List of Business Intelligence Software

Nr.	BI Software Solution	Version	BI Vendor
1.	IBM Cognos Series 10	10.1	IBM
2.	Oracle Enterprise BI Server	11g1 new!	Oracle
3.	SAP Business Objects Enterprise XI	r4 new!	SAP
4.	SAS Enterprise BI Server	9.2 new!	SAS Institute
5.	Microsoft Integrated BI offering*	2008/2010	Microsoft
6.	SAP NetWeaver BI	7.3 new!	SAP
7.	Board Management IntelligenceToolkit	7.1 new!	Board International
8.	BizzScore Suite	7.3	EFM Software
9.	WebFocus	8	Information Builders
10.	QlikView	11 new!	QlikTech
11.	Microstrategy	9 new!	Microstrategy
12.	Oracle Hyperion System	9	Oracle
13.	Actuate	9.1	Actuate
14.	Style Intellingence	11 new!	InetSoft
15.	Pentaho BI suite (open source)	4 new!	Pentaho
16.	Tableau Software	6.1 new!	Tableau Software

Business Intelligence (BI) software is widely used for reporting, dashboarding and analysis. The following BI software products were thoroughly examined in our Business Intelligence Survey on 103 criteria considered important for high productivity and Business Intelligence systems that actually add value to your organization.

Vendor independent comparison

The following BI software products (*in random order*) that are part of our Business Intelligence Survey. The comparison is made by Passionned Group, an independent consultancy and research company based in The Netherlands. Download today the BI Survey for a thorough comparison of the Business Intelligence Software Solutions listed in the table below.

Selection criteria for BI software

Below we have listed all business intelligence software selection criteria we researched. All criteria are explained in more detail in the BI Software Survey which is available for purchase.

Infrastructure & architecture

Load-balancing and clustering	Does the product support load balancing and clustering? If so, describe how it is arranged.
Fail-over	Does the product support fail-over? If so, describe how it is arranged.
Zero-footprint viewer √	Are the products fully web-based and support they the zero-footprint concept (e.g. no software is downloaded or needed on

	the client computer)
Zero-footprint definer	If so, does it hold true for the software where one defines reports, dashboards and analysis?
Web 2.0 / AJAX supported	Is Web 2.0 / AJAX supported?
Number of portlets technologies √	What kind of portlets (or webparts) does the product support? For example IBM Websphere, SharePoint or BEA WebLogic Portal?
Portlets zero-footprint	Does the portlets have a zero-footprint?
Portlets certified	Are the portlets certified or validated by the vendor of the portal technology?
Platforms	On what platforms (UNIX, Windows, Linux and so forth) does the product run? This is specified for the design environment, the end-user environment (the client computers) and the server environment.
Reporting, dash boarding and analysis All-in-one √	Does your solution provide above defined functionality within one environment, software package or screen? In this case reporting, interactive analysis and dash boarding can be combined very easily.
MS Office integration	Does the product integrate fully with MS Office? Which versions? Can reports be maintained in the Office environment? Is there a live connnection between the reports and the Office document?
Functions in a Service Oriented Architecture	Does the product function well in a Service Oriented Architecture (SOA)? If so, describe here at least two examples.
Supports 64-bit architecture	Does the product support a 64-bit architecture?
Supports In-Memory or Caching	Does the product use In-Memory technologies or caching? If so, describe here the restrictions and conditions for using it properly.
Designs stored once in a	Is the design and content of a table or graph (the query and the

repository √	visualization) stored once and is it reusable for multiple purposes, for example when users want to see it from different perspectives like month, year, customer, product et cetera.
Designs are resuable across BI applications √	Is it stored in an (open) repository and is it possible to reuse a design in multiple BI applications and on different devices (desktops, tablets, smart phones)?

Core functionality

Role-based dash boarding and reporting √	Does the product support the concept of role-based reporting, dash boarding and analysis? For example when a user logged on, he sees only and instantly the information (portlets, graphs, tables, gauges, data) he is authorized for?
Common drill-down paths stored in repository √	Are common drill-down paths and hierarchies stored in a repository?
Do they depend on the role users have?	If so, can they being made dependent on the role users have? For example the primary drill-down path of a product manager is to drill into the product groups; the primary drill-down path of the director sales is region.
Standard reports can be adjusted	Is it possible for end-users to adjust standard reports or dashboards, for example delete a column, filter the data, change the sorting et cetera?
Can the adjustments be saved for that particular user	Can the adjustments be saved for that particular user in a way that when he logon on the next time the adjustments are still in place?
Export to Excel, formatting included	Is an export of the data and/or formatting to Excel available?

