

BI Buyer's Guide:
Embedding Analytics in Your Software

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Foreword by Jen Underwood

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“Is data the new oil?”

In the digital era, data is evolving into the most sought-after resource on the planet. Every single day, 2.5 quintillion bytes of data are generated—most of which is not used.

Few organizations today maximize the economic benefits of data. Much like oil in the 18th century, data in the 21st century is a raw, untapped, invaluable asset waiting to be mined.


Turning Data into Dollars

Artificial intelligence, automation, and data monetization will further increase the value of data. The ability to refine, process, and transform that data into intelligence is crucial to every type of business. Thus, we are just beginning to witness the exploitation of data for significant competitive advantage in the digital age.

Timely analytical insights empower decision makers to optimize outcomes. Numerous studies have proven data-driven companies outperform competitors. McKinsey¹ found a 1 percent improvement in pricing provided returns up to 8.7 percent in operating profits. **What could a 1 percent improvement mean to you?**

To support data-driven organizations, software applications must deliver analytical intelligence when and where it is needed. Application teams must synchronize and infuse analytics into day-to-day processes. Identify opportunities and determine how data can be used to reinvent models or boost operations. Transparently embed intelligence into line of business applications and across new digital channels to “close the loop” between analysis and action.

¹ <http://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/using-big-data-to-make-better-pricing-decisions>



Unfortunately, most companies are still struggling with basics. They have no idea where to start or how to turn data into dollars. Empowering the masses with information while protecting data residing everywhere and complying with changing regulations has become complex.

Selecting the Right BI Platform for the Future

Savvy industry leaders are now on the hunt for modern, forward-thinking BI platforms. Sifting through hundreds of potential BI platform options—from free open-source solutions to cloud BI, traditional legacy BI, data discovery applications, and purpose-built embedded analytics—has become overwhelming.

To expedite the BI platform selection process, Logi Analytics has carefully crafted the following detailed BI Buyer's Guide. This Buyer's Guide helps organizations understand which platform types are available, clarifies questions to ask, establishes evaluation criteria, and provides suggested steps to take.

As you begin reviewing analytics solutions, keep in mind which BI capabilities are critical for the digital era. These include rich embedding of self-service analysis, write-back features for updating information as it's needed, strong workflow integration, collaboration, and mobile support. For successful embedded analytics, multi-tenancy, white-labeling, and robust data security are also essential.

No one wants to waste time or money embedding the wrong solution. To avoid making a mistake, don't get caught up in feature bake-offs or be fooled by the allure of cheap BI platforms that are known to be expensive to maintain. Lastly, try not to get distracted by dazzling features that simply don't deliver on key requirements. Refer to the Logi Analytics BI Buyer's Guide as a compass guiding you throughout your journey to select the best analytics platform.

Part 1: Comparing BI Business Models

The consumer market has made technology instantly accessible, but for software companies, the buying process can still feel Byzantine.

To help you navigate this complicated landscape, we'll start by breaking down the analytics market into six distinct business models. Each model has benefits and drawbacks, as outlined here.

- Free BI and Analytics
- Open-Source Analytics
- Cloud BI
- Traditional Legacy BI
- Data Discovery Apps
- Purpose-Built Analytics

Free BI and Analytics

Are there BI solutions out there—free and ready for download—that can get a company squared away with business intelligence? Yes. Some of them are truly free, and some are easy to connect, don't require much maintenance, and are robust enough to give the company the tangible benefits of BI. For this discussion, we will only consider solutions that have these advantages. But project managers should note that while some companies may tout themselves as "free," they in fact offer only a very basic free product that hooks customers and eventually comes with additional charges.

"For businesses, the analytics buying process can still feel Byzantine."

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Benefits

A good free BI solution has many advantages. First of all, it requires no upfront costs and isn't resource-intensive to build, use, and maintain. As far as connection, it links to traditional and nontraditional data sources, such as databases, web services, and flat files. And it will all work right out of the box.

Some free BI solutions are web-based, offer embedding options to fit into other software solutions or applications, and are relatively robust. When used to their fullest potential, they have the ability to empower a handful of users to report on and analyze data in a reliable, efficient way—giving a small company the chance to become more competitive using analytics. Some users may only need a few key features to become more effective in their tasks—for instance, tabular, cross-tab, and free-style reports; drill-down and drill-through capabilities; rich visualization features; and the ability to export reports to common formats such as Excel, CSV, Word, and HTML.

Drawbacks

Still, even good free BI solutions have some drawbacks. If the alternatives are no BI at all or investing time, resources, and cash into a risky project, then free, web-based BI is the proverbial no-brainer. You may not have the latest dashboarding tools at your disposal—complex data analysis, robust user-driven ad-hoc reporting, and OLAP or advanced visualization tools like heat maps, to name a few—but as far as the basics go, you will be covered.

Open-Source Analytics

With commercial open-source BI, the vendor takes a product that was created in the open-source community and makes it their own so they can market it. Since by definition an open-source product cannot be sold, commercial open-source vendors make money through services, support, and add-ons they have built themselves. So although they are not selling the core product, they are still selling something.

Benefits

One benefit of a pure open-source model is the flexibility it offers for customization—although this comes with a substantial flip side, as outlined below. Another initial lure of working with a commercial open-source vendor is the low cost of entry, since the product is ostensibly free.

Drawbacks

In an open-source model, buyers have access to the source code, so their teams can add, modify, or delete anything they want. But as soon as they deviate from the source, clients have two options. Either they become active participants in the community (submitting their changes for everyone else to use) or they have to move further away from the core and hope to avoid any major landmines that they ultimately need to fix themselves.

The services and support that commercial open-source vendors provide is essential to helping clients get started. However, once clients go down this road, they start to face the challenges described above (they've deviated from the source), and may become even more dependent on the vendor for services, support, and add-ons.

Another negative is that there's no real accountability if something goes wrong. Who do you turn to if there's a problem with the product? Can you go back to the community to get the bug fixed? Possibly, but a resolution there may take a while. Can you go back to the vendor? Perhaps—but they may also be waiting for the same fix from the open-source community.

This type of bottleneck happens frequently in the commercial open-source market: The same bug exists within the commercial open-source as it does in the main open-source project. Customers can't get their situations resolved by the vendor, because the vendor is waiting for the community to fix the problem.

The fact that services and add-ons still require payment, plus the uncertainty of how the project will be supported in case something goes wrong, makes open-source BI risky.

Cloud BI

Cloud BI (as well as software as a service or SaaS) is a relatively new model that has gained attention in recent years.

