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Essential features to look for in a good Business Intelligence solution

Introduction

Business Intelligence (BI) solutions come in all shapes and sizes. Some emphasize architecture, while others tout their flashy interface. Some cost hundreds of thousands of dollars, while others cost hundreds.

With all of these options, how do you separate the good from the bad?

The first sign of a good Business Intelligence solution: Evolution. How has the software evolved since its release? If left alone, even

Image Credit: PublicDomainPictures via pixabay cc

the most advanced BI solution becomes outdated in just a few short years. A good BI solution receives constant enhancements, and therefore, always remains current with the latest technology and trends.

The next sign of a good BI solution: A broad set of features. Which features come standard with the software? Every good Business Intelligence solution must include certain essential features. This guide outlines which features and capabilities make a good BI solution, and separates each feature into 4 different categories. Click the options below to jump to a specific section:

- **High-level features**
  This section includes broad, big-picture features found in the software itself.

- **Security features**
  These features dictate your level of control over the data, the BI applications, and overall user access.

- **Must-have Applications**
  This section outlines essential applications that BI software must create.

- **Advanced features**
  Finally, this section outlines a few cutting-edge, yet uncommon features that only the most advanced BI solutions include.

Let's get started. The first section starts with a list of broad, high-level features found in good Business Intelligence solutions:

High-level features

1. Open architecture

A widely ignored feature, architecture remains one of the most critical aspects of Business Intelligence. Some vendors build their software on their own proprietary architecture, while others build on open architecture and frameworks. Always choose the open solution.

Why is this so important? Business intelligence software built on open architecture integrates better with other platforms and software. It also comes with less limitations, as it doesn't tie your company to any single platform or vendor.

2. Wide database support

While some solutions only support a single database or platform, modern BI software must support any database or platform. Going one step further, it must also build applications that can pull data from multiple sources of data.

Why is this so important? As new databases crop up at an increasing rate, database support only becomes more important. Even if your company only uses one database now, BI software with broad database support won't limit your database options in the future.

A few popular databases that modern BI software must support

3. Real-time data

Some BI software delivers day-old, or even week-old data. Good Business Intelligence software creates applications that deliver real-time data directly from your database.

Why is this so important? Business Intelligence helps you make quick, informed decisions based on the most *current data* possible. A lack of real-time data hinders decision-making, and greatly limits the advantages of BI.

4. Self-service capabilities

In the past, the IT department controlled reporting and BI capabilities within the organization. These days, good BI software includes self-service capabilities that lets end users create their own BI and reporting applications.

Why is this so important? With the rise of SaaS solutions, end users have options. When the IT department doesn't deliver the applications they need, users simply bypass IT altogether. IT departments must deliver self-service BI options that let users create the BI applications they require, or risk alienating end users.

5. Application Importing

Some BI applications require embedded data or charts pulled from other applications. Good Business Intelligence software makes this process simple, letting you seamlessly pull all necessary data and applications into one BI application.

Why is this so important? Application importing offers flexibility and saves time when creating BI applications. Rather than re-create charts and graphs in every application, importing lets you pull applicable data from other applications.

6. Mobile support

Modern Business Intelligence software must span all devices and platforms. As illustrated in the image below, a single BI application must provide a different, yet native, experience for every device.

