

Selecting the Right Visual Analytic Tool for Your Unique Business Challenges



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Super Graphics™ to Enable the Adaptive Enterprise.
www.bis2.net



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Introduction

A critical step in constructing your Business Intelligence (BI) infrastructure is selecting the tools that will deliver and present information to your business users. This is the last step in a complex value chain that starts with raw source data from many systems, both internal and external, flows through various transformations to validate and cleanse the data, and finally loads into a data mart or data warehouse. If the information-delivery tools in the last step of this value chain are inadequate, then all the effort and expense of the preceding infrastructure is for not.

Selecting a tool that will deliver information to business users is much more than a technical comparison. One can put much effort in judging the merit of a specific feature or capability among candidates.

However, the real test of merit comes more on the subjective match with business users than the technical features of the tool. Does the tool enable business uses to understand complex interactions with customers and the like? Does the tool stimulate the creativity of business users to generate action plans for improving customer profitability...and enable them to monitor the effectiveness of those plans? It is deeper questions like these that should drive your tool selection.

This white paper will help you through the process of selecting the right visual analytic tool for delivering information to your business users. In particular, we will focus upon tools for visual analytics and offer a set of requirements that these tools should support. We will then suggest a checklist and a process for selecting visual analytic tools.



Visual Analytic Tools

There are three different ways of delivering information to business users within the enterprise (Figure 1).

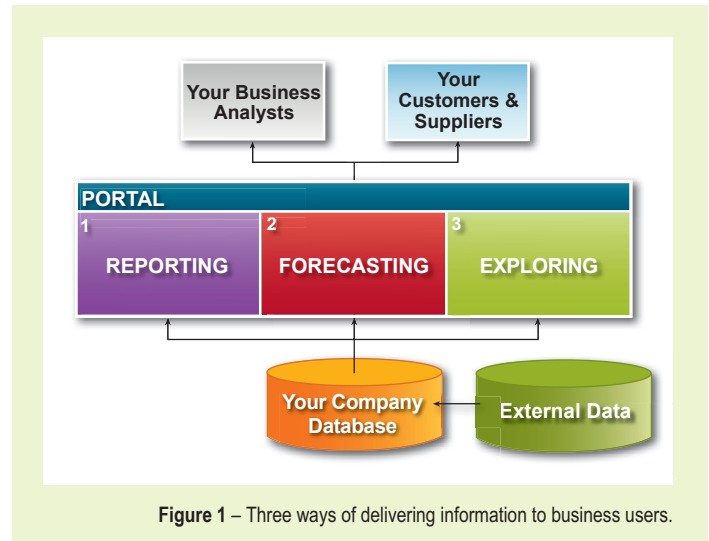


Figure 1 – Three ways of delivering information to business users.

First, there are reporting tools that summarize and display historical data. The relationships within the data are known and usually obvious. For instance, a report may list the top 25 customers and their total sales for the past month.

Second, there are forecasting tools that analyze trends in historical data and predict future values. Forecasting tools are also based on known relationships within the data (which may not be as obvious) and are useful for planning.

Third, there are exploring tools that probe the unknown relationships among customers, products, stores, and other key business entities. Exploring tools are often referred to as analytic tools or simply analytics.

The purpose of analytic tools is to break a complex business issue into smaller and simpler parts, thereby gaining an understanding of the issue and generate insights into the unknown relationships hidden within your data. As compared to reporting tools, analytic tools probe deeper into the casual relationships, such as the seasonal buying habits of high-frequency customers in a particular region.

There are analytic tools, such as data mining and predictive analytics, that rely on sophisticated computation to detect frequently occurring patterns. These tools are useful for experienced analysts who have the skills to configure the analysis runs and interpret the results. These tools are not appropriate for direct use by business users. There is a need for a different type of tool.

