NextGen Software or Software for the NextGen?

White Paper

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NextGen Software or Software for the NextGen?

The uptake of Business Intelligence software has been perennially disappointing. Some say the tools are too hard to use, others say the data is too confusing or the subject areas made available are not aligned with the requirements. But, analytics are playing an increasingly important role for employees in non-technical roles. Many question whether it s time to rethink the whole field of Business Intelligence (BI), of which analytics is a part, and move to a BI 2.0, a next generation set of software products. Alternatively, is it possible that the workforce may be outgrowing its reservations to analytics? Perhaps what is really needed is not NextGen software, but rather, software for the NextGen?

The NextGen

The next generation of workers, NextGen for short, already uses technology[1] in ways that challenge all of the current notions about work, information and power. To the same extent that people of the current generation, those who have been in the workforce for a few decades, could not understand their parents fixation with the Depression, the next generation is stunned by the current generation s lack of mastery or, in many cases, even interest in the application of technology to work. The current generation selectively incorporated technology into their work; the next generation incorporates technology into every aspect of their lives.

Consider for a moment what s happened in just the past dozen or so years. Google came out of beta in September of 1999, a scant seven years ago as of this writing, but we might as well rewrite the calendar to place it at the year 0 BG (Before Google). Ten years ago, a cell phone was a device for mobile workers and the wealthy. Most people who had a connection to the Internet had a 24k bps analog modem. But people coming into the workforce now cannot recall a time without broadband connections, color screen multi-function cell phones, 3-D video games and MySpace.com.

The cubicles and corner offices of commercial organizations are rapidly filling up with people who have made electronic devices and their interfaces a central part of their lives. Computers, cell phones and video games are as commonplace to them as color TV and automatic transmissions were to the previous generation. Because of this familiarity with devices and software, assimilating new innovations comes easily to this group. Unlike the previous generation, which accepted a new technology or didn t, this new generation views technology as essential and is demanding and vocal about the experience they expect. Ease of use is no longer about being easy . Popular video games are not popular because they are easy, but rather because they deliver exhilarating and responsive experiences. Sensibilities are very different now. This generation at work seeks intellectually stimulating and rewarding experiences in place of routine and regularity.

The previous generation dug in its heels over technology. While some innovations were widely adopted, such as spreadsheets and email, almost every other type of business-oriented software was met with resistance. In the case of BI and especially analytics, at least 90% of knowledge workers, and perhaps more, never developed a facility for using the tools except in limited ways, such as exporting data to their spreadsheets.

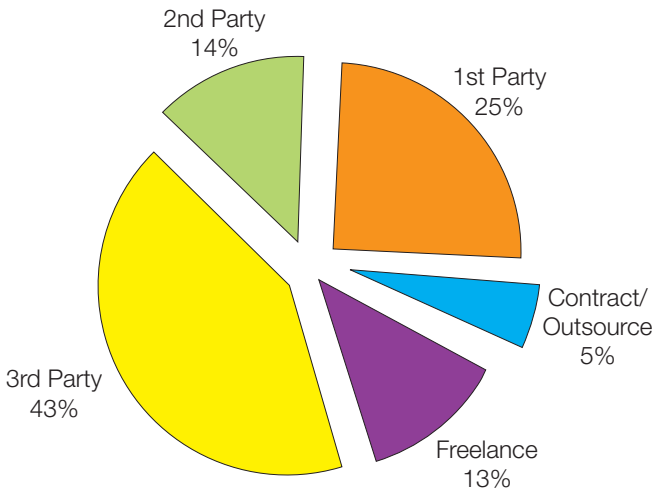
BI vendors have consistently labored to come up with new versions of software that would seduce the legions of people sitting on the sidelines to join in. Attempts include packaging a broad range of functionality under a single brand name (platform standardization) often far in advance of engineering interoperation of the pieces, or dialing down the functionality of the interface (also known as dumbing down) so that the product would appear more friendly or easy to use to the reluctant. But the demographics are

[1] Principally, this refers to electronic technology such as computers and software, the Internet, video games and cell phones

changing. These strategies will not work with the NextGen. BI vendors that will survive and prosper will need to develop software that addresses the entire BI experience, rather than providing merely BI tools and functions. NextGen workers require software to do all the things they need to do, leveraging their already deep experience with electronic technology, the internet and collaboration. Rather than seeking control through spreadsheets, NextGen employees are seeking experiences at work that are as compelling as their recreation.