Benefits

Cloud BI works by offering some of the benefits of analytics without the hassles of hosting an application in house. The vendor keeps, hosts, and manages the application, while the client uses and pays for the application on-demand online. A host of companies have specialized in cloud business intelligence solutions or components. Like open-source BI, cloud has become a viable alternative to more traditional models.

Drawbacks

Despite high expectations, Cloud BI has failed to gain significant traction due to a few drawbacks. First, the majority of cloud BI apps are targeted for neither smaller companies nor larger ones. The smaller company may choose free BI instead—let's remember that cloud BI is not free—while the larger ones might prefer to deal with their existing legacy systems and on-premise data by acquiring, refining, and maintaining their own in-house BI applications.

Then, to quote analyst Boris Evelson: "BI is still an art much more than a science. Whether I'm hosting [BI] somewhere in the cloud or doing it in-house, I'm still going to go through exactly the same difficulties. And as long as I'm doing that, why would I want to release—or lose control over—my BI installation to a third-party vendor?"

And lastly, there is the issue of safety. Putting critical data and sensitive information in someone else's hands and outside of the company's own firewalls, as is the case for a cloud-based solution, is something not all businesses are willing to do.

Traditional Legacy BI

Traditional BI tools were originally built to service structured, repetitive tasks. These were unchanging decisions or manual processes with static requirements where the benefits were primarily measured in increased efficiency.

Benefits

By definition, traditional legacy BI is ill suited to all but the largest companies. It grew out of the needs, budgets, and timelines of blue-chip companies solving routine problems—tasks like basic financial reporting—that were repetitive and had static requirements. Unsurprisingly, the architecture of these traditional BI tools grew to mirror the scope of their tasks: highly structured and rigid.

Drawbacks

The first negative aspect of traditional BI solutions is the huge expense associated with buying, implementing, maintaining, and upgrading them.

Beyond that, the mergers and acquisitions that many legacy companies have undergone mean that most of their offerings are technologically heterogeneous (at best) and uncertain (at worst). Of the many disparate BI products offered by some of the legacy vendors, which ones use the same technological platform? Which ones force the client's IT department to implement, learn, and maintain products borne out of radically different philosophies? And most importantly, which ones will the vendor still support next year—and how can clients know this before they buy?

Another drawback is that the prevalent licensing model for legacy BI is user-based. This means that if the company wants BI to be truly pervasive—as it should be—there will be a substantial cost.

Data Discovery Apps

Data discovery apps help companies uncover insights from information. Advanced data profiling techniques allow business users to make sense of the data, providing recommendations and prioritizations to help filter out the noise and make it as easy as possible to discover insights.

Benefits

Data discovery apps typically work out of the box, requiring minimal time and effort up front. These tools are built to solve structured, repetitive tasks that don't often change. They're ideal for a small number of basic users with static requirements.

Drawbacks

Unfortunately, data discovery tools make poor enterprise analytics solutions. As more and more people use them, the need for IT security and governance increases exponentially. And while data discovery tools are very easy to use, they don't provide the security of enterprise solutions.

These solutions also tend to be siloed from existing workflows, which hinders their ability to help users across an organization share information with one another.

Lastly, data discovery apps are incredibly expensive to scale over time. Since they're built for just a few users and a handful of use cases, these solutions often cannot keep up with the company's changing needs.

Purpose-Built Analytics

Perhaps the best fit for the majority of companies today is purpose-built analytics. The main differences between this model and those previously discussed are:

- + Purpose-built solutions offer a wide range of customization options that help companies deliver analytics in the context of the applications customers already use. They make it easy to match the look, feel, and user experience of existing apps.
- + Software vendors are able to tailor self-service capabilities to their customers' unique roles and skills—helping increase user adoption and improve the stickiness of their apps.
- + Purpose-built solutions can be infused deeper than most other analytics products. They integrate seamlessly with your existing security model, workflows, and user experiences.

Benefits

The advantages of newer, purpose-built BI solutions begin with the ease of getting started. From pricing to connection to setup, these solutions can save companies time and money. They do not require multiple consulting trips, and they can easily connect to the most common data sources—from databases to web services to flat files.

In some cases, vendors offer free trials of their solutions. This enables decision-makers to test the solution with their company's own data and evaluate it against the backdrop of their own technological architecture and real-life issues.

Purpose-built analytics solutions are also easy to use. Solutions that were created to run on the web (not adaptations) have the intuitive interface and navigability of the Internet. This is advantageous to both the report developer—who can prepare feature-rich, dynamic reports with little coding and using

a wizard-driven development approach—and to the end user, who will find reporting and analysis intuitive.

In turn, adoption will naturally increase. And if the solution is adopted enthusiastically by as many customers as possible, decision-making becomes more efficient and (ultimately) the app becomes more competitive.

Other factors that boost user adoption include the capability for purpose-built analytics to be tailored to different roles and skill levels, and to be embedded deeply into existing apps and workflows. The more closely you're able to match customers' needs with a solution, and the more seamlessly you can embed that experience in the apps they use, the more likely they'll be to adopt that solution.

And by making the experience seamless—infusing analytics within the apps people already use, and white-labeling the tools to match the current look and feel—you'll see users naturally gravitate toward the analytics tools you've provided.

Another benefit is the scalable nature of these solutions. These BI vendors offer solutions that can be customized to your customers' needs, both today and in the future. In this sense, the components of a good platform become points along your company's growth in customer size and revenue—meaning you can deliver the analytics customers need now, but can also add more capabilities as needs change.

Dynamic, purpose-built BI tools are more powerful and interactive than many other solutions on the market. Features include interactive dashboards, powerful visualization tools like heat maps and GIS maps with drill-down and drill-through capabilities, animated charts and graphs, intuitive OLAP analysis, and user-driven ad-hoc reporting.

Lastly, purpose-built BI platforms tend to be a good value. This point may seem intuitive—but in fact it's easily missed. Value is the ratio between benefits gained compared to effort required. Many BI projects fail because they don't ultimately offer strategic value, or because they require too much effort for too few benefits.

The value of a purpose-built BI solution comes when it helps a company reach strategic goals with less effort—by making your products more engaging, increasing revenue, and improving customer loyalty.

Drawbacks

Purpose-built analytics do come with a few hurdles. These solutions don't work 100 percent out of the box, and they require more upfront costs and effort to take full advantage of the products. Companies will need to allocate IT and development resources to successfully get started, which means organizations that have threadbare IT departments may be better off with another solution.