Why is this so important? According to a **report published by MIT**, mobile computers (smartphones/tablets) will saturate markets in the U.S. and the developing worlds in record time-- faster than any other technology in history. As a result of this growing mobile trend, modern BI solutions must create applications that instantly adapt to any platform.
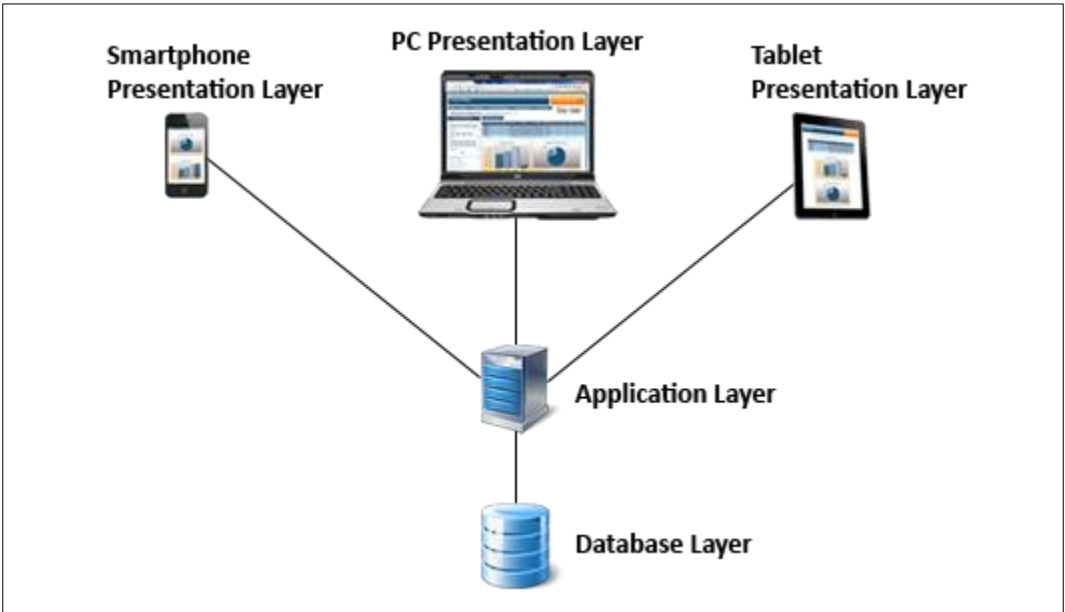
Architecture of a cross-platform BI application

7. Support for Data-mart or Data-Warehouse Structures

Data-mart and data-warehouse structures allow the BI tool to work with data from multiple source systems. They pull data from transactional systems that run the business, and place it in a single location for ad-hoc reporting and analysis.

Why is this so important? The data warehouse and data mart structures improve ad-hoc reporting capabilities. They let end users create reports over the data they need, while insulating them from the operational systems.

8. Operational Reporting Capabilities

Operational reporting is designed to support the detailed day-to-day activities of the organization. Often scheduled to run nightly and delivered via email, operational reports give business leaders the details they need to run the business.

Why is this so important? A good BI Platform should provide multiple reporting options (ad-hoc, operational, what-if, mobile, dashboards, etc.) from one code base. The problem: Many vendors don't provide operational reporting capabilities as an out-of-the-box feature. This forces you to purchase and integrate multiple tools, or purchase additional modules—raising the TCO of your solution.

Security Features

1. Application level security

Application level security lets you control BI application access on a per-user role, or per-user basis. This typically includes a role-based menuing system, which displays different menu options to different users based on their role.

Why is this so important? Unless every employee in your organization needs access to every application, you need application level security. For instance, your CEO might have access to all BI applications, while your HR department can only access reports related to HR.

2. Row-level (or multi-tenant) security

A critical aspect of BI and reporting applications, multi-tenant security lets you control data access within a single application at the row level. As illustrated in the image below, this means that multiple users access the same application, but view different data.

Why is this so important? As mentioned above, different users (or groups of users) have varying levels of data access. For instance, suppose you build a sales report, but each salesperson must only access his/her sales figures. Rather than building separate applications for each user, multi-tenant security lets you create one application that displays different data depending on the user.
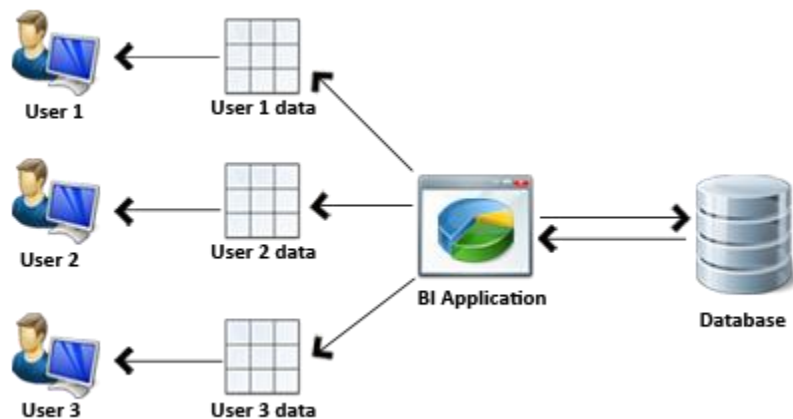
Example of multi-tenant security

3. Single sign-on

A session/user authentication process, single sign-on (SSO) lets users enter their name and password in only one place, and access multiple related applications. It authenticates the user for all authorized applications and eliminates login prompts when switching between applications in a single session.