Export to PDF	Is an export of the data and/or formatting to PDF available?
Attach notes to figures and distribute them	Can one attach notes to the figures, graphs, dashboards, and distribute these notes to a particular user group or a specific user?
Notes can be linked to specific dimension member	If so, can these notes being linked to a specific period, product or customer (e.g. dimension member(s))?
Full Syntax of SQL SELECT supported	Is the full syntax of the SELECT statement supported (for example inner joins, outer joins, unions, sub queries, group by) to fill a dataset used by a portlet, report, dashboard gauge or graph?
Supported by menus	If so, can one select all elements of the SELECT statement by using menus instead of typing?
Can this be done by an end-user	If so, can this be done by an end-user?
Basket analysis supported	Are basket analysis supported out-of-the-box (without any programming)?
Write-back facilities	Does the product support write-back facilities to change the data? This is mainly for planning and budgeting purposes.
Keeps history when figures are changed	If so, does the product support storing the history of these planning and budgeting figures in the database when the figures are changed by the user?
Support for Slowly changing dimensions √	Does the product explicitly support slowly changing dimensions (type 1 and 2) and displays it automatically (in case of type 2) the user two options (current or historical view), if required and relevant.
Support for Balanced scorecarding	Does the product support the balanced scorecard methodology in terms of key performance indicators, perspectives, critical success factors, strategy maps and actions?
BI self-service supported	Does the product support the concept of BI self-service, for example can one make or change his own dashboard, reports or

	lay-out?
Scheduled distribution of reports/dashboards	Can reports / dashboards distributed by email on a regular, scheduled basis?
Publish and subscribe	Does the product support the principle of publish and subscribe?
Is the product real-time aware	Is the product real-time aware, for example if new data has been arrived in the database, the report or dashboard is refreshed instantly?
User and Identity management √	Can user groups and organizational roles be defined? Can one user have more than one role? At what level does authorization work?

Usability & visualization

Ease-of-use √	The ease-of-use of the product. Is it easy to learn and easy to use on a daily basis?
Screen design	Does the screen look quiet and well-balanced?
Task compatibility	Does the tool support the tasks (in the same sequence) as the BI developer and BI user?
Number of graphs and visualizations	What type of graphs/visualizations can be chosen? Mention them all.
Conditional formatting	Is conditional formatting supported?
Style-sheets supported (css)	Does the product make use of cascading style-sheets (css)?
Drill-down supported on	Is drill-down supported on specific elements of graphs if required

elements in graphs	and relevant? For example, a user wants to drill-down on the combination of product type and quarter.
Support for iPad's, PDA's and BlackBerries √	Are the reports / dashboards optimized for viewing on iPad's, PDA's and Blackberries?

Search & alerting

Meta data search	Is there a search facility to search reports / dashboards (search over meta data)?
Search over data in reports and dashboards √	Is there a search facility to that support finding specific data that is stored in the reports or dashboards (search over data)?
Alerts and notifications	Can one define alerts and notifications?
Are they RSS compatible?	If so, are they RSS compatible?

Performance issues

Aggregate awareness	Is aggregate awareness supported?
Aggregate stores (ROLAP/MOLAP)	Can aggregates be defined in the database (or cube)?
Automatic selection of best aggregate	Will the product automatically select the best aggregate when the user wants to (re)run a report or dashboard?
Caching √	Are query results cached?

Reuse of the cache	Is the cache reused automatically by a similar or sub-query requested by other users?
Changed Data Capture (CDC) √	Is Changed Data Capture caching supported (e.g. when new data arrives the cache is automatically updated)?
Cache management √	When the database changes what happens to the caches?

Predictive Analysis

Data mining models	Does the product support data mining models out-of-the-box?
Type of models	What models and analysis can be used?
Data mining applications	Are data mining applications supported out-of-the-box?
Type of applications	What type of data mining applications are supported (list of applications)?
Text mining	Is text mining supported? If so, describe what type of text mining models are supported?

Performance management & planning

Management models	Are management models like the Balanced scorecard supported out-of-the-box? Which models?
Impact indicators	Can the product link key performance indicators by setting the possible impact of one indicator on another?

Strategy maps	Are strategy maps supported?
Objectives	Are strategic objectives supported? Can they be linked to specific (key performance) indicators?
Multiple strategies	Are different multiple strategies supported (different critical success factors)? Can they be linked to specific (key performance indicators)?
Norms and targets √	Can one define norms and targets? By indicator? By time-frame?
Planning	Are planning facilities included in the product?

Security & connectivity

Single sign-on supported	Does the product support single sign-on? If so, please describe how it works.
Support for Active or Enterprise Directories	Does the product make automatically use of Active Directories or Enterprise Directories?
Data authorization available √	Is it possible to define for each user, user group or role what data one is authorized to see?
On rows/columns/both	If so, is it applicable for rows, columns or rows and columns?
Are reports and dashboards automatically adjusted	If so, is the report or dashboard automatically adjusted for that particular user? If yes, described here how it works.
Does it make use of database authorizations	If authorizations are stored in the repository of the database, can the product make use of it?

Number of native connections to data sources	List here the data sources the product can natively connect to? E.g. Oracle, DB2, SQL Server 2005, MS Analysis Services et cetera.
Does the product has a repository	Is there a repository, if so describe here the functions of it?
Impact analysis	Does the product support impact analysis?
Data lineage	Does the product support data lineage?
SDK and customization of the product	Is there a system development kit (SDK), so one can build his one portal, with a specific look-and-feel and functions?
SDK has same functions as clients	If so, does the SDK contain/support the same possibilities and functions as if one were working with the client interface?

Costs*

Pricing 100 users	Please provide us a rough estimate of the list price for 100 users
Pricing 2 processors	Please provide us a rough estimate of the list price for running it on two processors?
Pricing 2000 users	Please provide us a rough estimate of the list price for 2,000 users
Pricing 8 processors	Please provide us a rough estimate of the list price for running it on eight processors?
List price per database connection	If the price depends on connections to specific data source, please provide here a rough estimate of the list price per connection?
Additional costs	If there are any additional costs, please provide here.