The result of this time and effort, however, will be an extremely flexible application you can reallocate to improve future apps quickly and easily. This means companies that need more than one instance to meet different customer needs will see lower upgrade costs and maintenance costs over time. Nonetheless, if your organization only needs one analytics app to do a small list of tasks, these high short-term costs may not lead to significant long-term savings.



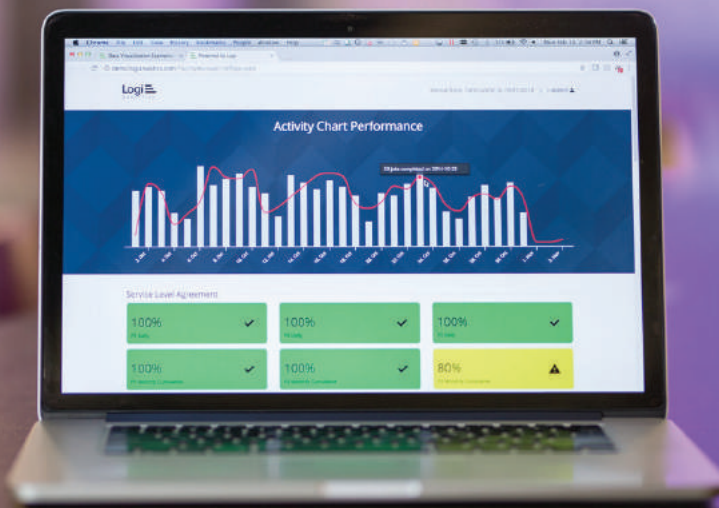
Part 2: Which Functions Fit Your Customers?

The range of BI features and functions available today means that some will be a better fit for your customers than others. Consider not only what your customers need (and are willing to pay for) today, but also what will satisfy them and win over new customers for years to come.

Successful embedded analytics projects are not just appealing depictions of data. They generate insights and actions. Including must-have features as well as sophisticated capabilities will help you monetize your embedded analytics now and into the future.

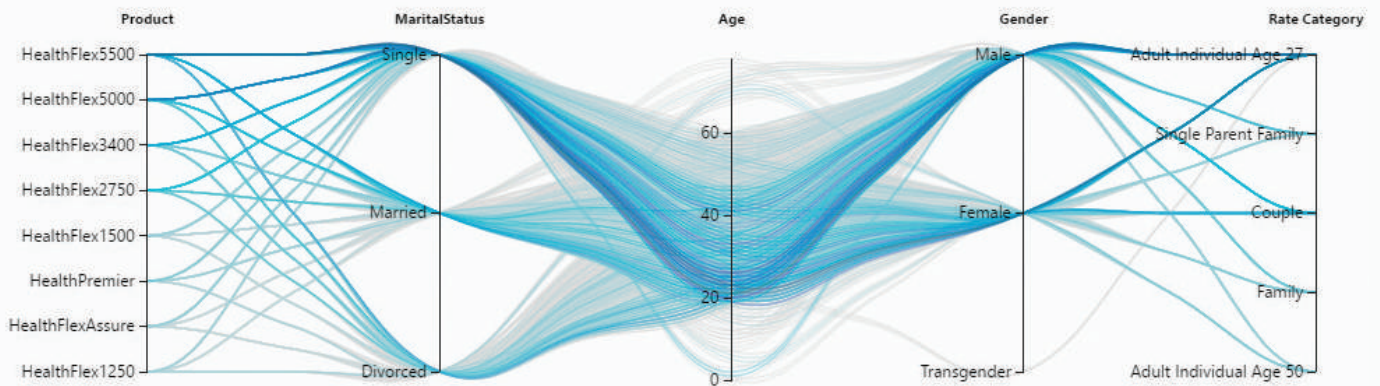
To determine which BI functionalities to provide, first consider the most common analytics capabilities on the market.

Common Capabilities of Analytic Applications



Dashboards are single screens that display critical pieces of information in panels, giving end users a unified view of their data. Web-based dashboards offer customization options so creators can match the user interface to existing branding or current application interfaces. They also let users drill down into more specific data or drill through to relevant reports.

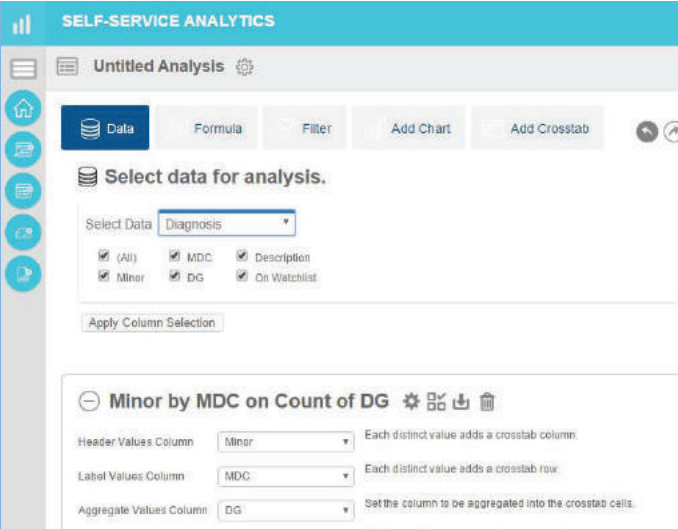
Demographics



Data Visualizations, such as charts, gauges, heat maps, and geographic maps, enable users to quickly draw conclusions and monitor key performance indicators. These can be presented in the context of a single chart or in a collection of visualizations in a dashboard, and can be customized to meet different users' needs. Cutting-edge visualizations show high-level summaries of important data, presenting information in clearly defined spaces using shape, size, and color to provide context and meaning to users, who can identify trends at a single glance. Using flexible libraries like D3, you can create web-based visualizations that are dynamic, interactive, and visually stunning.

Static and interactive reports provide tabular views of data with or without parameters and scheduling capabilities, often with numerical figures and grouped into categories. Interactivity, including dropdowns and filters, enables users to view specific slices of data.





Self-service analytics and ad-hoc querying enables users to ask their own questions by exploring a set of data to create their own dashboards and reports.

Benchmarking allows users to compare themselves against industry standards and identify areas for improvement. Some cloud applications can even create value by providing new benchmarks based on data collected across the customer base.



Mobile reporting capabilities, made available on users' mobile devices, ensure accurate visual display of information as well as compatibility with mobile features like touch input and interactive functionality.



Visual workflows, write-backs, and processes incorporate transactional capabilities directly within the analytic user interface. Examples include charts embedded on an existing application page to guide user behavior; a report with editable data cells where users can update the displayed data; and a visualization with selectable regions (on a map or area of a scatter plot) allowing the user to perform an action on the selected records.