Why is this so important? SSO reduces the number of passwords end users must remember, and cuts down on "forgotten password" support requests. It also improves end user productivity, since users no longer need to log in to each new application.

4. User privilege parameters

User privilege parameters let you personalize features and security to individual users or user roles. Saved to a user's profile, these user privilege parameters control user-specific features throughout every BI application.

Why is this so important? User privilege parameters offer broad control over many application aspects. They let you control the look and feel, add or hide user options, limit user capabilities, and more. For instance, suppose your company created a web pivot table. User privilege parameters could control which users have authority to export that pivot table to a PDF document or spreadsheet. Unauthorized users could not even see the "export" option in the application.

5. Flexible authentication options

Many businesses already use multiple application authentication sources. For instance, your CRM system might authenticate users against one user table, while your email system might use a completely different authentication source. BI software must provide flexible authentication options–letting you authenticate your applications using whatever authentication sources you already have in place.

Why is this so important? BI software offering flexible authentication options saves you from changing your current authentication methods or creating and maintaining yet another user table. It lets you take advantage of the authentication methods you already use.

6. User-specific data sources

Similar to row-level security, this security feature applies to the database level. It lets you build a single application that accesses different data sources depending on the user.

Why is this so important? This security feature provides flexibility, as it lets developers control database access on a user level. For instance, suppose your company merges with another company. While employees from each company now use the same applications, employees from your company must access a local database, while employees from the other company must access data in a completely different database. With user-specific data sources, BI applications automatically point to the correct database based on the user.

7. Application activity auditing

Application activity auditing lets developers log end-user activity for signon/signoff activities. This lets IT departments monitor when users log in, which applications they access, and when they log off.

Why is this so important? Monitoring log-in/log-off activity helps IT departments manage application security. On a non-security note, activity auditing also helps companies track the most and least-used BI applications and reports.

Must-have Applications

*__**Click the images or headings in this section to see live example applications****__*

1. Ad-hoc Report

Ad-hoc reports let end users create and distribute reports on the fly. Users select the data elements they wish to see in the report at run-time, and then export the report into a format of their choosing or email the report to other users directly from the web browser.

Why is this so important? Ad-hoc reporting brings simple reporting capabilities to the users. It lets users create and run their own reports when they need them, taking the reporting burden off of the IT department.

Ad-hoc Report: Products Ordered by Customer

Select Report Data with Cascading Drop-Down Lists:

Product Class:	▼	*required
Product	➡ ▼	
Salesman:	▼	*required
Customer:	➡ ▼	

Include Levels
- ☑ Detail
- ☑ Subtotal by Customer Number
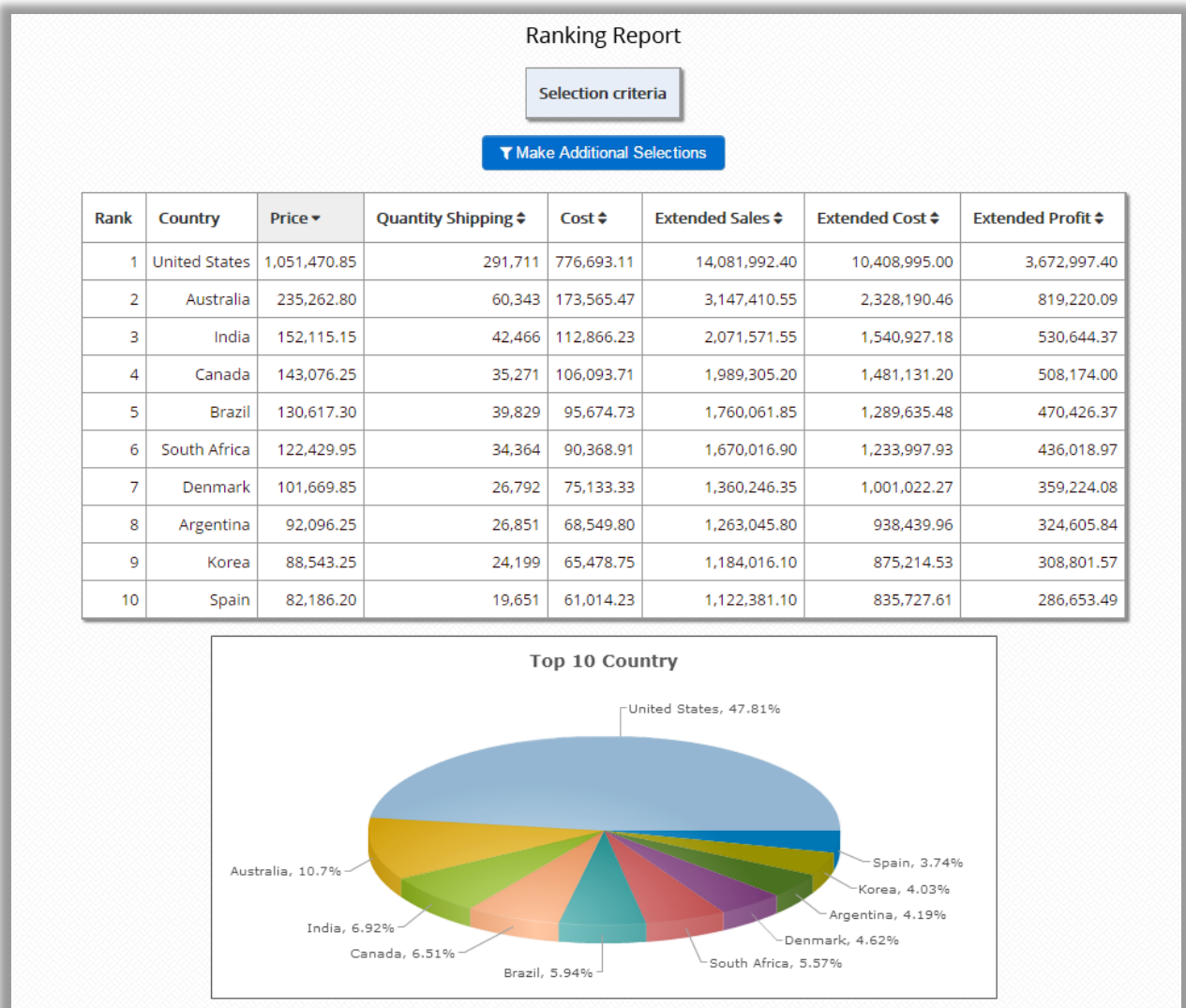- ☑ Grand Total

Report Format
- ⦿ HTML
- ○ Excel
- ○ PDF
- ○ XML

➔ Run Report

2. Ranking report

This report creates variable rankings, across multiple dimensions, while specifying various selection criteria at run-time. For example, suppose you want a report that lists your top 25 best customers of the last year. Or, suppose you want the top (or bottom) 5 salespeople last month. A ranking report makes this simple.

Why is this so important? An essential Business Intelligence application, a ranking report lets you quickly see the best and worst of any aspect of your business.

Ranking Report

Selection criteria

▼ Make Additional Selections

Rank	Country	Price ▼	Quantity Shipping ⬍	Cost ⬍	Extended Sales ⬍	Extended Cost ⬍	Extended Profit ⬍
1	United States	1,051,470.85	291,711	776,693.11	14,081,992.40	10,408,995.00	3,672,997.40
2	Australia	235,262.80	60,343	173,565.47	3,147,410.55	2,328,190.46	819,220.09
3	India	152,115.15	42,466	112,866.23	2,071,571.55	1,540,927.18	530,644.37
4	Canada	143,076.25	35,271	106,093.71	1,989,305.20	1,481,131.20	508,174.00
5	Brazil	130,617.30	39,829	95,674.73	1,760,061.85	1,289,635.48	470,426.37
6	South Africa	122,429.95	34,364	90,368.91	1,670,016.90	1,233,997.93	436,018.97
7	Denmark	101,669.85	26,792	75,133.33	1,360,246.35	1,001,022.27	359,224.08
8	Argentina	92,096.25	26,851	68,549.80	1,263,045.80	938,439.96	324,605.84
9	Korea	88,543.25	24,199	65,478.75	1,184,016.10	875,214.53	308,801.57
10	Spain	82,186.20	19,651	61,014.23	1,122,381.10	835,727.61	286,653.49

Top 10 Country

United States, 47.81%
Spain, 3.74%
Korea, 4.03%
Argentina, 4.19%
Denmark, 4.62%
South Africa, 5.57%
Brazil, 5.94%
Canada, 6.51%
India, 6.92%
Australia, 10.7%

3. Executive Dashboards

A dashboard provides a real-time view of your business using multiple, easy-to-read graphs. Dashboards offers essential data customized to each executive's duties and areas interest. For example, a CEO needs graphs displaying revenue over the past year, month, and week. The customer service manager needs graphs displaying average time needed to resolve issues.