Price end-user training	What are the costs for attending the end-user training? (price per user)
Price designer training	What are the costs for attending the designer training (price per user)
Price advanced designer training	If applicable, what are the costs for attending the advanced designer training (price per user)
Percentage for support and maintenance	What is the percentage one has to pay for maintenance and support?

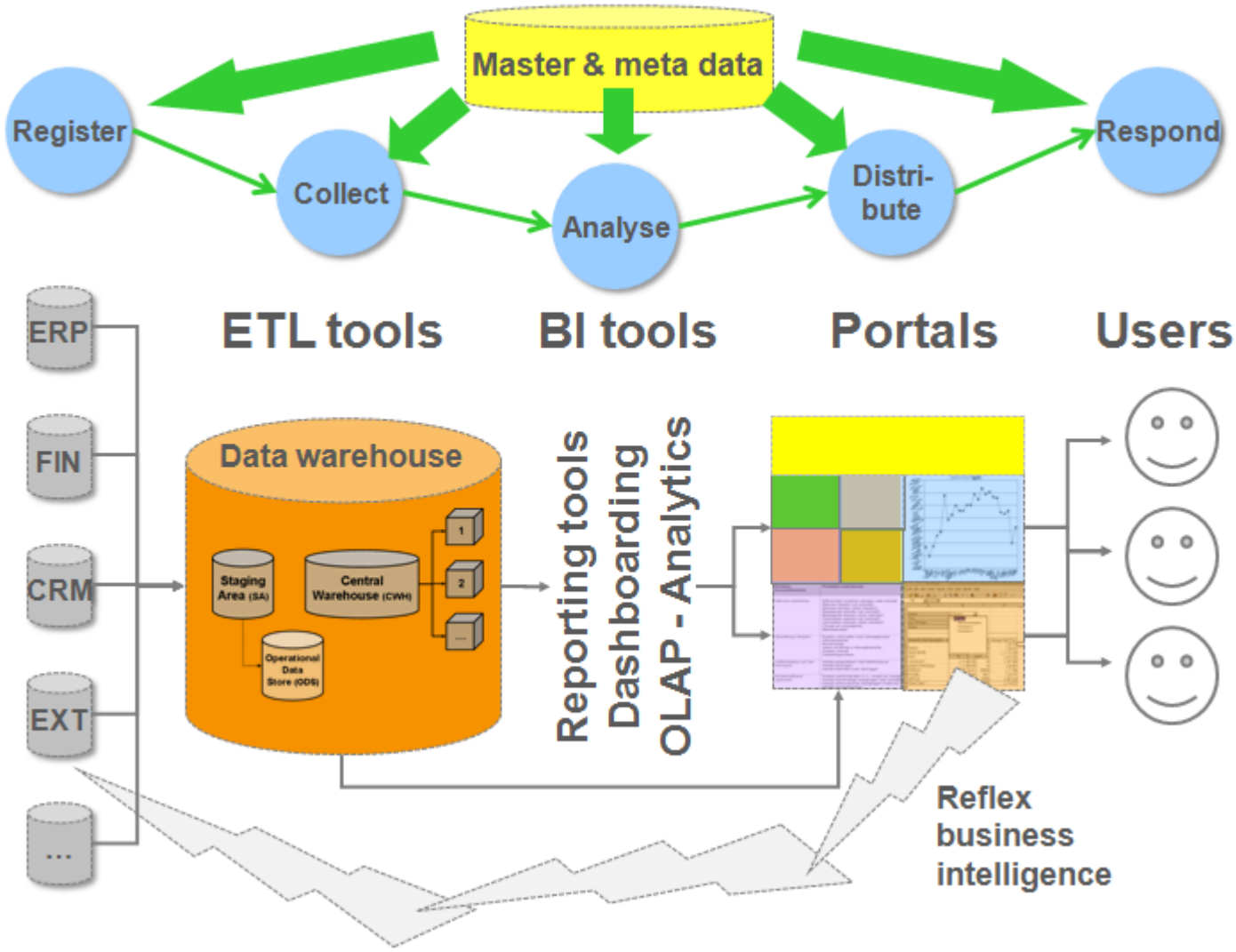
* User population: 10% pure analysts, 20% report viewers and 70% a combination of dash boarding, reporting and analysis.

General

Productname(s)	The name of the product(s). If there are multiple products necessary for providing above defined functionality, give here the various names.
Version number(s)	The version numbers of the product(s).
Number of customers world wide	How many customers are using the product(s), worldwide (rough estimate)?
Three largest implementations world wide	What are the three largest implementations in terms of the number of users?
Number of resellers/partners	How many local partners / resellers do you have an agreement with? Please provide figures for worldwide, Europe and the Benelux.

What is Business Intelligence?

BI is an abbreviation of the two words Business Intelligence, bringing the right information at the right time to the right people in the right format. It is a 5-step process to run your business smarter, starting with registering the right data correctly, collecting the data from multiple sources, transforming, combining and storing it in a data warehouse. This data should be reported, analyzed and distributed to the right people at the right time in the right format. The figure below shows these steps.



Business Intelligence is about connecting people using a proper information infrastructure and performance driven culture, enabling them working more closely together towards company and personal goals. The success factors of business intelligence are described in our research paper 'Get the highest ROI on business intelligence software'.