Get tips on how to monetize your embedded analytics offerings in the ebook, *Monetizing Analytics Features: Why Data Visualizations Will Never Be Enough.*

Let Your Customers Drive Analytics Capabilities

Which functionalities should you provide? To determine this, you must first understand the [business intelligence users](#) you need to serve.

Most customers fall across a broad range. These include basic BI users who want easy-to-use, interactive dashboards; data-savvy users who require drill-down analysis; and power users who demand visual data discovery that empowers them to answer their own questions in real time. For instance, users in high-touch industries like hospitality and manufacturing will have different needs than those in highly regulated industries like insurance and financial services.

For any given company, nearly every analytics customer will fall into one of these three categories:



1. The information consumer:

The majority of analytics users fall in this category. Information consumers prefer to work with a predefined experience where they can regularly view, interact with, and personalize a preconfigured asset.

Consumers often have a standard set of questions they're trying to answer, and their needs don't change very often. Consider a sales representative who is tracking her activity levels and quota goals. Consumers could also be anyone from an executive who wants to keep an eye on his team's KPIs to a factory floor worker who needs to monitor standard metrics to make sure he's keeping pace.



2. The content creator:

A creator's self-service experience is more managed than predefined. These users want the ability to choose the data they

need and supplement those existing dashboards and reports with their own metrics.

Like consumers, creators want predetermined dashboards to help them quickly answer their most commonly asked questions. But new questions will also regularly pop up. For instance, a sales manager who wants to track team performance against annual goals may one day want to author his own personalized dashboard. These users need to be able to author new reports and make new queries of the data to answer questions quickly.



3. The data analyst:

An analyst's experience is entirely self-directed. These power users prefer to bring their own data, build their own dashboards and reports, and mine insights they can share with others.

For data analysts, the world is wide open. They may not start with predetermined questions, which frees them up to let the data tell the story. Consider a data analyst who's trying to understand what the sales closed this quarter could mean for future business opportunities.

It's important to note that this type of role comes with risks: Even if other workers have access to drag-and-drop tools, not everyone is a data analyst. An analyst interface is too complex for many users, who may become overwhelmed by the lack of structure.

For any company, analytics users fall into one of these 3 categories. What types of users do you need to serve?

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Determining the Capabilities Your Customers Need

Success in analytics requires focusing on the user experience, understanding the value analytics brings to each persona, and matching capabilities to users' needs. Answer these questions to determine what analytics capabilities are most important to your customers:

1. Who are my users?

Use the framework outlined in this chapter to identify and understand your target users as well as their roles and responsibilities. Keep in mind that these may be new users who do not currently use your application.

2. What is the value of analytics?

For each group of users, identify the problems analytics can help address, and then qualify and quantify the value analytics brings. Usually, value can be expressed as increasing revenue, reducing costs, or improving customer satisfaction.

3. How do my users map to common analytics user profiles?

Match the customers you're serving to the persona profiles outlined here. What best describes how each group needs to work with data? Are they information consumers, content creators, or data analysts?

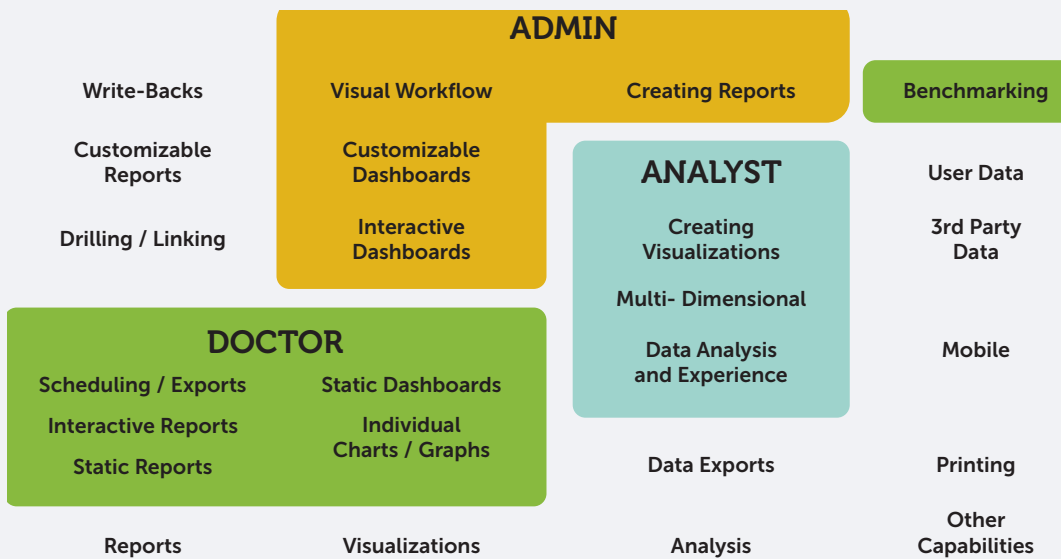
What are the 5 questions to ask before deciding on an analytics solution?

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4. What functionalities match to my customer needs?

With analytics, there's certainly a lot of functionality that can overwhelm users; this includes any of the visualizations, interactivity, and data that is displayed. But for many users, and especially for those who are just starting out, you should give them only the functionality and specific data they need to work smarter. Release more functionality and data as adoption grows and new questions arise.

Construct a set of stories demonstrating how different users may need to use analytics. Then use a capabilities map (like the one here) that shows a wide range of functionality and hone in on the capabilities you need for those particular users.



5. How should analytics be integrated?

Think about how BI capabilities will be integrated into the user experience for each of your user types. Consider other applications that [embed analytics](#) deep into the context of the application workflow. This could very well be a way to improve the user experience of your applications.



Part 3: Evaluation Criteria

Now that you have a sense of the types of BI business models and common capabilities available in the marketplace, there's another variable to contend with: vendor selection.

Choosing the right solution involves thoroughly evaluating the technology, understanding the expertise offered by the vendor, knowing how each vendor will integrate with your current infrastructure (including any existing apps, workflows, and security levels), and implementing a process to ensure success.

First, let's examine the five evaluation criteria that are critical to analytics implementations. These include both the technical and non-technical requirements that are common to most evaluations.

End-User Experience

These are the core capabilities for all the end users of your application. These may include dashboards and reports as well as the interactive and analytical functions users can perform.

Ideally, such self-service capabilities let users answer their own questions without having to involve IT. That frees up IT to work on more strategic projects rather than answering ad hoc requests. It also empowers users to be more self-sufficient.