Visual analytics rely on a users intrinsic ability to detect patterns visually, thereby being able to see and understand the complex relationships within their business data. Aply put, seeing the relationship in business data is the basis for managing your business. To the business user, visual analytics is the means for cutting through the fog hiding business reality.

Selection Requirements

There are many approaches and many techniques used by visual analytics for displaying data. Given the unique requirements of your company, which ones are the most effective?

Herein we define the six broad requirements that a visual analytics tool should support. With each, a checklist of specific requirements is suggested.

Six requirements for a visual analytic tool:

- Seeing is key to your enterprise architecture
- Seeing the business value
- Seeing the whole amid the details
- Seeing in a glance
- Seeing as a group
- Seeing many perspectives at once.

Seeing is key to your enterprise architecture

The first set of requirements deal with enhancing your existing BI investment and complementing your enterprise architecture. Your enterprise architecture is incomplete until you have completed the last foot...from pixels to the brain. The compatibility of the visual analytics tools to your enterprise architecture is critical. Whether your company is a very large enterprise or not, it is critical that the tool qualify as an enterprise-class product with all the implications for scalability, security, ease of administration and the like. Key checklist questions:

- Can the tool directly access data from all the important data sources?
- Can the tool directly access data directly from spatial data sources?
- Can the tool execute indatabase analytical functions?
- Does the tool provide metadata driven defined user experiences?
- Does the tool comply with standards for integration into WebPortals?
- Is the delivery mechanism compatible with your Web 2.0 standards for Rich Internet Applications, such as Adobe® Flash® and the like?
- Are rendering times fast?
- Can the tool scale to performing analyses involving millions or billions of data records?
- Is the tool compatible with Microsoft® Office for both data access and result display?
- Is the tool compatible with your current security infrastructure?
- Do the distribution services enable browser based interaction for multiple users in your organization?
- Can results be easily exported for use in another tool?

Seeing the business value

Visual analytics should always focus on the business problem. And likewise, business users should define their business problem as clearly as possible and then refine that definition as the analysis proceeds. The problem can be obvious, such as a steep decline in sales. Or, the problem can be a lack of understanding, such as the cause-effect between sales and regional events. Metrics should clearly indicate whether a specific factor results in something that is better or worse for your company. If the company has established key performance indicators, those metrics should be used to drive the analytics. Key checklist questions:

- Are measures and dimensions familiar to business users?
- Are tradeoffs that are better/worse for the company obvious?
- Are analytics specific to issues in your industry?
- Can analytics be linked back to established KPIs?

<p>Seeing the whole amid the details</p>	<p>The implication is that the analytics will display a high density of information. However, that density should be designed with high clarity. Every pixel should convey additional information, while avoiding clutter. If so, this is a healthy form of high density information.</p> <ul style="list-style-type: none"> • Is there sufficient high density information with high clarity? • Are the visualizations explained with automatic legends? • Are almost all aspects of the visualization controlled in metadata, including color scales, breakpoints, layering and data sources? • Is the data query process exposed for data validation? • Does every pixel convey some useful information? • Are comparisons among measures and dimensions valid? • Does the visual reflect the cause-to-effect relationship inherent in the business processes? • Can you drill down from a high-level visual to the underlying data? • Are the operations of sorting, filtering and grouping performed easily and intuitively? • Can you explore specific detail of the visual display for deeper insights?
<p>Seeing in a glance</p>	<p>The visual design should be intuitive to a business user, reflecting the business reality while leveraging our visual brain. Some informal training may be necessary to orient business users. Once the user is familiar with the key features of the visual, do the following questions apply?</p> <ul style="list-style-type: none"> • Are key features conveyed at a glance to the trained user? • Do trained users judge the visual to be 'intuitive'? • Is there a minimum or absence of crucial textual explanation? For example, is there difficulty with English textual explanations for a French audience to understand the visual? • Through a series of analysis steps (sorting/filtering/grouping) can a business user maintain a consistent train-of-thought upon the business problem? • Are key insights into the nature of data shown in a clear fashion, without distraction or clutter?
<p>Seeing as a group</p>	<p>Seeing as a group must reinforce the unique management style and procedures of your corporation and drive practical actions. The analysis of critical business problems is usually a group process involving decision making, alternative generation, priority ranking, action planning, and team building.</p> <ul style="list-style-type: none"> • Is group decision making facilitated? For instance, can a group focus on a single issue, view multiple perspectives of that issue, discuss alternative explanations, generate various actions to remedy the issue, prioritize action plans, and decide on a course of action? • Can a team share data and collaborate on key visuals? In particular, does shared discovery lead to group education? • Can key visuals be published to and subscribed within a secure corporate network? • Can you embed visuals as widgets or images in other web pages or web portals? • Does the tool support one version of the truth?