Different applications and tools may exist in a business intelligence infrastructure, including ETL tools and reporting tools. These are all covered in the BI Software Survey.

Basic Business Intelligence

This type of application is mainly used to understand the business processes, and the operational results, of the organization. This basic application contains often just a collection of reports, used for operational purposes.

Corporate performance management (CPM)

An application used to optimize the business processes of an organization, and more importantly to align strategy with execution, and vice versa. Key performance indicators (KPI's), key result indicators (KRI's) and performance indicators (PI) are defined in order to see how things are going, in perspective of each other. Once you have this type of application running, you can alter and execute strategies more quickly. In a fast changing environment, this will not be overkill.

Customer Analytics / CRM

For each organization, customers should be considered and treated as the most important business partner. Because of that, many organizations understand that to be fully customer oriented, they should have a 360 degree view of the customer. This BI solution, often implemented side by side with a Customer Relationship management system, collects all the customer data that a organization registers, combine it and display it to the users in different formats.

Marketing intelligence

An application to measure the effectiveness of the marketing activities, for example to measure the relationship between ads and the revenue by product. With marketing intelligence, we measure and analyze also market shares, market growth, brand awareness, the effectiveness of marketing campaigns and product portfolio. With this application we can get a clear view of the contribution of marketing to the other activities of the company.

Business Activity Monitoring (BAM)

This application, often called BAM, makes it possible to discover real-time or near real-time what is happening in daily operations. Mostly used to report sudden deviations in critical business processes from the standard patterns or norms, for example a sudden increase of the

back log, or a decrease of the stock of some specific medicine. Thanks to BAM, people can get alerted before things are getting real worse.

BI for the supply chain

Pivotal in this application is integration of information with your business partners in a very structured way, using the internet, to enable a more smoothly running supply chain. It can support better vendor management, monitor stocks in the entire supply chain, give more flexibility to connect new vendors in the chain, enhance the speed and reliability of deliveries, and a on-demand supply chain.

Metadata management

Information about all the data that is processed, from source systems to target reports and dashboard, is often put into a metadata repository; a database containing all the metadata. The entire process can be 'managed' with metadata management, for example one can query how a specific key performance indicator (KPI) is built-up in the process, called data lineage. Or, you want to know what the impact of a change will be, for example the size of the order identifier (id) is changed, and in which steps this attribute plays a role.

Open source BI software

Many organizations, both private and public, are currently evaluating or deploying Open Source BI software (OS BI) like JasperSoft, Pentaho or SpagoBI. These three leading open source business intelligence software offer a full range of BI capabilities, ranging from ETL to ad-hoc analysis and reporting.

Open source adoption increases

On a feature by feature comparison, open source BI software still can't beat the leading closed source offerings, but, as a leading analyst firm recently stated in a research paper: open source adoption increases, because it is often considered 'good enough'.

OS BI software worth considering

If you combine the 'good enough' factor with an attractive price point and the support delivered by the vendors, open source BI software are certainly worth considering. The open source BI software solutions Pentaho BI & JasperSoft are compared against the most popular commercial BI software on the market in the BI Software Survey which is avaiable for purchase.

Business intelligence software: what can it do for you?

It helps you to create easily reports, insights, analysis and dashboards with essential information about your company business processes and performance. Letting you turn data into dollars. Discover all the features of BI software.

Features of BI software

Business Intelligence Software helps you to create, distribute and use reports, analysis and dashboards very easily and in a cost effective manner. BI software ships usually with the following features.

Reporting

- connect to one or multiple databases in a single report
- loading millions of data records for aggregation and analysis
- design a pixel perfect report including a variety of formatting options
- conditional formatting
- display plain tables or pivot tables
- creating sections guided by a dimension
- creating simple and complex filters
- presenting data in many type of graphs
- automatic summarization of figures: average, count, sum and so forth.

Analysis

- clicking on data items to drill-down into the details
- one click graphs
- switching easily a dimensions by slicing and dicing
- nesting dimensions
- filtering
- conditional formatting
- automatic summarization of figures

Dashboarding

- display measures visualized as meters
- letting you to create a dashboard with one or more meters
- defining norms and targets on measures
- alerts and notifications when target values are reached
- drilling into more details

Performance management

- define a framework of key performance indicators
- setting the most likely impact of one indicator on another
- defining norms, targets and objectives
- support for the Balanced Scorecard methodology
- support for strategy maps
- support for planning & consolidation
- adjusting norms and targets
- visualization of the performance indicators in dashboards and reports

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Social collaboration

- creating notes regarding a specific indicator or graph
- distribute the notes to your collegues
- real-time shared analysis letting your collegues see what you see
- instant messaging (IM) lets you chat about the figures

Summary

- What is Business Intelligence (BI)?
- What is Business Analytics?
- Choosing and selecting Business Intelligence Software

- Open source BI software
- Why buy the BI Software Survey?
- How did we compare the BI Software Solutions?
- The Business Intelligence Software Vendors

Articles

- Is BI software mature enough for building big data applications?
- Roles are essential for business intelligence software
- BI in the cloud
- Achieve the highest ROI on BI software

Business Analytics

A few business intelligence vendors like IBM Cognos and SAS Institute say the term business intelligence fall short. They find out that business intelligence is all about business analytics: analyzing data to get to know why things happen and what may happen in the future.