During your evaluation, make sure the capabilities important to your project are demonstrated and understand how you will deliver and iterate upon these capabilities inside your application. These are the common self-service capabilities in the BI market today:

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
<p>The Spectrum of Self-Service Personas</p>	<p>Increase the adoption of analytics by providing a broad range of users with a tailored experience that matches their needs and skills. Users will typically fall into one or more self-service personas.</p>	<p>Information Consumers prefer a defined experience where they can access core business metrics through dashboards and reports that have been prepared for them.</p> <p>Content Creators are more knowledgeable information workers who respond to ad hoc requests for new dashboards and reports.</p> <p>Analysts need an exploratory environment to discover insights and create new metrics that drive the business forward.</p>
<p>Presentation and Information Delivery</p>	<p>Empower everyone to quickly draw conclusions, monitor key performance indicators, and obtain a complete view of the business through visualization.</p>	<p>Data Visualizations include bar charts, gauges, heat maps, spark lines, and geographic maps.</p> <p>Dashboards, both static and interactive, present multiple visualizations in a single view.</p> <p>Reports, both static and interactive, present tabular views of data.</p>
	<p>Provide an optimal user experience regardless of where and how users prefer to access information. Evaluate the compatibility of solutions across different devices and formats.</p>	<p>Web Browser: Users should be able to access all content and capabilities on standard web browsers.</p> <p>Mobile: Users should also be able to easily access and interact with analytics on mobile devices and utilize mobile features such as touch input.</p> <p>Exports: Content should be available in non-web formats for printing and offline access, such as PDF and Excel spreadsheets.</p>
<p>Interactivity and Automation</p>	<p>Create an engaging experience where users can explore the data and interact with the information presented.</p>	<p>Filtering: Users can choose the data that is important to them and get more specific in their analysis.</p> <p>Drilling: Users can dig deeper and gain greater insights into the underlying data.</p> <p>Personalization: Users choose the visualizations and reports most important to them, and re-arrange content into their preferred view.</p>
	<p>Grow user adoption by embedding analytics into everyday work.</p>	<p>Workflow Actions: Users can perform actions on selected data, such as initiating a workflow process on specific records or updating the data, without having to leave the application.</p> <p>Alerts: Users receive automated notifications when specific actions are taken or thresholds are met.</p> <p>Scheduling: Content can be scheduled for delivery on a one-time or recurring basis.</p>

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
<p>Analysis and Authoring</p>	<p>Empower users by giving them greater flexibility in their analysis and the ability to create and format the desired content on their own.</p>	<p>Data Query: Users choose the data sources, tables, and columns they are interested in—without having to write SQL.</p> <p>Data Analysis and Visualization: Users can intuitively see, understand, and visualize the data. Important capabilities include filtering data, creating new calculations and metrics, and creating visualizations.</p> <p>Dashboard and Report Authoring: Users lay out dashboards and reports and share what they've created with colleagues.</p>
	<p>Extend the value of the data in your application by providing deeper insights into business trends.</p>	<p>Benchmarking: Users can compare their performance against industry benchmarks and identify areas for improvement.</p> <p>Advanced Analytics: Provide a unique value proposition in your applications by developing and incorporating advanced (and often proprietary) statistical models into the analysis.</p>

Data Environment

The solutions you evaluate should be compatible with your current data environment, while at the same time have enough flexibility to meet future demands as your data architecture evolves. These are the diverse data requirements commonly evaluated by application providers:

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Data Sources	Leverage native connectivity optimized for the data source. Ideally, your primary data source should belong in this group.	<p>Databases such as SQL Server, Oracle, MySQL, and DB2</p> <p>Big Data including columnar/analytic data stores (e.g., Vertica, Redshift, Infobright); Hadoop (e.g., Cloudera, Hortonworks, MAPR); NoSQL (e.g., MongoDB)</p> <p>Cloud Applications such as Salesforce.com, Netsuite, MS Dynamics, and Google Analytics</p> <p>OLAP cubes for multi-dimensional analysis</p>
	Benefit from data flexibility with generic connectors when a vendor-specific connector is not available.	<p>ODBC/JDBC connectivity</p> <p>Web Services such as REST and SOAP APIs</p> <p>Files such as XLS, CSV, and XML</p>
	Enjoy ultimate data source flexibility through APIs or plug-ins to connect to uncommon or proprietary data sources.	Data APIs and Plug-Ins coded in your language of choice provide customized data access.
Data Management	Balance your needs for real-time reporting and interactive self-service analysis with a solution that enables you to connect directly to underlying data sources and cache data from transactional systems.	<p>Direct Connect: Directly query the data source to facilitate real-time reporting and leverage the analytical capabilities of the underlying data source.</p> <p>Data Caching: Unlike "direct connect," data is extracted from the underlying sources into a high-performance data store to optimize reporting and analysis from transactional systems.</p>
	Create a complete view of the data that users can easily work with by preparing the data for analysis.	Multi-Source Data Blending: Data from multiple sources is combined in a single view, metric, or visualization.

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Data Management (continued)	Create a complete view of the data that users can easily work with by preparing the data for analysis.	<p>Data transformation and enrichment: Data can be enriched for analysis. Examples include new metrics and calculated values that are frequently used, standardization of dates, aggregations, and manipulation of multi-part text (e.g., addresses).</p> <p>Metadata: Data is made more accessible to end users for self-service analysis through friendly and recognizable names for tables and columns.</p>
	Create an efficient user experience where users can immediately take action on what they see in any visualization or report.	<p>ODBC/JDBC connectivity</p> <p>Web Services such as REST and SOAP APIs</p> <p>Files such as XLS, CSV, and XML</p>
	Transform your application into a vital hub of information by incorporating data from external sources into a single consolidated view.	Data APIs and Plug-Ins coded in your language of choice provide customized data access.
	Give your application ultimate flexibility to present information by consuming data services from the analytics solution.	Data Services: The analytic solution becomes a provider of data in addition to analytic functionality. These data services produce output to be used by jQuery components, third-party charting, and other application functions.

“When buying an analytics solution, people generally ignore one of the biggest challenges of analytics: data.”



Embeddability and Customization

In order to satisfy your customers and grow revenue, the level of [embedding analytics](#) into your application or existing software should be a primary consideration. How much emphasis do you place on customization and integration capabilities compared to standard business intelligence implementations? Do you want to offer a seamless user experience within the context of an existing application? How will any new analytics features integrate with your existing security levels?

One way to look at embeddability is to focus on driving adoption. The deeper you integrate analytics into the fabric of your application, the higher your user adoption will be and the stickier your app will become. For instance, if you're a salesperson and you spend most of your time using Salesforce, you don't want to have to sign in to a different application that's siloed from your daily work just to access the data you need. Organizations need to infuse that analytic workflow within users' daily activities.