Who are your "NextGen employees?"

In addition to changing demographics in the workplace, the very definition of workplace is changing. If you imagine the way analytics operate in an organization today, you will most likely visualize white collar employees functioning at various levels of proficiency. A small number provide the most intricate and in-depth output, while others with less skill, training or interest do little to no creative generation, but review and utilize the output of others. This is the standard model for BI, and is repeated in articles and white papers and brochures without question. However, the workforce is quite a bit more diverse than this model allows, and is rapidly becoming more so.



Responses by Employment Category

Figure 1

In some industries or even in all industries for particular functional areas, 75% of the people actively working may not be employees at all. There aren t a lot of good surveys of workforce demographics that focus on this particular point, but one, a survey of employment diversity in the electronic gaming industry, illustrates the point pretty clearly (Figure 1).

1st party refers to direct employees, 2nd party, those who work for a design studio owned by the firm, 3rd party are employees of an external firm. Freelance and Contract are self-explanatory.

Extrapolating this a little, consider the fact that your enterprise no longer begins and ends at your company security gate, or even your virtual security gate. Work is increasingly done cooperatively with partners, suppliers, regulators and even ad hoc associations, such as in the event of an incident like a natural disaster or product recall. Your workforce is composed of people that you not only can t see, you may not even know.

LastGen Lessons

Like it or not, analytics is married to BI in the minds of corporate IT. Slicing and dicing in OLAP tools, viewing reports and manipulating analytics fall under the same category for their purposes of access, control and overview. This is unfortunate, but to understand how analytics have been, and continue to be, deployed in organizations, it is helpful to understand common usage models for BI as a whole.

Unlike the Web, spreadsheets or the iPod, BI technology did not burst onto the scene; it emerged slowly over time. Although the name itself, Business Intelligence, entered the computing lexicon barely a decade ago, its lineage can be traced back another ten or even twenty years. Because BI is a mature discipline, best practices for deploying and sustaining BI have accumulated over time, especially those practices around managing access and engineering how people actually use the tools. Best practices, however, have a tendency to impede progress in mature technologies, especially when the surrounding technologies are on acceler-

ating trajectories, as they are today. When best practices become stale, they adversely affect the ability of organizations to realize the full complement of benefits from technology investments, and BI is no exception.

BI is typically rolled out (and this includes analytics) in a role-based scheme. Similar to the pyramid in Figure 2, very broad definitions of roles are specified and all users are slotted into one of them. But usage models based on a one-to-one relationship between role and person are too simplistic to be useful. People who act in a single role are the exception, not the rule. In today s hyper-connected environment, people more than ever act not as individuals, but as a community. Work tends to be highly varied, not routine. Responsiveness is more valued than planning when it comes to competitiveness. Where traditional BI strives for standardization, NextGen BI (analytics) seeks to change the way the way people experience information. More than all of the disciplines in Information Technology, BI has to be the most flexible, extendible and accommodating to constantly changing challenges.

Today s canonical models of BI users appeared well over a decade ago, before the entire fabric of working life was altered radically by the Internet, the general flattening of organizations, globalization and a workforce that is far more computer literate than the one that preceded it. These models persist despite the fact that BI is long past adolescence, and has matured through many generations of surrounding technology which turned working life in organizations upside-down. What is needed is a broader understanding of how BI is used and how it adds value, an understanding that displaces these long-held best practices.

Current BI tools are almost completely driven by the underlying data models, either the tool s meta-model or actual source systems. When a client approaches a system like this, their goal is to make the computer understand what they need to do, not vice-versa. Ease of use is a fungible term, but for the next generation, it means having the power to do complex, multi-step tasks, but presented to them in the familiar metaphors of their experience. Many today believe the ideal interface for BI is a spreadsheet because so many potential clients of BI have voted with their feet and trudged back to Excel. Excel is far from ideal, but it has the advantage of allowing clients to do what they want when they want it. Repeatability, maintainability and accuracy are serious problems with Excel, but they don t present themselves until later. The lesson with spreadsheets is allowing people to do what they need to do. Just fix all the problems that come later.

