custom coding and can make it easier to update components without having to rewrite entire systems.

Context is a critical advantage of embedded BI and analytics. Users can employ the functionality within the context of an application or service dedicated to supporting their roles, their responsibilities, and the types of data-driven decisions they need to make. This contextualization can be critical to successfully operationalizing BI and analytics. Features such as the ability to burst reports to frontline personnel and develop and deploy dashboards quickly and widely can help operational users make informed decisions based on current data. However, given the growing demand for analytics capabilities, organizations should evaluate whether solutions enable users to do more than consume reports; embedded analytics should enable visual data interaction so that users can answer “why” questions and spot important trends and patterns.

NUMBER FOUR

STREAMLINE DATA PREPARATION FOR ADAPTABILITY AND INTEGRATION

To advance faster with BI and analytics, users need better solutions for data preparation. TDWI research finds that users in most organizations are mired in long, tedious data preparation processes that take up too much time—time that would be better spent on actual analysis.

Data preparation covers processes that begin with raw data ingestion and collection and move through refinement, enrichment, transformation, and quality improvement. In traditional BI environments, the goal is to provide consistent, complete, and usually relationally structured data that accords with a data model. Users primarily need structured data, but increasingly, many users also want to analyze raw or semistructured data that requires different preparation processes. Data preparation solutions must provide flexibility to adapt to a variety of user requirements.

However, adding flexibility to data preparation often means more manual effort will be required. IT-driven data preparation processes are frequently hardened so they efficiently supply data for BI and the data warehouse. If users want to do something different, they frequently need to do it themselves, using spreadsheets or other labor-intensive methods. For some analytics, users and analysts may want to work with raw data and bypass standard data preparation processes for profiling, quality improvement, and transformation.

Additionally, the rise in analytics puts pressure on IT data preparation processes because analytics processes are often iterative, involving going back and forth between analysis and data preparation. Users and analysts will build models or scripts, apply them to data, examine the results, and then repeat the process. Thus, to support analytics, data preparation processes need to be adaptable for a variety of analytics workflows.

Organizations should evaluate solutions that better integrate front-end BI and analytics workflows with data preparation so that users can prepare, integrate, and transform data as needed. The alternative is usually to drop out of the BI and analytics tools and into separate data preparation tool environments or into manual effort. When integrated into a single solution or environment, the self-service experience is more complete, enabling users to incorporate, blend, and transform data when their analytics requirements call for it.

As organizations evaluate data preparation solutions that offer more flexibility, organizations need to make sure that their data infrastructure, including data modeling, metadata management, and data integration (including connectors and federated middleware), can support the new variety in workflows and preparation styles.

 NUMBER FIVE

SCALE AND EXPAND INFRASTRUCTURE FOR SELF-SERVICE BI AND ANALYTICS

Progress toward business value with BI and analytics can stall if organizations do not plan for how they will scale and expand resources. Self-service BI and analytics bring higher demands for data access. With increased interest in analytics, some “fixed state” objects (such as static dashboards and reports) will not satisfy users who need to view and analyze data from different perspectives. This will require organizations to scale up to handle more intensive data interaction than standard enterprise BI reporting.

As users adopt self-service, they will put added pressure on query performance and data availability. Workloads that in traditional enterprise BI environments would be run in off hours in batch when computers and IT staff are available may now need to be run sooner and more frequently. Rather than overtax existing IT resources, many organizations will need to adjust their data architecture to put data closer to users so that they can, in self-service fashion, access, prepare, integrate, and analyze it on their own.

Technology is advancing to help organizations address intensive user activity. Here are three areas that should be part of a modern strategy:

Cloud computing. TDWI research finds that a significant number of enterprises are planning to implement self-service BI and analytics through cloud computing.¹ Cloud can help organizations bend down the usually steep cost curve associated with scaling up computing power and storage. Leading self-service BI and analytics offerings today run in the cloud or as SaaS solutions, enabling organizations to avoid the time and cost of setting up on-premises systems. Cloud computing may not fit all situations, particularly where for security reasons data has to stay on premises. For this reason, many organizations need to plan for multiplatform architectures that combine cloud and on-premises computing.

In-memory computing. This option reduces I/O and takes advantage of the increasingly large memory space on servers to expand the amount of data available for self-service BI and analytics. However, moving data into large memory is not always the appropriate approach; most users still need to query live source data. In addition, pushing data into memory raises IT administrative issues, such as how often to refresh the data and how to manage data volume, because memory, although larger, is still finite. Thus, in-memory computing is best as part of a broader, balanced strategy.

In-database computing. Rather than extract and load data into a different platform for analytics, some organizations choose to run processes where the data resides in the database. In this way, they can take advantage of technologies specialized for analytics on large data volumes, such as columnar databases including Amazon Redshift, HPE Vertica, and Google BigQuery.

To plan an architecture that affords scalability and expansion, organizations should evaluate these options. Key issues include how to handle new self-service BI and analytics workloads as well as detailing which are priorities for supporting daily decision making.

 NUMBER SIX

MANAGE SELF-SERVICE TO BALANCE GOVERNANCE AND ADAPTABILITY

Governance is vital as users expand data access and analysis. At first glance, demands for governance would appear at odds with those for flexibility and adaptability. Under pressure to apply data insights as soon as possible, users could regard the imposition of rules and policies governing how they can use data as an obstacle. Indeed, in a recent TDWI research study, although most survey respondents acknowledged the need for governance, about half of respondents said users in their organizations regard governance as a hindrance to improving time to value with BI and analytics. Only about 1 in 10 said users see governance as helpful.