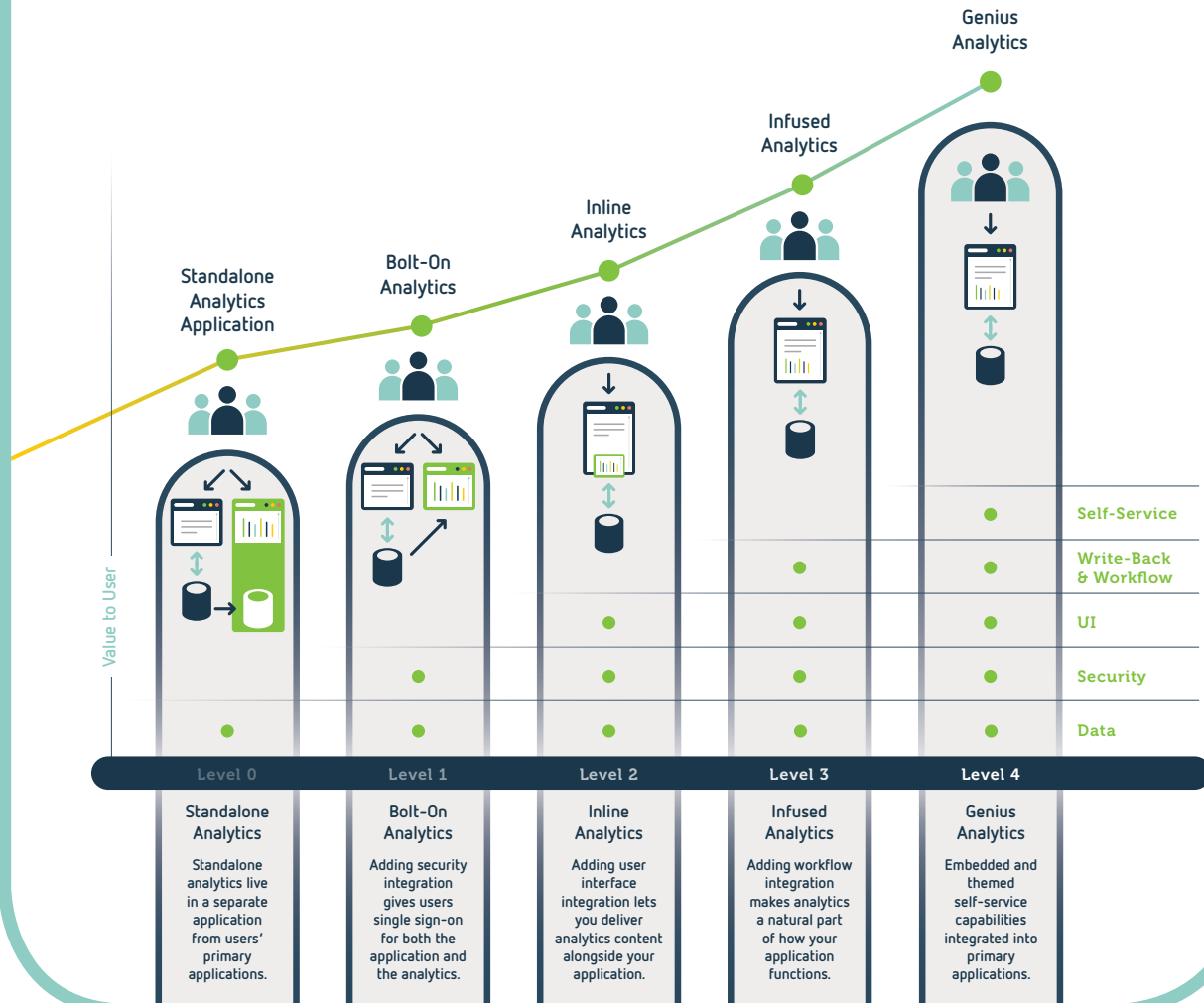
CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Security	It should be easy to adopt the security from your application to the analytics content. Scrutinize vendors on the flexibility of their security models, implementation of single sign-on, and whether data needs to be synchronized or replicated between applications.	<p>Authentication: Single sign-on should leverage the authentication of the parent application without the overhead of replicating and synchronizing user profiles in the analytics application.</p> <p>Authorization: Roles and rights established in the parent application are passed to the analytics application to ensure end users are granted the appropriate levels of access.</p> <p>Application Security: Fine-grained permissions can be applied to end-user visualizations and functionality, such as charts, reports, dashboards, input controls, and user functions.</p> <p>Data Security: Security can be applied to data sources, tables, columns, and rows; this is crucial for multi-tenant applications.</p>

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Multi-Tenancy	Accelerate development with a solution that has built-in multi-tenancy support, which allows you to create a report once and deploy for multiple customers.	Multi-Tenancy: A single application has the ability to access the data for multiple customers, whether data is stored in the same database and/or in individual databases per customer. Look for parameterization and tokenization capabilities that do not require data replication or advanced data modeling to support multi-tenancy.
User Experience	Create a truly analytic application experience by embedding analytics as a natural part of your application.	<p>White Labeling: The look and feel of embedded analytics should match your brand and application, where you maintain complete control of the user experience. The logo of your analytics provider should not be visible.</p> <p>Embedding API: Content is usually embedded via a JavaScript API; parameters can be passed from the parent application to ensure visualizations are rendered in the correct context.</p> <p>Application Linking: Users can navigate between analytic content and the parent application, and vice versa. A common example is clicking on a part of a chart to go to the specific record in the application.</p>
Workflow	Create an efficient experience where users can immediately take action on what they see in any visualization or report.	Workflow Processes: Users can initiate API calls to your application from a report or dashboard in order to perform data operations or process transactions at the moment they see the data. For example, a user could select a region of a chart and perform an action on the selected records without having to leave the visualization.
Extensibility	Competing on analytics often means delivering unique functionality. Ensure you'll be able to meet any future requirement with a solution that can be extended utilizing open-standards approaches.	<p>Custom Code: For specific presentation needs, see how custom HTML, CSS, and JavaScript can be incorporated. For specialized functionality requirements, understand how custom-compiled code can be integrated into the solution.</p> <p>Third-Party Charts: For unique charting requirements, understand how third-party charting libraries and components can be utilized and embedded alongside "out-of-the-box" visualizations.</p>

The Embedded Analytics Maturity Model

Embedded analytics strives to bring together insight and action into the same context by integrating analytics deeper and deeper within business applications and workflows. Analytics is embedded within applications in one or more of the following ways:

THE 5 LEVELS OF ANALYTICS MATURITY



Development and Deployment

Since time-to-value is so critical to the success of any BI project, having a development environment where you can create, style, embed, deploy, and iterate on analytics will enable your team to deliver the functionality your business demands.