Another fallacy of BI today is that it is highly personal work. The promise of BI was for people to make better decisions by being better informed. Unfortunately, the model stopped there and never answered the question, Then what? Where is the connection between an individual receiving their monthly stack of reports and then taking action or making decisions with other people? Where is the total experience of problem-solving and decision-making as a group activity and why hasn t BI facilitated that? In reality, people gather information constantly, consult with colleagues and managers, and review their assumptions and steps. Decisions, such as they are, are typically made incrementally, and by consensus. The best ideas are those that follow from other observations, interactions and ideas. Isaac Newton referred to his monumental achievements as being merely, standing on the shoulders of giants. ROI from analytics does not come from a few solitary analysts discovering a

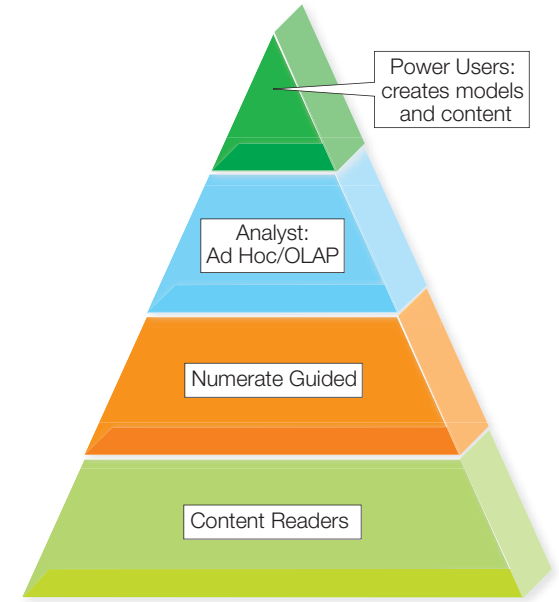


Figure 2

massive savings or a stunning revenue opportunity. It contributes to shared understanding and discovery processes that have to be connected, not done in seclusion, and bound seamlessly to the rest of the computing framework of the organization. How do you make complex decisions with confidence and consensus? You have to be able to iterate on known results. You have to create derived data not just rely on interpretation of historical information. You have to be able to show the path to the results in addition to the results themselves.

The vast majority of BI applications and BI products operate under a perception that users merely view data. The whole notion of a data warehouse is strictly read-only (and that it contains the data needed for any type of analytics). The underlying assumption here is that Business Intelligence is an exercise in evaluating what is already recorded. All that is needed is a sufficient degree of presentation. There are some exceptions to this model. It turns out that users have some information too as well as the ability to rapidly interact with information. One reason the vast majority of knowledge workers reject BI tools in favor of their personal tools, such as spreadsheets, is because of the crucial ability to add their own information to an analysis. It should be noted that data management people cringe at this idea. All current data warehousing methodologies consist of right-pointing arrows, starting with raw data and pointing down to users, with nothing pointing back. This was the conventional wisdom in the past two decades, but it is becoming abundantly clear that the analytical aspects of BI are now prominent and the read-only BI environment is on its way out.

Competing on Analytics

One indication of the rising prominence of analytics is that the Harvard Business Review published an article in 2006 called Competing on Analytics[2] by Tom Davenport. Davenport singlehandedly placed the word analytics into the popular business lexicon. His premise is that companies are beginning to derive their competitive advantage from analytics. He pointed out that going forward, competing on analytics is more important than competing on product design, customer service or anything else. Davenport raises the important issue that analytics have to pervade organizations and prescribes a wide use if they are going to compete effectively, but raises some concerns as well:

> But with a democratic approach there s a possibility that some people will get in over their heads. They ll produce spreadsheet errors... violate statistical assumptions, and create new versions of key corporate data elements.