Seeing many perspectives at once

As the group interprets the analysis, the shift among multiple perspectives of the data should be easy and fluid, along with simultaneously viewing several perspectives at once.

- Does the tool have a rich set of display designs, from data displays to heat maps?
- Does the tool treat the spatial dimension in a proper and flexible manner?
- Does the tool treat the time dimension in a proper and flexible manner?
- Can multiple perspectives be seen at the same time?
- Is the switching among multiple perspectives easy, flexible and fluid?
- Are multiple perspectives in sync so that filters/groupings in one visual show in all others?
- Do many 'stories' about the same data arise naturally from multiple perspectives?

Selection Process

The selection process is as important as the selection requirements above. As with any formal product selection, a well-planned process should be executed to maximize the benefits to your company. In particular, here are a few suggestions for selecting visual analytic tools.

First, focus the selection process on the business as opposed to technology. And, involve business users from the start.

The champion should be a business manager who sees real value to him/her and to the company.

Second, choose a specific business problem as a problem to be analyzed by the various candidates. The problem should not be too big and complex, but it should be significant enough to attract attention from top management. Also, the problem should be typical of business problems facing the company.

Third, compile a representative sample of realistic data. This may involve some challenges due to data access or data confidentiality. Allow sufficient time and effort to do this task adequately.

Fourth, spend time as a team with the tools and their vendors. This is more than a selection process. It is a learning experience

Progress is being made with advanced data visualizations that help comprehend the massive amount and complexity of data that is currently assaulting corporations. It is tools like BIS² Super Graphics that are leading the way.

Senior Executive, Mobile Telco Industry

that matures your understanding of the tradeoffs and of the appropriate match to your company's requirements.

Finally, do several group collaboration sessions since the greatest benefit from visual analytic tools is the ability to reach a group consensus and formulate a group action plan. Involve business persons who are familiar with the business problem but are not familiar with the technology or the specific tool being evaluated.

If you have performed the above selection process properly, the actual selection of the tool will be easy and obvious.

As an analyst, I see a wide variety of analytical tools. BIS² Super Graphics is a product that enables corporations to reap the value in their business data by bridging the gap in the last foot from pixels to the brain.

Leading BI Analyst & Market Commentator

vizbybis² as a Visual Analytic Tool

As you consider various visual analytic tools, it will become obvious that vizbybis² and it's Super Graphics are a strong contender. Not only does vizbybis² cover all the requirements discussed above, it goes further in several areas.

vizbybis² is built upon several powerful technologies, such as an easy-to-use graphical interface, patent-pending algorithms, Rich Internal Application (RIA) using Adobe® Flash®, Service Oriented Architecture (SOA) using USEful™ and RESTful interfaces, and universal data access. It is a tool that leverages, not replaces, your existing investment in BI tools by extending their capabilities into visual analytics.

vizbybis² has an extensive and expanding library of unique visual designs covering a wide range of business problems. (See Figure 2).