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Development	Empower your development team with the tools to quickly create and iterate on analytics capabilities.	<p>Rapid Development: Evaluate the tools for how quickly you can create content, fine-tune how the content looks and behaves, and make changes to what you've done. Understand how to make both small changes to functionality as well as mass changes that affect the entire application.</p> <p>Out-of-the-Box Functionality: A rich set of capabilities—visualizations, self-service analysis, input controls, and UI themes—will accelerate your product development.</p> <p>Sample Applications: Access to working applications will accelerate the learning process and adoption of best practices.</p> <p>Collaborative Development: Analytics should integrate into your source control systems for version control and collaborative development</p>
Development	Quickly deploy and scale an implementation that is aligned with your current technology stack. Be assured that you have the flexibility to shift as your technical environment evolves.	<p>Web Architecture: The best solution fits into your web architecture, minimizing the need to deploy proprietary technology, and utilizes well-known techniques to scale the implementation.</p> <p>Deployment Style: The greatest flexibility comes from solutions that can easily be deployed on premise at customer sites, hosted in your data center, and made available in the cloud such as Amazon Web Services and Microsoft Azure.</p>

Licensing, Services, and Company Expertise

Choosing the right partner is not just about the technology. It's also about finding the level of expertise you require for training, support, and services—as well as agreeing on the business terms that ensure shared success—to get you to the finish line and beyond.

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
Licensing	Software licensing terms should align the vendor with the value you provide to your customers.	Licensing: Terms of the license can depend on a variety of factors, including number of users/customers, servers, usage, and whether you are embedding into a commercial product. Be sure the terms make business sense over the short and long runs.
Services	Completing your project on time and in the right way can require resources outside your team; take comfort from a full range of services options even if you do not employ them.	<p>Pre-Sales Technical Support: Leverage pre-sales resources to fully evaluate solutions; this experience will give you an indication of the vendor's commitment to you as a customer.</p> <p>Professional Services: Whether you simply need to augment your staff with a consultant or require a whole team to complete a large scope of work, evaluate the range of professional services offered and the extent of the partner network.</p> <p>Training: Virtual and instructor-led training options will bring your development team up to speed quickly and help them gain a firm understanding of best practices.</p>
Customer Success	Vendors should supply a process that maps your path to success and provide a wide array of resources to address any issues along the way.	<p>Onboarding: Look for a process that quickly ramps up your team on the solution, aligns resources so you have a clear path to success, and sets milestones for completing each phase in the project plan.</p> <p>Account Management: Expect dedicated managers who proactively oversee your account, keep you updated on the latest product news and trends, and can be relied upon to handle your questions.</p> <p>Documentation: The quality of product documentation is another sign of a vendor's commitment to your success, so read carefully.</p>

CATEGORY	STRATEGIC OBJECTIVE	REQUIREMENT
<p>Customer Success (continued)</p>	<p>Vendors should supply a process that maps your path to success and provide a wide array of resources to address any issues along the way.</p>	<p>Support: A combination of live and self-service support options backed by experienced professionals should be available to help you work through any technical question. Service-level agreements should clearly set expectations for response times.</p> <p>Community: An active user community can lend peer support and share valuable best practices so you can benefit from the experience of others.</p>
<p>Expertise</p>	<p>Leverage the vendor's experience and commitment to making you and others like you successful.</p>	<p>Company Expertise: Inquire about the vendor's history with analytics and the resources dedicated to partnering with software providers (OEMs).</p> <p>Product Roadmap: Inquire about future product releases that will benefit you and your customers.</p> <p>References: Ask to speak to existing customers that are similar to your own business.</p>



Part 4: Evaluation and Decision-Making

Now that we've established the criteria for evaluating analytics vendors, let's look at how to make the best decision for your business.

1. Determine Your Goals

To get where you want to go, write it down. Statistically speaking, you increase your likelihood for success simply by putting your goals on paper.

Draw from the strategic benefits we discussed earlier:

- Quantifiable metrics may include increasing revenue, increasing user adoption, or improving customer retention.
- Soft metrics may include improving the user experience, creating a competitive differentiator, or increasing customer satisfaction.

2. Establish the Timeline

Identify the steps you'll take to reach your goals. Ask yourself, "When do I want to..."

- Begin the selection process?
- Have detailed vendor presentations and demos?
- Finish a proof of concept?
- Make my final decision?
- Start development?
- Release product?

3. Assemble the Team

Determine the stakeholders who need to be involved. Who is going to care about analytics internally (your executive team, product management, lead developers) and externally (your key customers, customer advisory board)? Build the business case collectively to secure buy-in to move forward.

4. Identify Requirements

Review your technical and non-technical requirements, using the previous pages as a guide to rank and weigh their importance. Research your competitors and talk to your customers to develop a firm understanding of the capabilities you want to add to your application.

Take the functional scenarios that describe how end users will work with analytics and what they will be able to accomplish, and turn those into technical requirements. Consider who will use the third-party products internally. Understand their skill sets and identify any potential resource gaps as you move into the evaluation phase.

5. Research Potential Vendors

Assign a point person to research potential vendors and evaluate whether their functionalities match your requirements. To create your initial vendor list, consult independent industry resources such as the [Gartner Critical Capabilities for BI and Analytics Platforms](#) report and the [Dresner Advisory Services Embedded Business Intelligence Market Study](#). Of course, software providers should specifically look for vendors who specialize in the OEM market.

To confirm a basic fit, attend product demonstrations by each vendor. Discuss your requirements and ask each one to demonstrate how they would deliver your specific processes and scenarios. Ask every question you can think of and make sure the vendors show you the functionality they promise. Confirm ballpark pricing to move forward.

Evaluate each vendor's ability to make you successful during the implementation process through access to best practices, community, consulting, support, and training.

Avoid a feature bake-off. Instead, focus on the requirements you've already identified and try not to be dazzled by features that don't deliver on your criteria. Of course, during your search process you may update your goals as you learn what's possible. Just remember to stick to the features that will provide value to your users—and that you can really envision your workers leveraging.

Analytics: More Than Just Pretty Pictures

During your evaluation process, it can be easy to get lost among a dizzying array of charts and graphs. Don't lose sight of what's important: Ultimately, you want to bring the most value to your application and your customers.