Quit common

Such a shift in terminology is quit common in the software branche. Earlier business intelligence software is called performance management, business performance management, and corporate performance management and so on. But it is the same software they try to sell.

Business Intelligence Software

A fully vendor independent and in-depth comparison of business intelligence & analytics software is available for download. In the list of business intelligence software you'll find IBM Cognos and SAS as well as other popular vendors like Oracle, SAP Business Objects and Microsoft BI.

BI Software selection process

In many organizations there is no software selection process at all. Sometimes there is a corporate standard you need to comply with, or you may have a database or reporting tool in place from a specific vendor, and you decide to buy BI software from the same vendor, because you expect that these will integrate better with each other.

Often organizations find it difficult and labor intensive to execute a software selection process in order to gather all the necessary data. The BI Software Survey is designed to help you perform the selection quickly and efficiently. There are many more reasons why to buy the report.

1. Create a business intelligence strategy

Choosing and selecting Business Intelligence Software is a process that begins with defining a business intelligence strategy, compliant with the overall business strategy and requirements. Without a proper bi strategy, buying BI Software, will be the same as buying a very nice and expensive car, which runs on a type of fuel which is not available in the country where you want to drive it!

2. Define criteria in business terms

Once the strategy is clear, you can define the business critical selection criteria, like 'Our business people want to keep track of history'. In that case you need BI Software that has standard support for slowly changing dimensions out-of-the-box.

Another example: one of the business strategies is to exchange more critical information with customers and vendors. You need BI software that performs well with a huge number of users, having a robust infrastructure with load balancing and clustering. By doing so, we make a clear connection between the criteria and the business strategy, an essential factor for success.

3. Create a short-list

Once you have all the criteria in place, you will be able, with the information in BI Software Survey be able to decide which tools match your criteria. From there, you can create easily a short-list of two or three solutions.

4. Invite vendors for a live demonstration

In this phase of the BI selection process, you will invite the vendors on the short-list for a live demonstration of their solution. We recommended that you prepare this meeting in detail with the vendor, to avoid demonstrations by PowerPoint. If possible, provide the vendors with some company data, so you can easily see the relevance of what is demonstrated and judge how well it functions.

5. Perform a proof-of-concept (PoC)

Doing a proof-of-concept (PoC) is essential for choosing BI Software that suits your organization. So you can test the solution in your own IT environment, and get a idea of the functionality, connectivity, usability and performance of each BI software solution.

Define beforehand what has to be done, what the results should be and what data should be used. Be sure, that the data in your source systems are accessible. In general, a proof-of-concept can be done in three to five days. To keep negotiation options open, it is recommended that a PoC is performed with at least two vendors.

6. Negotiate with BI vendors

The last step before the end of the selection is to negotiate with the BI vendors about the contract, including prices, maintenance, support, training and terms of use. Many software vendors require you to buy a runtime as well as a development license. Put all the different prices and terms in a spreadsheet, and calculate the costs over at least three years to see which vendor has the best conditions over a longer period.

7. Close the deal

Finally, you want to close the deal with the vendor that has the best support for your business intelligence strategy, and has the lowest costs.

Why Buy?

1. The BI Survey is truly independent

The survey has been conducted by Passionned Group, a vendor independent research company and consultancy, specializing in business intelligence and integration from a business and technological perspective. This will give you true insight in the strengths and weaknesses of BI software as well as the vendors. We have been monitoring the business intelligence market space now for many years.

2. We have validated the answers

Vendors were asked to demonstrate the software features in an environment with live data. PowerPoints were not accepted, and to leave no doubts, we validate all the answers by comparing it to the manuals and usage experiences from the developer community.

3. Find out the vendor's 'secrets'

Vendors will often tell you only the strengths of their product(s). In our survey, all the features are revealed, also the weak points.

4. Negotiate better with vendors

Using the survey, you will be in a better position to negotiate with the vendor to get better pricing and conditions for the product. The vendor comparison is made based on eight categories and about hundred criteria.

5. All the detailed survey data available

The BI Survey (Full Edition) comes with all the details. At the end of the report you will find an appendix with all scores for all the products compared on all the criteria.

6. Immediate insight into how the software scored

Graphs showing you in seconds how the different BI software solutions have scored on different categories and subcategories. Comparison can be made very easily.

7. Compact report with clear expert opinions

Our 60-page report contains clear opinions and recommendations, no redundant information and focuses only on the things that really matter.

8. Full market coverage

With sixteen software solutions covered, we cover all the major BI software solutions and at least 90% of the market space. The niche players Arcplan, Spotfire and Panorama software were not included, because they did not want to fill in the questionnaire and the comparison cannot be done without the vendor's cooperation.

9. Future prospects

The software is not only assessed by what they have now. The BI Survey has also attempted to measure the future prospects, unravelling the degree of innovation of the vendor one by

one. Knowing that, you can see which products are most likely to survive in the future, leaving you with a sustainable solution.

10. Clear ease-of-use opinions

Our experts evaluated the product usability, giving you a profound view of how easy-to-use (or not) the product really is. The Survey tells you that some products are better used by programmers; other products are also suitable for the business user.

Is BI software mature enough for building big data applications?