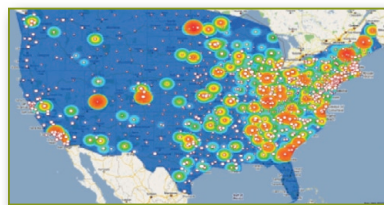
In our loyalty business we are generating huge piles of data every day. BIS²'s visualizations will let us know what customers are really doing and their shopping habits and this also provides valuable information for our loyalty partners.

Loyalty Management Executive

Spatial



See key business metrics by geographic region.

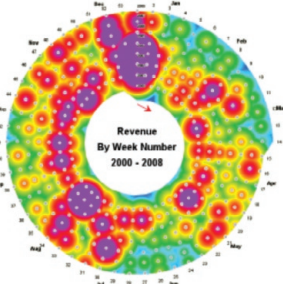


Inspatial



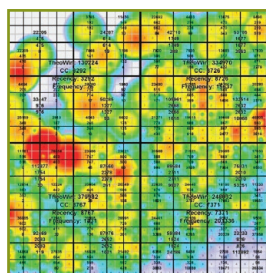
See customer behavior on a retail or casino floor.

Temporal

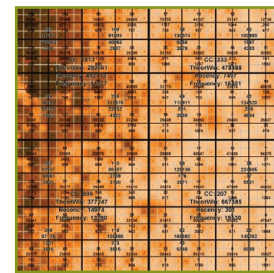


See cyclical patterns through time.

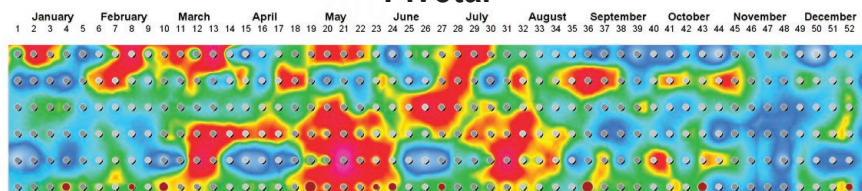
Quartal



See multi-dimensions of customer or product data.



Pivotal



See customer segments or product categories over time.

Figure 2 – Example BIS² Super Graphics.

BIS²'s methodology has generated a set of industry-specific solutions that can fit your company's situation, such as retailViz, telViz, insuranceViz, gameViz, entertainmentViz, manufacturingViz and others (See Figure 3).