Why is this so important? Dashboards give your executives a real-time view of your business, and alert your company to problems before they get out of hand.

4. Interactive reporting

An extremely flexible BI application, the interactive report offers instant access to a wide range of business data in one place. It starts with a high level view of the data and lets users drill down to the smallest details.

Why is this so important? The interactive report lets you view your data in any way imaginable. It combines power, ease of use, and flexibility into one intuitive application.
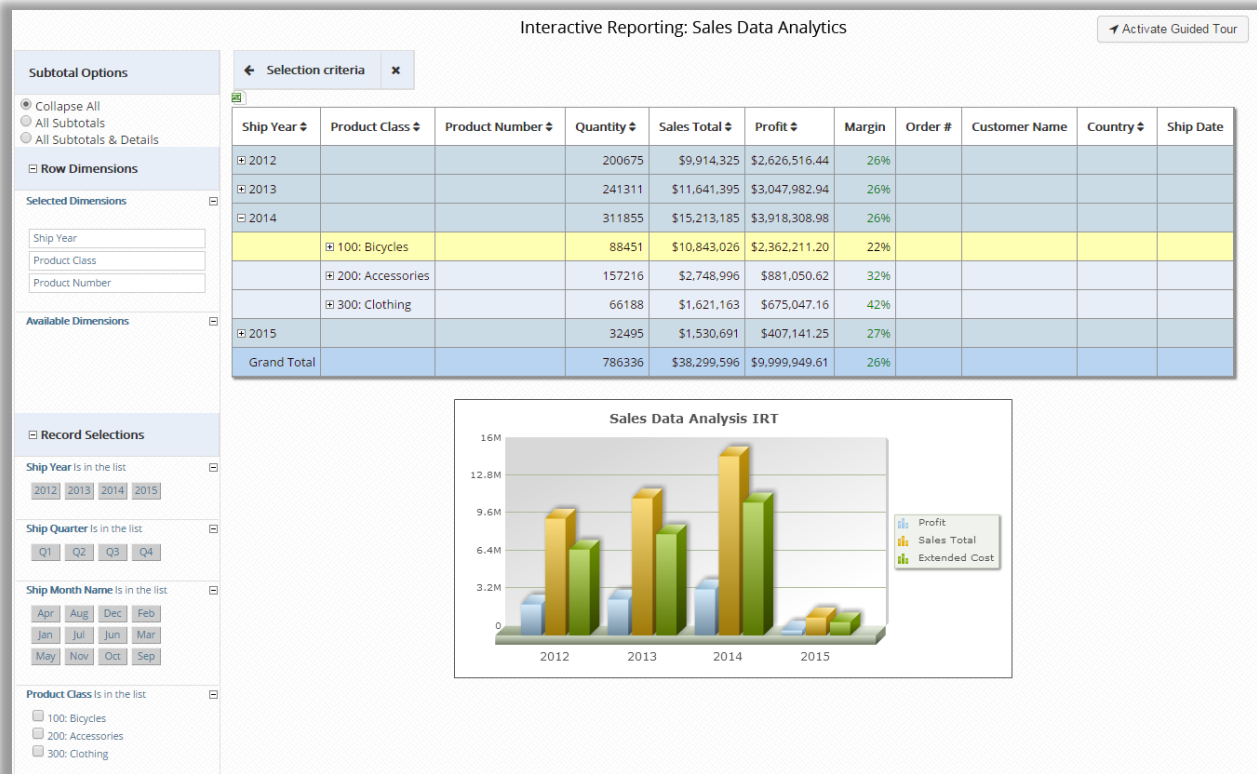
5. Pivot table/OLAP

Pivot tables automatically extract, organize, and summarize data. Often used for analyzing data, making comparisons, and discovering trends, the flexibility offered by pivot tables makes them one of the most popular BI applications.

Why is this so important? Pivot tables help you spot hidden details and trends in a sea of data. One pivot table lets you quickly examine nearly any aspect of your data.

6. What-if analysis

This application lets you assess potential business changes before you make them. Using past data, it displays how different changes might affect certain aspects of your business. For example, what if you raised prices by 10%? What if you lowered prices and increased quantity? How would that affect sales?