Yet governance is important not only to protect sensitive data but for improving user productivity and satisfaction in the long run. Together with data stewardship, governance can help users avoid mistakes, including wasted effort when projects have to be stopped or significantly altered because they violate industry regulations or internal policies. When clearly stated, governance rules and policies can reduce confusion about who has rights to access certain data with respect to regulations, data security policies, and other industry or internal rules. Although governance “guardrails” might restrain some ideas for analyzing data and making insights actionable, knowledge of the rules in the early stages of projects will enable business users to avoid problems later.

IT is commonly in charge of governance, but as self-service technologies spread in organizations, it is important that business stakeholders share responsibility. Organizations should update their governance procedures so they account for growth in self-service BI and analytics. Establishing a committee composed of business and IT leaders is a good way to facilitate collaboration on governance. The committee should include data security managers to improve alignment between governance and security policies. Corporate leadership should champion data governance so all personnel understand its importance.

¹ See *TDWI Best Practices Report: BI, Analytics, and the Cloud* (2016), online at tdwi.org/bpreports.

Data stewardship and curation procedures can be integrated with governance to establish a “managed” self-service BI and analytics approach. The aim is to balance technology flexibility with the organization’s imperatives for governing sensitive data and avoiding the chaos of users working with inconsistent data. Data stewards can mentor users, helping them understand the quality and characteristics of their data sources and whether they are relevant for the types of analytics they are undertaking. Stewards can work with IT to curate data for users, including setting up cloud-based sandboxes for data discovery and experimentation.

A managed and governed approach to self-service BI and analytics will enable users to be productive. It is also key to building the organization’s culture of responsibility for protecting sensitive data in analytics processes.

A FINAL WORD

By addressing the issues described in these six strategies, organizations can avoid pitfalls that can slow progress toward meeting objectives with BI and analytics. Adaptability and flexibility are key attributes of successful systems that support users’ quest for the data insights that help an enterprise respond to change.

Adaptability becomes even more important as organizations seek to use the power of data insights to improve decision making at all levels by different types of users. Organizations should ensure that as they deploy solutions across the enterprise, the solutions fit into the users’ context—that is, the types of decisions they need to make, their skill in using data, and how they use data insights to collaborate. This knowledge of users’ requirements and workloads will help organizations manage and govern BI and analytics appropriately and position their data infrastructure for the future.

ABOUT OUR SPONSOR



dundas.com

As one of the first providers of data visualizations for business intelligence technologies, Dundas Data Visualization is known for software that powers superior user experiences for data consumption. Dundas' software (Dundas BI) was designed to help more users, regardless of role, discover deeper insights faster, make better decisions, and achieve greater success. With Dundas, your BI experience is completely personal.

Dundas BI is an enterprise-level BI and analytics tool all in one, fully embeddable platform. With its immense built-in functionality, agile data flows adapted to users' skills, and fully open APIs, business users and analysts can run ad hoc queries, perform visual data analytics, and quickly create dashboards and reports, eliminating the need to have multiple tools to prepare, analyze, and visualize data.

Dundas BI delivers advanced data prep, interactive dashboards, operational reporting, and visual data analytics, enabling users of all types with instant access to all of their data. Complete with rich built-in capabilities, advanced customization options, a built-in scripting engine, and open API, Dundas BI's users can quickly deliver analytical solutions that are easily adapted to their very specific business needs.

To learn more, visit www.dundas.com.

ABOUT THE AUTHOR



David Stodder is senior director of TDWI Research for business intelligence. He focuses on providing research-based insight and best practices for organizations implementing BI, analytics, performance management, data discovery, data visualization, and related technologies and methods. He is the author of TDWI Best Practices Reports and Checklist Reports on data discovery, data visualization, customer analytics in the age of social media, BI/DW agility, mobile BI, and information management. He has chaired TDWI conferences on BI agility and big data analytics. Stodder has provided thought leadership on BI, information management, and IT management for over two decades. He has served as vice president and research director with Ventana Research, and he was the founding chief editor of *Intelligent Enterprise*, where he served as editorial director for nine years. You can reach him at dstodder@tdwi.org, [@dbstodder](https://twitter.com/dbstodder) on Twitter, and on LinkedIn at [linkedin.com/in/davidstodder](https://www.linkedin.com/in/davidstodder).

ABOUT TDWI RESEARCH

TDWI Research provides research and advice for BI professionals worldwide. Focusing exclusively on data management and analytics issues, TDWI Research teams up with industry practitioners to deliver both broad and deep understanding of the business and technical issues surrounding the deployment of business intelligence and data warehousing solutions. TDWI Research offers reports, commentary, and inquiry services via a worldwide membership program and provides custom research, benchmarking, and strategic planning services to user and vendor organizations.

ABOUT TDWI CHECKLIST REPORTS

TDWI Checklist Reports provide an overview of success factors for a specific project in business intelligence, data warehousing, analytics, or a related data management discipline. Companies may use this overview to get organized before beginning a project or to identify goals and areas of improvement for current projects.