- **Embeddability** is how tightly you'll integrate analytics into the overall user experience, the existing application security, and the application workflow.
- **Customization** is your ability to white-label and control the look and feel of the application to make it your own, and tailor the functionality so every user has access to the capabilities they need.
- **Extensibility** gives you the ultimate flexibility to create a unique application experience so you will stand out from the crowd, as well as the ability to future-proof your solution so you can tackle any new requirement.

6. Complete Technical Evaluations with a Select Few

Narrow down your list to the top two or three vendors and begin a structured evaluation process with each one. This is where you'll define a proof of concept and establish clear-cut guidelines for what you want to accomplish within a reasonable timeframe of, say, 30 days.

The amount of interaction you have with each vendor is up to you. This can range from an assisted trial, in which support is generally available if you run into issues, to a true structured evaluation, in which you and the vendor are building a proof of concept together.

Always implement the proof of concept in a technical environment that is as close to the production environment as possible. That means it should be connected to your data sources and integrated with your security. If

you host a SaaS application in the cloud, do not simply evaluate desktop tools or run analysis off a cleansed spreadsheet—unless that's what you expect your customers to do.

At the end of the evaluation, present the output to your stakeholders to get feedback and validate your direction.

7. Talk to References

Now it's time to find out if your vendor can actually make you successful. Ask for references. Solicit feedback from others in your personal and social networks. Look for references that are similar to your organization with a comparable size, industry, use case, and so on.

Find out whether your situation is similar to that of others. Don't just ask whether they're happy with the vendor; really drill into the functionality the vendor has delivered, the nature of vendor support and training, the duration of implementation, and any roadblocks they've encountered. Examine how the vendor handled any problems or issues.

8. Select a Vendor and Get Started

It's go time! Choose the vendor you are most confident will be a partner in reaching your goals. Of course, you'll have to compare and negotiate terms and conditions, but look beyond the software to the vendor that gives you the highest chance of success.

Make sure your vendor has the resources to help you, including documentation for training and best practices and samples of dashboards or applications that you can leverage. Ask your vendor who your dedicated support person is and whether they offer ongoing training. The best BI vendors will also have a robust community: public forums, user groups, and user conferences that support you over the long term. Even if you don't need the help today, you'll appreciate being able to test ideas and leverage best practices as your needs evolve.

Get training for anyone in your company who will be using the platform to create analytics applications. Create your first set of reports. Work with your vendor's enablement and consulting teams for best practices.

9. Monitor, Adapt and Optimize

There's a lot that can be said here, given the endless possibilities that come from using analytics. But here are a few tips for this ongoing phase of the BI buying process:

- Invest in the training you need to be successful. Even if this training incurs a cost, that's a small price to pay for your team to be up to date on any product changes.
- After three to six months, do a check-up and consider reengaging with your vendor's services. Evaluate additional services that could take you to the next level.
- Engage with your vendor's community to learn and share best practices. While you're at it, suggest ideas for new features.



BI Buyer's Guide: Checklist for Vendor Evaluation

For a quick and dirty version of this process, use this one-page checklist for summarizing evaluation criteria:

CHECKLIST FOR VENDOR EVALUATION

Criteria	Description	Our Requirements	Level of Need	Provided by Vendor?
White Labeling	Look and feel matches existing brand			
Multi-Tenancy	Allows you to create a report once and run it with multiple customers			
Security	Authentication, authorization, application security, and data security. Look also for a flexible security model and whether data needs to be synchronized or replicated between applications.			
Interactivity	Filtering, drilling, and personalization.			
Tech Support	During the pre-sale process, note the care the vendor provides. This will be a good measure of how tech support might be after the sale.			

Conclusion

When BI disappears into the fabric of your application, it opens up opportunities to grow revenue, satisfy customers, and get ahead of the competition. This means finding the right analytics solution is paramount.

The good news? The market has evolved, offering a range of BI solutions that solve specific needs and support a range of users.

But as with anything else, the more choices we have, the harder it becomes to make sense of it all.

To assess modern BI solutions, first specify your product and market requirements. Then consider the users you need to support and weigh the following key factors:

- 1. Embeddability:** Consider how tightly analytics will be integrated into the user experience, existing application security, and workflows.
- 2. Customization:** Will you be able to white-label and customize the look and feel of the application to make it your own? Are you able to tailor the functionality so every user gets the specific insights they need?
- 3. Extensibility:** Will you have the flexibility to create data-rich, unique apps your customers love? Will you have a future-proof solution so you can keep up with new requirements?

In the end, the best solution will be the one that meets your users' needs—and the one that can scale as your business evolves in the coming years.

“The more BI choices we have, the harder it becomes to make sense of it all.”

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Appendix:

Glossary of Common Analytics Definitions

Embedded analytics vs. business intelligence: Embedded analytics is the integration of business intelligence tools and capabilities into business software. Business intelligence (BI) refers to a number of software applications that are employed to analyze raw data.

Self-service analytics: Such data analytics let business users access and work with corporate data even if they lack knowledge of statistical analysis, business intelligence, or data science.

Embedded analytics: The integration of BI tools into other apps and software.

Operational intelligence: Real-time dynamic business analytics that provides visibility into data.

Agile BI: A flexible, scalable architecture that embraces rapid, iterative development and the commoditization of data storage. This agile architecture allows organizations to quickly adapt to changing business requirements while reducing total cost of ownership.

Data discovery: The capability to uncover insights from information. Data discovery is revolutionizing how people work with data. Instead of relying on data scientists as users, today's BI applications empower anyone to be an analyst.

Infused analytics: The deepest form of embedding. Here, analytics is infused as a natural part of the application. It is embedded within user workflows and becomes a core part of the overall user experience. The infused analytics model is for application providers who want to position analytics as a core capability by bringing together insight and action into the same context. It is correlated with greater realization of strategic benefits to the organization.

Multi-tenancy: A software architecture in which a single application serves multiple customers (or tenants). Multi-tenancy gives companies the ability to create an application once and deploy it to many customers.

Predictive analytics: A business intelligence technology that produces a predictive score to inform the actions customers should take. It's an area of data mining that is related to the overall prediction of future probabilities and trends.

Visual analytics: Presents data in a way that is understandable and easy to digest. Visual analytics applications feature intuitive visualizations and charts that enable users to quickly uncover key patterns and make informed decisions.

White labeling: The ability to make embedded analytics look and feel like your own application. When it comes to BI user interfaces, white labeling is usually a top requirement to ensure the analytics solution matches the existing application, company, and brand. Good white labeling can increase user adoption of BI applications.