Why is this so important? A valuable BI application, the what-if analysis application lets you assess risks and rewards before making a decision.
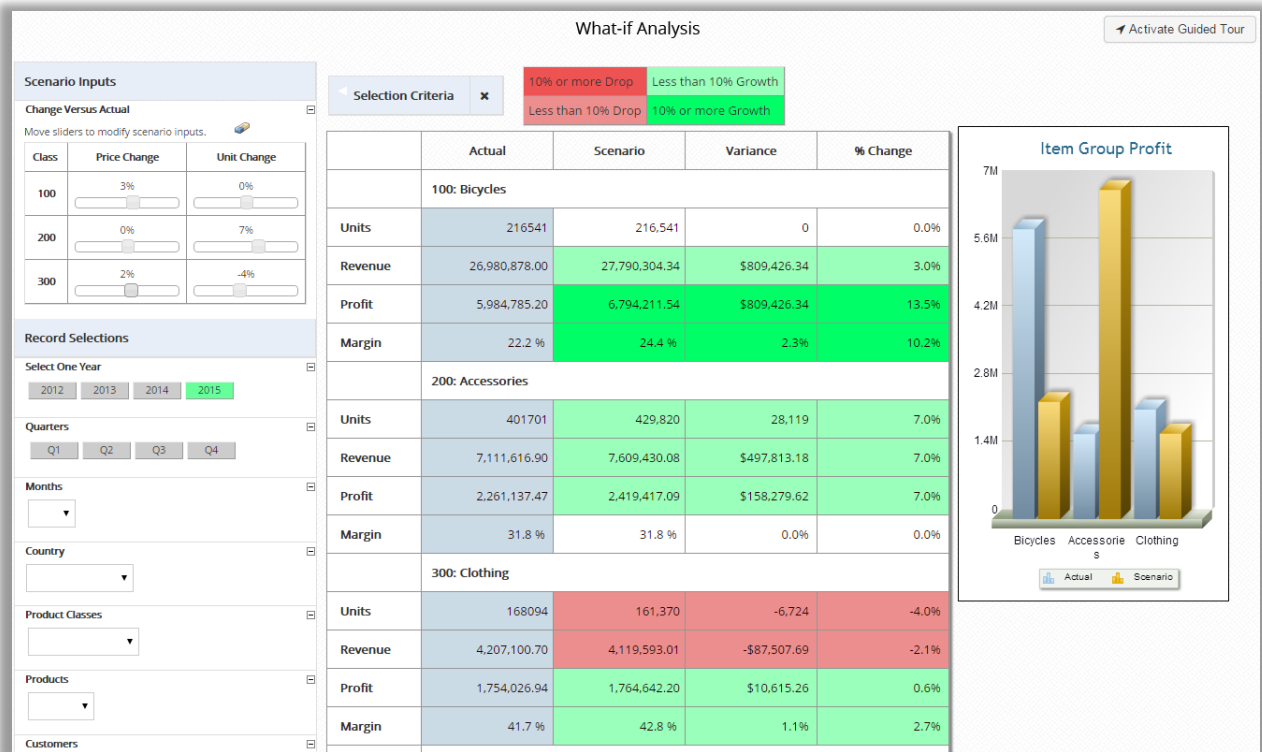
7. Geospatial/mapping applications

This application takes your geographical data and displays it graphically on a map. It helps businesses gain location-based insight--either to gain a competitive edge, improve organizational performance management or both.