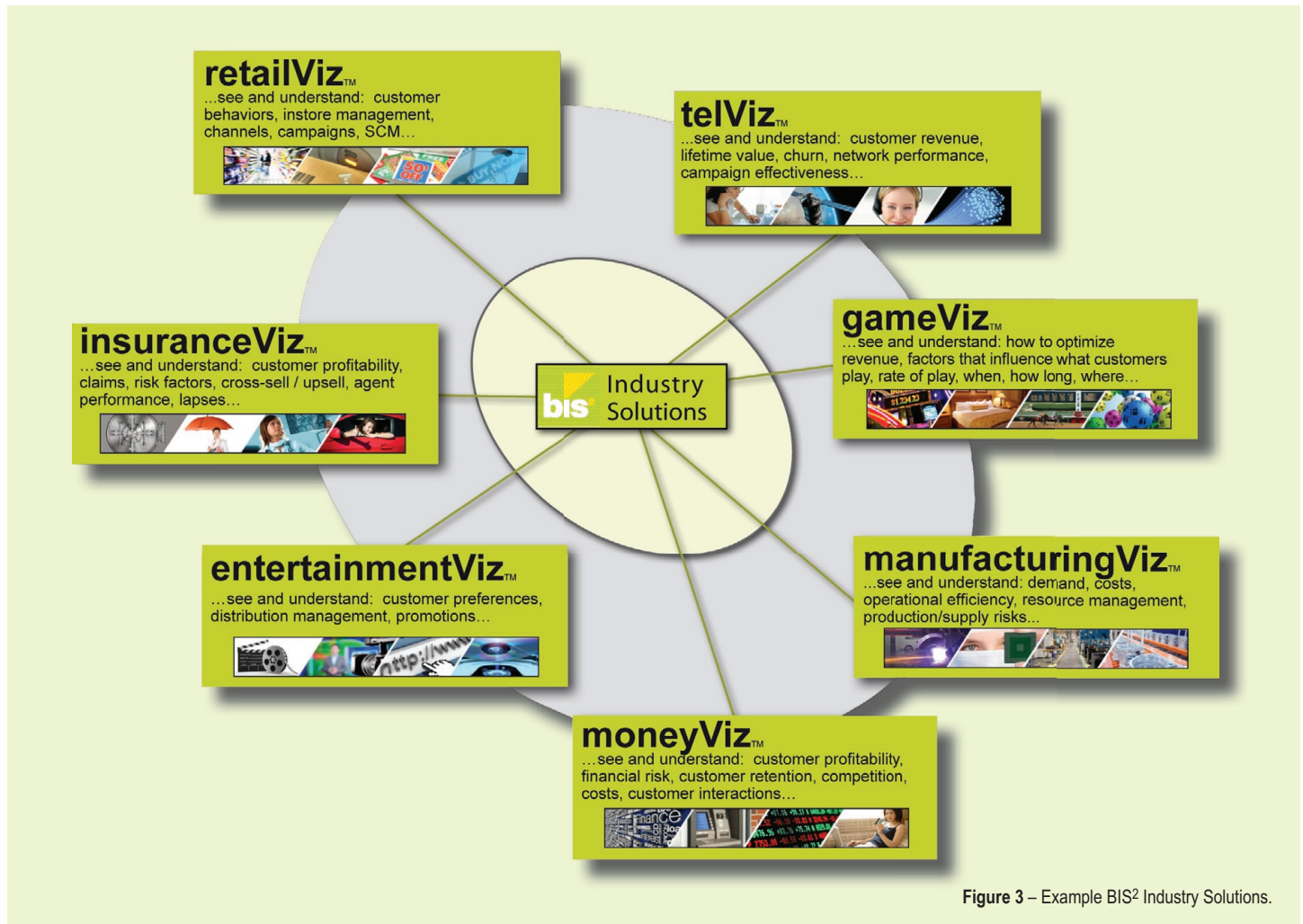


Figure 3 – Example BIS² Industry Solutions.

The vizbybis² dynamic metadata-defined framework enables flexible deployment and sophisticated adjustments to be made to the visuals presented in the product. This framework, which incorporates widgets, allows adjustments to be made to almost every aspect of the visuals.

The framework provides:

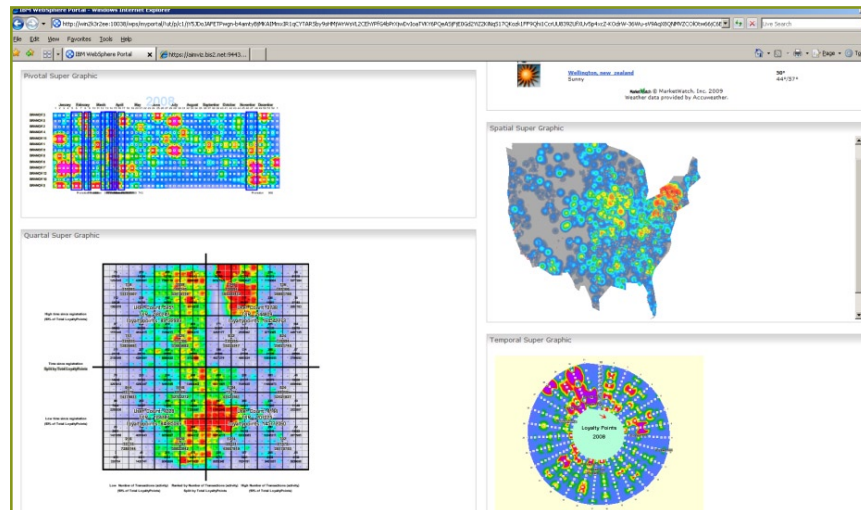
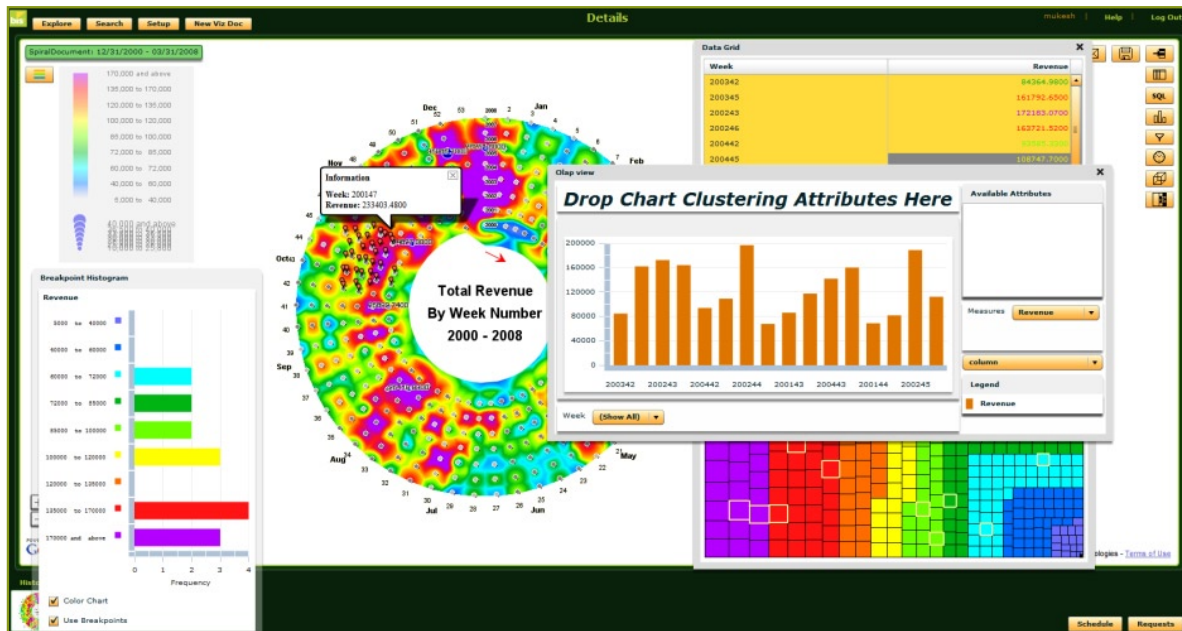
- **Layers** – a Super Graphic contains Visual Design Layers that are used to construct the Super Graphic; these range from background maps to heatmaps and enhance the visual value of the Super Graphic (See Figure 4).
- **Widgets** – Includes a widget which allows one or more image files stored on the vizbybis² server to be included within a Visual Document.
- **Breakpoints** – The choice of breakpoints and the color settings may be determined by the user. The correct selection will result in a Visual Document that is easy-to-read and clearly show differentiation between breakpoints.

- **Data definitions** - The data definition layer defines the key business rules around the data such as normalization or top 'number' of significant events. This data definition layer is independent of the underlying data access layer which hooks the data definition layer to the underlying database schema.

gameViz's main strength is that it provides analytics and visualizations one cannot easily do with an SQL coding tool. When I look at CRM or other analytics packages, I can achieve more effective results with SQL coding. I could do some of the gameViz functionality with SQL coding but it would take me years to do it, and there are other parts of gameViz that are truly amazing.

Gaming Industry Consultant

vizbybis² contains interactive Super Graphics. The vizbybis² solution allows a user to easily search, view and interact with the Super Graphics.



Web Portal – Use vizbybis² to create a dashboard of Super Graphics (IBM Web Portal shown).

Figure 4 – The vizbybis² interactive Super Graphics and Web Portal.

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