A recent study by one of the analysts firms tells us that “in 2011 the world will create a staggering 1.8 zeta bytes” and “by 2020 the world will generate 50 times the amount of information [now]”.

In this article we explore the three biggest challenges of using big data and what to do about it: intelligent filtering, outstanding performance and good data visualization. The main question here is if the business intelligence software we are using today is capable of tackling these challenges.

Big data is becoming a serious business

Big data is so to speak hot and it is becoming a serious business. The amount of data may double every two years. The question is does the amount of valuable information double at the same rate? According to IBM's Mr. Big Data, vice president Rod Smith: "maybe 90 percent of it is not very useful". In general, we may assume the more (complex) the data the bigger the dataset and the more difficult it is to derive information from it. We need to manage big data, that’s for sure. The other 10 percent may be of very great value.

But which technologies and techniques can be used in order to be more successful with big data. Does business intelligence software offer a solution? Do we need special analytical tools on top of it? Or is it just filtering the data properly before we load it into our data warehouse or tool?

“You ain’t seen nothing yet” is a saying that is especially true with regard to big data. It’s very difficult to see any piece of information in a very large amount of information. Especially if you’re looking at the wrong items or using tools that are not capable of analyzing big data (everyone has heard of the ‘query from hell’ or reports that run six hours).

Processing and using big data has three big challenges from a technical point of view. Firstly, intelligent filtering. Secondly, outstanding performance. Thirdly, good visualization.

Intelligent filtering

Because big data is really big and there are many applications, you first need to know what you are looking for and what the purpose is. Is it your company name (and all variations, typos) on Twitter or Facebook or blogs? Is it the temperature of your medicines, provided by sensors, in an airplane flying to Japan? Are you looking for the weather conditions in a specific country? Do you need to know what the most likely path is which visitors of your website took before they ordered your product? In some cases you don't need all the big data, but only a subset. It depends on the type of application you want to build. So, the first step in building a big data application is to know exactly what you are looking for.

Outstanding performance

The Telco's of this world had a clue how to process big data sets of structured data. But today, a whole new set of difficulties comes up because of the lack of structure in today's data, the size of it and the speed by which it is generated. Mobile devices, sensors in cars, plains and RFID chips, large scale eCommerce, all generate a lot of data in seconds that is not yet structured enough to store in a (single) relational database.

Few technologies that can handle big data should be considered as part of business intelligence solutions. To name a few: massive parallel processing (see the ETL Tool criteria), cloud computing platforms, distributed databases, grid computing and the Apache Hadoop framework. Sure, filtering first is key, but you can use it only if the rest of the data isn't relevant at all and the data set you should filter on is stored in a way which supports filtering.

This looks like a 'Catch 22' situation: to be able to filter intelligently, normally you should put the data in the database first, but to put the big data in the database you should sometimes filter it first. That is where Hadoop comes into the picture or any of its alternatives: GemFire, MarkLogic, and neo4j. Because of its distributed nature and sophisticated technology it can handle large data sets very well, for fast storage as well as quick retrieval. It can work on pieces of data in parallel. Today, the Hadoop community is working on a data warehouse system (Hive DWH) based on Hadoop technology.

Good data visualization

If the big data is available in a way which can be queried, inside or outside the cloud, the last difficulty is to visualize the data in a proper manner. The main purpose of visualization is to communicate the information clearly and in an effective manner. That means not necessarily the data should always be presented in graphs. Some information could very well be effectively communicated in a sorted plain list or a pivot table. It depends on the purpose (what relations are you looking for in the data set) and the nature of the data.

According to research performed by Cleveland and McGill there is a difference in the accuracy in quantitative, ordinal and nominal tasks (Mackinlay, 1986). Higher tasks are accomplished more accurately than lower tasks. Tasks to perceive different positions in the data rank as best and differences in shapes are the perceived as being the worst. The following table (adopted from Cleveland and McGill) ranks which task (type of graph) is most effective for each data type (quantitative, ordinal and nominal).

	Quantitative	Ordinal	Nominal
more	Position	Position	Position
↓	Length	Density	Colour Hue
↓	Angle	Colour Saturation	Texture
↓	Slope	Colour Hue	Connection
↓	Area	Texture	Containment
accu-	Volume	Connection	Density
rate	Density	Containment	Colour Saturation
↓	Colour saturation	Length	Shape
↓	Colour Hue	Angle	Length
↓	Texture	Slope	Angle
↓	Connection	Area	Slope
↓	Containment	Volume	Area
less	Shape	Shape	Volume

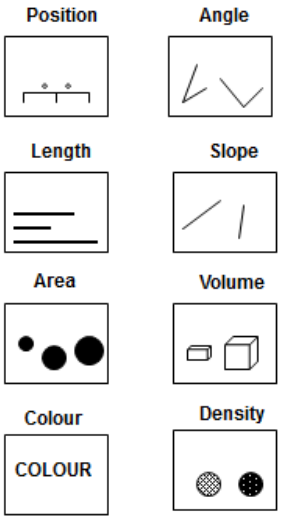

Table 1: ranking of encoders by effectiveness; position is for quantitive data the best visualization; shape the least.

But these basic rules are a little bit too simplistic for big data, although they can be useful as basic guidelines. They also gave an implicit warning to be careful when using 3D graphs because volume is not included in the different types of tasks by the top five.