Why is this so important? Geospatial applications simplify geographical data. Rather than sorting through tables of data, decision makers can quickly understand their data at a glance. For instance, the image below highlights the advantages of geospatial applications. With a glance at the map, a business leader can instantly see which sales regions are performing well, and which need help.
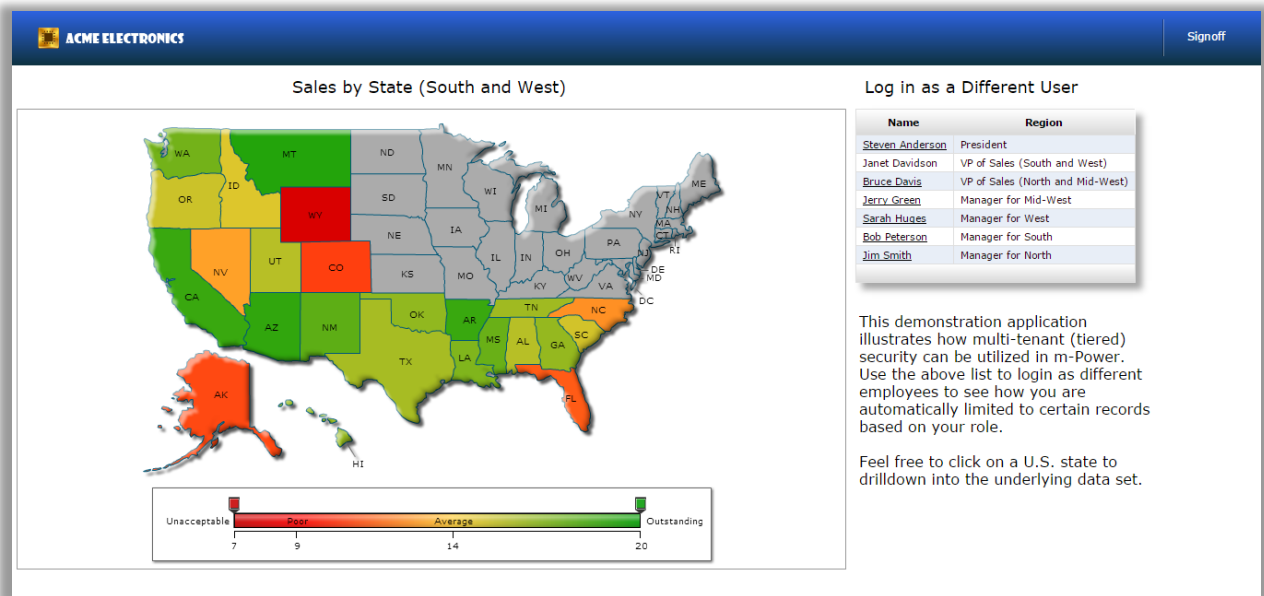
Advanced Features

1. Intelligent Alerts

As illustrated below, intelligent alerts let a BI application automatically send an email or sms message to the appropriate party when data reaches a pre-defined threshold. For instance, intelligent alerts can instantly notify the CEO any time a customer cancels their account, or any time sales numbers reach abnormal levels.

Why is this so important? Intelligent alerts turn Business Intelligence from a static solution to a proactive solution. They instantly alert your company to issues as they happen, and may help you stop a problem before it gets out of hand.
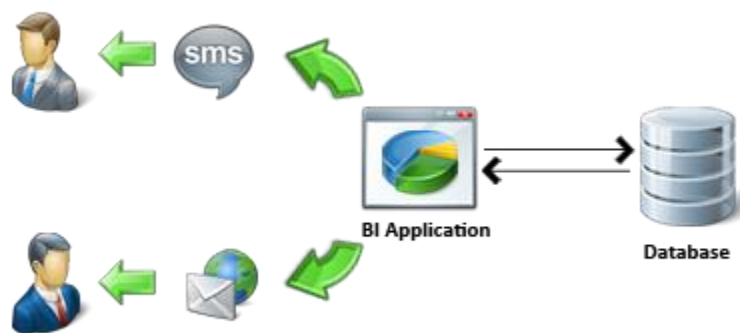
Intelligent alerts automatically send email or sms messages at pre-defined data events

2. Collaboration

As we learned from the rise of social media, the internet provides the perfect collaboration platform. This concept translates seamlessly to Business Intelligence. In the future, BI applications will incorporate commenting and let you interact with other co-workers directly within the application.

Why is this so important? In the past, BI collaboration involved emailing an app to other users. In-app commenting brings collaboration to the application itself. It helps you share ideas or point out interesting trends found in the data, without going through the hassle of mass emailing other users.

3. White labeling

White labeling (or re-branding) lets you customize the BI software to look and feel like your current business software. It lets you build the BI software directly into your existing software or systems.

Why is this so important? White labeling helps you give the end users a consistent interface, which improves overall user adoption. It helps you bring BI to the users, rather than forcing users into a brand new interface or system.

4. Open Integration

In the future, BI applications will pull data from your database, cloud services, email accounts, social media, the web, and more. For instance, Business Intelligence applications will not only display product sales, but also scan the web and social media sites for reviews and comments about your products.

Why is this so important? Scanning the web helps your company understand your data on a new level. For instance, if sales fall dramatically on one day, the product feedback pulled from the web and social media may help you understand why.

