



Ten Characteristics of a Modern Enterprise BI Tool

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Abstract

A modern enterprise business intelligence (BI) tool possesses a number of characteristics that didn't exist several years ago. Advances in hardware and software have ushered in a new wave of innovation in the BI field, transforming how vendors build and customers consume BI applications. In this article, internationally recognized BI thought leader, Wayne W. Eckerson, defines ten characteristics of a modern enterprise BI tool.

Five years ago, most definitions of enterprise BI focused on information technology (IT) requirements—scalability, manageability, reliability, availability, and security. Product features emphasized load balancing, cluster management, backup and restore, administration and monitoring, among other things. These characteristics are still critical to enterprise BI products, but they are no longer the essence.

Software has changed dramatically in the past five years and BI with it. Parallel processing, in-memory databases, open source software, and open APIs have greatly improved the speed, scalability, affordability, and functionality of modern applications. In addition, mobile applications and new Web development frameworks have reshaped application workflows and graphical interfaces, making applications faster, easier, and more fun to use.

So what does an enterprise class BI tool look like in 2016? What are its fundamental characteristics? What are its bedrock architectural tenets? Below are my candidate requirements.

1. Browser Based. Recent advances in Web development languages and frameworks have turbo-charged once slow and clunky browser-based applications, making them as fast and functional as traditional desktop or client/server applications. With HTML5, client-side Javascript frameworks (e.g. Angular JS) and lightweight API servers (e.g. Node JS, Rails or Python), modern enterprise BI tools no longer require users, authors or administrators to download and synchronize desktop software. Without desktop code to maintain, modern enterprise BI tools are much easier to deploy, scale, upgrade, and secure.

2. Multi Tenant. A multi-tenant application manages multiple BI instances in a centralized manner, consolidating far-flung BI operations without sacrificing local customizations. Tenants share application and data processing, but each gets its own data and application flavor. So instead of proliferating BI tools in every department and region, multi-tenant BI applications enable organizations to deploy and manage all instances centrally, providing huge economies of scale. It also allows corporate BI teams to lock down corporate data models that local groups can extend with impunity. (See next “Governed Discovery”).

3. Governed Discovery. Modern enterprise BI tools balance self-service and governance. They provide sandboxes for business analysts to mash together corporate and local data, publish the output to authorized users, and promote data models and applications for inclusion in the corporate standard. In addition, multi-tenant BI applications (see above) let departments spawn new instances of the corporate data model and extend it to support local requirements without breaking the linkage between the two. This allows departments to automatically inherit changes in the corporate structure while maintaining their own local views of data.

4. BI Platform. The previous generation of enterprise BI tools was content to offer a suite of products, each with a different architecture and graphical interface with separate installs. Over time, some suites turned into sets of functional modules, hiding architectural discrepancies behind a graphical veneer. In contrast, modern enterprise BI products are no longer tools; they are platforms that support a full set of analytical applications and functions running on a single, integrated architecture with common engines and a robust API. Applications range from reports, dashboards, scorecards, analysis, and discovery to data preparation, mapping, collaboration, storyboarding and advanced analytics, and in some cases, planning, consolidation, and budgeting.

5. Machine Intelligence. To make BI tools easier to use, enterprise BI vendors now add machine intelligence to their products. Machine intelligence uses tacit rules, machine learning algorithms, and cognitive technologies to recommend actions based on a user's context within an application. For casual users, machine intelligence may suggest chart types, recommend adjacent queries, or suggest next steps or actions. For power users, it may identify data types and joins when blending data or suggest analytic algorithms to apply to a specific data set. Some machine algorithms learn user preferences and behavior on the fly, making smarter recommendations over time.

6. Universal Connectivity. Modern enterprise BI tools must connect to and query an ever-widening set of data sources and applications, ideally via native APIs. Besides traditional SQL databases, modern enterprise BI tools query cloud applications and services (e.g. Salesforce.com), Hadoop and NoSQL databases, legacy systems (e.g. mainframes), and data enrichment services (e.g. demographic or geographic data). The tools query and join data across these disparate systems in real-time (e.g. federation) and correlate the display of structured and unstructured data when returning query results.