Identifying complex relationships in large data sets should persuade you to use a combined approach using different techniques on top of the guide lines. Simulation and animation (for example showing over time the variation of a multidimensional indicator is one of

them. A good example is demonstrated in the following video. Multiple dimensions are shown using color, size and position.

But more concepts and methods can be helpful to visualize the data in the right way. An overview of visualization methods is given here.

Conclusion

To return to the main question, ‘Does business intelligence software provide enough tools and functions to tackle the challenges of big data?’, we must conclude that the BI software vendors are on their way, but may fall short on a few areas, depending on the BI software you are using.

- *Large unstructured data sets*: BI software may possibly read it well, but they are not doing a great job because of the size and the lack of structure of the data. This may cause real performance troubles despite the fact some tools have advanced In-Memory technology. You should consider using Hadoop technology (or an alternative) and built a data warehouse first by using for example a data integration platform like Informatica or less sophisticated ETL tools. When the big data is in a cube or data warehouse performance shouldn't be a problem anymore.
- *Data visualization*: although, a lot of visualization methods can be used out-of-the-box with BI tools, on average they provide between the 15 and 20 types of visualizations, the possibilities of most of the BI software are still quite limited compared to all visualization methods that are available. If you need advanced visualizations, take a look at the list of data visualization software. It can sometimes be integrated with BI software like Trendanalyzer (a Google API), or you may use it on top of BI software or as an alternative.

Last but not least, if your business intelligence platform can handle big data in a proper way, you have the right technology that suites you. But, worldwide there is a shortage of people with deep analytical skills that can make effective use of the big data technology (McKinsey, 2011). So, don't focus only on technology, consider also the skill side of big data & business analytics.

Role based reporting

From research carried out at hundreds of organizations, it is clear that role based reporting and dashboarding can be a highly effective means of achieving business intelligence success. By personalizing reports, analysis and dashboards, based on the role(s) the person has in an organization, we can ensure that initially they see only the information that interests them.

Causing information-overload

Omitting information that is out-of-scope, might seem to be risky, because you are not always certain what they want to know, but BI systems that aren't role based present a lot of information that is not relevant to a particular user, causing information overload. Users still have to search for information, instead of having it simply presented to them.

The way they present information differs considerably

Role based reporting and dashboarding are functions that are provided by nearly every BI software product, but the way they do it differs considerably. Some still present a full report, requiring the user to drill-down, filter, sort or click excessively in order to find the required information. Some software solutions, the better ones, make it possible to define roles within the BI system, and then link directly to information and data elements extracting only the information that is relevant to the role. Read more in the analyst BI Survey 2011 which is now available for purchase.

The vendors say: just turn on the tap and 'drink intelligence' - BI in the cloud a hype?

A lot of business intelligence vendors are selling their cloud offerings, which seems like 'heaven on earth' to us. It's cheaper, faster, more scalable and more reliable they say. But can true business intelligence be in the cloud? Can we draw parallels between water from the tap and **BI in the cloud**?

What is true business intelligence?

In our view it's running your business better using key information about your processes, your clients and the market. To be able to do that you should gather all kinds of data from a variety of source systems inside and outside your company network, integrate the data and transform it into information to produce insights in such a way that we can speak of 'intelligence'.

Each company has it's own intelligence which can bring a real competitive advantage, allowing companies to swim in the profit pool.

What is a cloud?

A cloud is an infrastructure of hard- and software that can be used for a period of time. You may want to use more disk storage, give more users access to the applications or use more memory. Or maybe at some time you want to drop a group of users, which does not pose a problem with the cloud concept. With your applications in a cloud, it should be really simple to scale up or down. Often you only have to pay for the usage, which can be a real advantage.

There are various types of clouds including; the private cloud and the public cloud. In the public cloud every user uses the same business intelligence software solution, the same version and has the same standard indicators and reports. In this type of cloud there is often very little space for customization as it comes down to the data that can be stored, the transformations and the key performance indicators. If you want high customization for example you should extract data from a source system that other users in the cloud don't have. This means you should move to a private cloud. In a private cloud, which is almost the same as buying a virtual or dedicated private server from your hosting partner, which we are all familiar with, some of the advantages of being in the cloud will disappear. In a private, highly customized cloud, scaling up isn't that easy (compared to the scalability of a public cloud), whether it is deployed within the company's firewall or hosted by a third party.

Tap water and BI in the cloud

Cloud solutions like BI in the cloud are often compared to tap water, at least it is often visualized that way. The vendors are marketing their offerings of BI in the cloud as: just turn on the tap and 'drink the intelligence'. Maybe it tastes good for a while, but what competitve advantage will this solution really bring to your company if your competitors can do exactly the same? In our view true business intelligence can't really be in the public cloud. In addition, who likes the idea that someone else is managing their brain?

"The only way to make money in the Cloud is to have a lot of customers. The only way to get a lot of customers quickly is to give everyone the same configurable application and avoid custom development work. In the Cloud, economies of scale are everything. But BI is largely a custom development effort." Wayne Eckerson, BeyeNETWORK

Tap water is, on average, 500 times cheaper than bottled water, some people would say, boycot the bottle. Could we say the same about BI in relation to the public cloud? Is it, on average, 500

times cheaper than having your own BI infrastructure? Even if that is true, we don't think it's wise to move your company specific intelligence to the public cloud, even if it is possible (there are some really nasty integration, security and compliancy issues to overcome). However, non-specific highly standardized indicators like the sickness rate could be in the public cloud as a data mart. However you may have to ask yourself if that is true business intelligence. So, don't boycott the BI bottle!