5. Cloud-ready BI

Most analysts and researchers agree on one point: Cloud computing is the future. BI on the cloud promises near 100% uptime and scalability while avoiding the effort/expense of in-house hardware. As illustrated below, advanced BI software creates cloud-ready apps that deploy anywhere—on premise or in the cloud.

Why is this so important? Even if your company has no plans for the cloud, creating cloud-ready applications position your company for the future. If your company ever adopts the cloud, your BI applications will not hold you back.
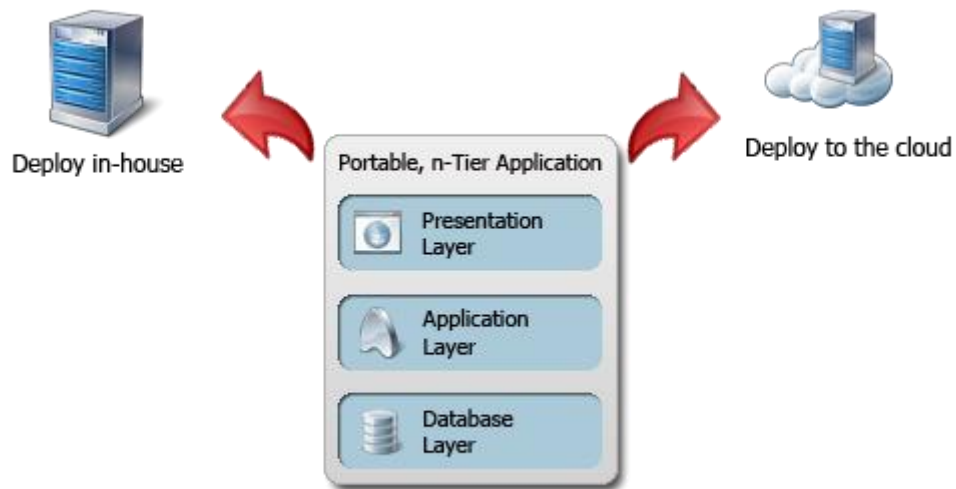

Diagram of a cloud-ready BI application

6. Development Platform

One big reason why BI software fails: It doesn't adapt to changing business requirements. Typical BI solutions suffer from a lack of flexibility. While they come standard with pre-built application types, they can't adapt to changing business needs and requirements.

Why is this so important? BI solutions that offer development platforms provide maximum flexibility. They let the business customize the package to fit their needs, and create new application types as needed. Most importantly: They let businesses quickly adapt to change.

7. Internal/External Reporting

Typically, BI software offers internal reporting. They let businesses analyze internal data and create reports. But, what happens when you want to offer reports to your customers? What happens when you need to create external-facing BI applications? Many BI solutions today do not offer this feature out of the box, while others don't offer the security features (SSO and multi-tenancy) to support external reporting.

Why is this so important? Even if you don't need external reporting now, who knows what the future holds? Choose a BI solution that offers external reporting capabilities baked in—not as an extra module. If/when you need that feature, your software won't hold you back.

8. Built-in ETL

ETL tools let you extract data from multiple source systems, transform it into a single format, and load that data into a target database. They give end users a simple way to include data from multiple locations in a single report. However, many BI solutions don't offer ETL capabilities as a built-in feature, but as a costly add-on.

Why is this so important? As the "Internet of Anything" and Big Data grow, the need for an ETL component within your BI platform will only increase. More and more, businesses will need to pull data from multiple systems and combine it in a single location for reporting. BI solutions that offer ETL data blending capabilities will become ever more important as the data demands increase.

Summary

Business Intelligence software varies greatly from vendor to vendor. With the sheer number of available Business Intelligence options, how does any company know which direction to take? As outlined in this guide, essential BI features fall into 4 different categories:

- High-level features
- Security features
- Must-have applications
- Advanced features

Before purchasing and BI software, compare the available features with the features outlined in this guide. Hopefully, this will make your life a little easier, and remove much of the uncertainty from the selection process as you search for the perfect BI solution.

About mrc

michaels, ross & cole, ltd (mrc) is a global software company which specializes in web application development software. Headquartered in Lombard, IL, and established in 1981, mrc has offices in the U.S. and the UK. mrc offers award-winning development software, as well as consulting, mentoring, and training services.

mrc's web application development platform, m-Power, is software that rapidly creates all types of web applications such as report-writing, Business Intelligence, executive dashboards, e-commerce, customer portals, and mobile applications to name a few. To learn more about mrc or m-Power, please visit: http://www.mrc-productivity.com

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