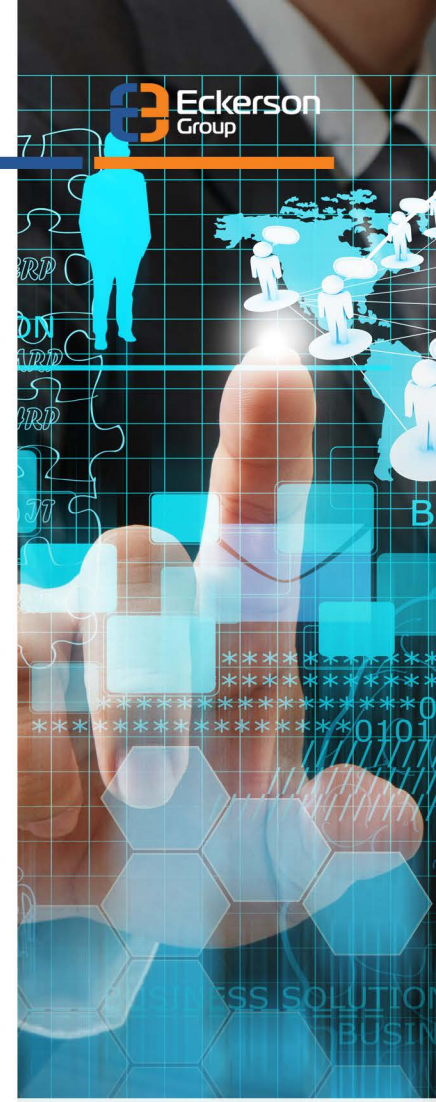


7. Search Driven. Search is an integral part of a modern enterprise BI tool, providing the starting point for user investigation. Rather than navigating folders for reports or metadata, users type words into a search box to view reports, dimensions, metrics and other objects. Type-ahead functionality lets users select or modify a search as they go. Search results deliver predefined reports and dashboards and generate queries that return results in tabular or graphical form. Best of all, BI search engines deliver results that display both structured and unstructured data.

8. Self-service Authoring. In a modern enterprise BI tool, report authoring is largely self-service, liberating business users from IT development backlogs. Casual users click, point, and hover to tailor an existing report or dashboard. Power users drag and drop report components (i.e. dimensions, metrics, prompts, filters) onto a canvass to create reports and dashboards without coding. Power users can also create custom logic—e.g., custom dimensions, hierarchies, and calculations—that they can embed in reports, share with authorized users, and reuse later. Finally, most authoring is done in place on the actual report or dashboard rather than in a separate design studio, making authoring much more accessible and intuitive.

9. Collaboration. Modern enterprise BI tools enable users to collaborate around data using a variety of social media techniques. For example, users can annotate reports, charts, tables and even individual cells in a table with comments, links and audio recordings. Colleagues can then respond to annotations with comments of their own, creating a threaded discussion to resolve an issue. Business users can also follow, rate, and like reports, people or discussions, and they can monitor all this communal activity on a personal timeline (e.g. like Facebook). Modern BI tools also provide decision-making tools, such as polls and ranked lists, and they audit user activity (via timelines and other utilities) so users can review factors that led to a particular decision. Finally, modern BI tools support publishing and storytelling features so users can easily share insights.

10. Embeddable. For BI tools to become pervasive, they must disappear. That is, BI must become an integral part of every other application, assuming the application's look and feel and exchanging functional parameters so the application and BI tool function as a single application. To support embedded BI applications, modern BI tools have a robust, open API (e.g. REST and JSON) that makes it easy for applications to call BI functions and vice versa. Modern BI tools also can easily be configured to assume the look and feel of a host application or, if desired, developers can bypass the BI tool's GUI altogether and call BI functions directly from within the host application.



Summary

These ten characteristics define the essence of a modern enterprise BI tool. This list represents a wholesale change from what I may have described ten or even five years ago. But our industry is riding the wave of revolutionary changes in hardware and software development, which are dramatically changing the way BI tools are designed, deployed and consumed.

Of course, these developments are meaningless unless business users actually use BI tools to analyze data, make decisions, and take action. To find out how to get users to adopt BI tools, whether modern or not, see **“The Holy Grail of Enterprise BI: User Adoption.”**



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