Achieve the highest ROI on business intelligence software

In this research paper you will find the results of a three year study into the success factors of Business Intelligence Software. The study was initiated to gain more insight into which factors actually determine the success (or otherwise) of these initiatives. In this clearly written research paper you will discover the secrets of success for Business Intelligence.

At least three out of five implementations fail

From the research it became clear that having success with business intelligence software is not easy. At least three out of five implementations fail, mostly due to not incorporating business intelligence in the planning & control cycle (adjust norms and targets, use information for analysis and action).

On the other hand, companies that succeed with business intelligence, demonstrate that when it is successful, financial results can increase dramatically.

The biggest pitfalls

This research paper shows in-depth insights into the biggest pitfalls and success factors of business intelligence. It will give you tips and guidance to make business intelligence really successful.

Learn how to be more successful

In this research paper you will learn:

- what the success rates are in the public and private sectors
- the 15 most critical success factors of business intelligence software
- why BI needs backing from the top to succeed

You don't have to make the same mistakes that other companies have done. Order today this research paper and make your business intelligence more successful and gain more ROI on

business intelligence software. The paper is 15 pages long and is illustrated with graphs, tables, best practices and expert opinions.

Business intelligence strategy

As a leading consultant in Business Intelligence we offer a small but high quality range of business intelligence services. Our *business intelligence strategy* service focuses on what you want to achieve with business intelligence in the near future, what the business benefits are and how to do it.

Where are you now?

The current situation will be addressed, discussed, analyses and compared with the best practices and newest technologies that are available. We will help you to find out quickly where improvements can be made.

Where do you want go?

Based on the previous step and the expected business benefits it is smart to create a business intelligence plan, leading to a clear goal. What competitive advantage can be achieved by upgrading your current BI system? What are the benefits for the business users and the IT professionals? How to present the plan to your stakeholders and directors.

How do you get there?

Now you know where you want to go, it's time to formulate a Business Intelligence strategy for the future. This can be implemented by setting standards, the implementation of a business intelligence competence centre, using BI in the cloud, using one platform for BI or a combination of all of these options.

What can we offer you?

- independent advice and process facilitation
- investigating the current situation
- interviewing your business users & IT professionals
- helping with the software selection process
- helping you to present the plans and strategy to your directors
- a second opinion

Business Intelligence framework

As a leading consultant in Business Intelligence we offer a small but high quality range of business intelligence services. Our ingenious *business intelligence framework* delivers world class business intelligence at a very reasonable price.

Why do you need a BI framework?

A business intelligence framework can help you to structure the process of improving your Business Intelligence and helps you to implement your business intelligence strategy in a very cost effective way. Business Intelligence projects will be more successful, cost less and deliver more value to your business users.

What is in the BI framework?

The business intelligence framework we offer consists of five key concepts:

- very high reusability achieved by object orientation & inheritance
- outstanding usability
- device neutral - portal, desktop, Smartphone, tablet
- high flexibility - role based with a data vault as an option
- vendor & tool independent

The framework connects these elements to each other. It will help you to implement your business intelligence strategy both easier and quicker.

What are the advantages?

- deliver new dashboards within an hour
- deliver new BI applications within days
- create new BI apps in hours
- less maintenance costs
- excellent performance (because of high reusability)
- higher usage of BI applications and dashboards

Business Intelligence consulting

As a leading partner in Business Intelligence we offer a small but high quality range of business intelligence services. Our Business Intelligence consulting focuses primarily on strategic & tactical issues, helping you to achieve success.

Key issues

There are several key issues in the market. The most important are:

- Our users are "drowning in information and starving for knowlegde", what can we do about it?
- Our Business Intelligence is hardly used, we have a problem.
- Our users complain about the performance of our Business Intelligence system, how can we improve it?
- The costs of our BI system are too high, how can we cut costs without decreasing the added value?
- Each department has chosen their own Business Intelligence tool, how can we migrate to one BI platform?

Cloud, analytics, big data and tools

- We have heard of BI in the cloud, should we consider it?
- We have heard of Business Analytics, do we need it?
- We have heard of Big Data, is it applicable to our business?
- We need a Business Intelligence tool, which one would be most suitable for us?
- We need an ETL tool, which one would be most suitable for us?

What can we offer you?

Our consulting practice is truly vendor independent and has tens of years of experience with all these issues. We can help you to find the right answers to your questions. In addition we can offer you our expertise and experience to help in defining a robust business intelligence strategy, setting up a business intelligence competence centre (BICC), implementing a business intelligence frame work and carry out the software selection.

Software selection

As a leading consultant in Business Intelligence we offer a small but high quality range of business intelligence services. Our *software selection* services offers extensive knowledge and truly independent advice.

Software selection quickly and efficiently

Often organizations find it difficult and costly to carry out a software selection process and to gather all the necessary data. The in-depth research we offer on Business Intelligence

tools and ETL tools is designed to help you perform the software selection quickly and efficiently.

Choosing and selecting software

We can help you to perform a software selection in two categories:

- Choosing & selecting BI tools
- Choosing & selecting ETL tools