The Zen master Suzuki Roshi has an answer for that concern: To control your cow, give it a bigger pasture. In the limited population of analytics users today, these problems are already rampant. A problem that already exists can t be avoided. The obvious answer is to provide a better solution rather than creating a cadre of cloistered experts. Analytics software today, such as it is, is simply not suited to the needs that have emerged.

Ideas for Software for the NextGen

It s easy enough to state the problem, but what exactly does Software for the Next Generation look like? How is it different from current BI tools? The following are some guidelines:

1. Visual representation allows for the unambiguous communications of results to multiple parties across various domains so that they can not only be understood, but be understood in context.
2. Interactivity is mandatory to permit actors at all stages of the process to ask and answer their own questions and to contribute their own information.
3. The information must be available to multiple users simultaneously in order for them to share their own insights and enable multi-directional exchange of analytic results to support an iterative path to consensual and confident conclusions.

[2] Competing on Analytics, Harvard Business Review, January-February, 2006

4. Analytic results must be guided so that the participants can benefit from knowledge that is not their own. This allows innovation to occur within the guideposts of what is intended increasing the opportunity for acting with confidence and consensus when faced with a complex problem.

There are also some specific features that essential attributes for NextGen analytics.

Guides

Analytics is not a personal effort, it s collaborative. A client constructs a model, populates it with data, runs scenarios, examines results graphically and refines the process from one step or another. It is impossible to describe all of this activity to others in words. Instead, the client can choose to animate the process and share the steps, sequentially or otherwise, with colleagues. This serves the purpose of not sharing complex thinking without repeating oneself, but it also sparks collaboration as these guides can be annotated and incrementally improved in much the same way Open Source software is developed by a people with a common interest.

Speed

Speed is the subject of another paper in this series, but briefly, speed has to be measured as cycle speed. Being able to recalculate a spreadsheet in a fraction of a second is good, but taking three days each month to update all the spreadsheets before sending them out is a time sink. Waiting for someone else to provision some data slows you down. Using four different software packages (even if they are in one suite) to transform and load data, build a model, enter assumptions, run multiple scenarios and screen output, choosing from dozens of visualizations, re-run with sliders to filter and constrain assumptions, not only takes time, each handoff chews up cycles trying to get the pins to fit into the holes. Analytics for the next generation must be able to deliver an information experience that does all of this, and more, seamlessly.

Visual Interactivity

Aggregation is the key to compressing data on a single page, but it obscures as much as it reveals. OLAP was designed to selectively reveal the detail beneath aggregated data, but it could not capture the interplay of all of the elements at once. Only interactive visualization can combine aggregation, navigation, and drilldown in one visible landscape. Visual interactivity is the only way to unambiguously communicate dense investigations with groups of people of varying backgrounds and orientations. The combination of all of the data present and the full complement of all of the tool s manipulations allows every actor to pose and answer their own questions and share the steps with others. Interactivity provides immediacy of understanding removing the latency in current BI practice waiting others without subject matter expertise to build a model, re-format a report or re-configure a cube of information for am operational area.

Conclusion

The first era of Information Technology is over. Applications programmed by programmers who worked from specifications developed by systems analysts who gathered requirements from others was too slow, too expensive and too limited for the dynamic world we live in today. Developing durable applications for ATM machines or air traffic control benefit from careful software engineering, but informing business decisions with information and tools to visualize, present, manipulate and share information can no longer be constrained by such glacial processes. Analytics has to change. We fence people off now by limiting features and restricting their access with the ironically entitled grants of access privileges. Marketers, for example, want to put a face on those customers, not just characterize them by numbers and pie charts. They want real attributes that tell them something. This next generation has earned the right to drive their own solutions, not be spoon-fed the same old BI. It s time to tear up the old BI software evaluation sheets and draw up new ones based on the total experience.

About Spotfire

For thousands of business users faced with day-to-day decisions, Spotfire analytics offers the platinum user experience for visually interacting with information. Distinguished by its intuitive ease and analytic power, Spotfire software rapidly reveals unseen threats and illuminates new opportunities, creating unprecedented economic value. Spotfire's customers include industry leaders among the Global 2000 that have deployed Spotfire analytics to gain an information advantage over their competitors. For more information, visit http://www.spotfire.com.

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