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MORALITY TAKES A PLACE AT THE DATA ANALYTICS TABLE

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IS THERE such a thing as too much data? Or is the amount of it inconsequential? After all, what's important is whether we can use the data we have—big or small—to gain insight for improving business processes and decision making. And if we can analyze all of our data—including both structured and unstructured information—what are the ethical considerations around the use of what we uncover through those analyses? Thorny questions.

Privacy and security have long been top priorities for organizations that collect data on customers and website visitors. Safeguards must be put in place to protect that data from unauthorized and improper uses. Thanks to the capabilities of advanced analytics tools, companies have another data-usage concern: ethics. Just because you can analyze data doesn't mean doing so will put you on firm moral footing. In this issue's lead article, BeyeNETWORK expert Frank Buytendijk assesses

the [ethical conundrums of analytics initiatives](#).

SearchBusinessAnalytics.com contributor Alan R. Earls reports on the concept of business intelligence competency centers, detailing their [benefits and the ways that companies can go wrong](#) in setting up and managing them.

Analyzing unstructured data has been an elusive target for many companies, but new technologies are putting it more in their sights. Data warehousing guru Bill Inmon discusses the value of [incorporating text data into BI processes](#).



JEAN SCHAUER
Editor in Chief
BeyeNETWORK

POWER, REACH OF ANALYTICS POSE NEW ETHICAL DILEMMAS

Analyze, analyze, analyze. That's the mandate in many companies. But to avoid negative repercussions, it's wise to proceed with caution and consider the moral issues created by powerful analytics tools. By Frank Buytendijk

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THERE IS an increasingly strong ethical dimension to technology design and use. Now that technical advancements have eased so many constraints and eliminated so many barriers for users, the question of how to accomplish something with technology is being replaced by this: "What do we do with all that power?" One area that's particularly susceptible to ethical issues is analytics.

Let's explore some examples. Imagine you are an insurance company analyst, and you read that sitting in front of a computer too long can lead to neck and back problems. You've also been part of initiating a very successful customer community on your company's website. After registering on the community

site, customers can discuss and rate medical specialists or peruse a large collection of information on health and diet best practices.

In a moment of creativity, you decide to write a software program to track which customers spend the most time on the website, and you correlate that information with the claims data in the company's data warehouse. Indeed, you find a correlation: Those who spend a lot of time on the site are clearly at higher risk for back and neck problems, which should be reflected in their insurance premiums.

Is it ethical to mine for that correlation in the data? It's data, it can be analyzed and doing so leads to more knowledge. What can be wrong with that? But I would guess that there is a good chance you'd view this analysis as wrong to do.

Consider another example at the same insurance company. You post a survey on the community site as part of a preventive health program. You ask people questions about time spent on their computers and any neck and back problems they may have. As a thank you for participating in the survey, after the data is analyzed customers who indicate they have neck and back problems receive a free software application that reminds them after 45 minutes of online time that they should do stretching exercises.

Would this be ethical? My guess is that most people would intuitively feel there are no big issues with this initiative. How is it different from the previous example?

LACK OF CONSENT RAISES RED FLAGS

One difference is immediately obvious. In the first example there is no *consent*, but there is in the second example. In the first, customers visit and use the community website for various purposes, but they aren't told that data about their activities will be used by the company for other purposes. In the second, people consent by willingly completing a questionnaire. It is the lack of consent to use data for a specific analytical purpose that may be an ethical issue.

Now consider a third example. Mining the data warehouse, you find that within two months of upgrading their dental insurance, a sizable

percentage of customers claim dental expenses that weren't covered before the upgrade. You recommend that the policy terms and conditions be changed so that reimbursement of newly covered expenses starts after four or six months.

In this case, there is no consent, but I have found that not many people would see ethical issues in what was done. What is different? In this example, customers know that dental work is needed and intentionally upgrade their insurance so the work will be covered. The insurer is using analytics to protect its legitimate interests. Next to consent, *intent* plays an important role in considerations of analytics ethics.

What makes the first example problematic is not only the lack of consent but also the insurance company's intent. Customers may face higher premiums because the tracking of their activities on the community website marked them as a higher risk. It's a trap set by the company and clearly not ethical. In the second case, not only is there consent, but the insurer's intent is different: to help customers avoid health problems.

USING DATA TO PLAN

SPEED TRAPS: NOT SO FAST

Here's a real-world example. In April 2011, European newspapers reported that police in the Netherlands were using data collected from TomTom

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Global Positioning System navigation devices to plan speed traps. There was a public outcry, and TomTom quickly responded by changing its contract language to prevent the data it sells to governments from being used for such purposes. But how did this happen?

One of TomTom's innovations was to make its navigation devices bidirectional. It collects driver data in real time and uses the information to notify subscribers of traffic jams. TomTom states in the terms and conditions for its service that it also is allowed to sell the collected data in an aggregated and anonymous form.

The authorities in charge of highways and roads in various locales have found good uses for the TomTom data. It helps them see where road improvements are needed to eliminate recurring traffic jams or minimize the ones caused by ongoing roadwork. So far, no problem. But then the data landed in the hands of Dutch police departments that used it to calculate average driving speeds and plan the placement of cameras to catch speeders.

Was that use of the data appropriate or not? It can be argued both ways.

The data was legally bought and contained no identifiable information, so citizens did not have to give consent for the police to use it. Furthermore, the data wasn't used to find and punish speeders after the

fact—it was used to catch people at the actual moment of speeding. In fact, this type of data-based decision making is an example of more efficient use of taxpayers' money. It replaces a more elaborate process of physically searching for places where drivers tend to speed. Why can't the

WHY CAN'T THE POLICE USE TECHNOLOGY TO IMPROVE THE EFFECTIVENESS AND EFFICIENCY OF SPEED TRAPS IF CITIZENS CAN USE TECHNOLOGIES SUCH AS TWITTER TO AVOID SUCH TRAPS?

police use technology to improve the effectiveness and efficiency of speed traps if citizens can use technologies such as Twitter to avoid such traps?

Yet TomTom's immediate reaction was to stop the practices. Faced with negative feedback from customers, the company decided that the police use of its data was bad for business. Customers pay extra for premium services such as dynamic traffic-jam monitoring, and they enable those services by supplying the required data. They are supposed to benefit from that, not be punished as a result of it.

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DIVERGENT VIEWS MUDDY ETHICAL WATERS

In ethics, there are two main schools of thought. There are the consequentialists, who feel actions can be judged based on their outcome. If the outcome is good, the action was good. If the outcome is bad, the action was bad. The universalists, on the contrary, feel there should be some rules up front. There are simply things that you should or shouldn't do because you believe they are right or wrong.

Both approaches have their limitations for assessing the ethics of analytics. It will be hard for consequentialists to maintain that you can freely explore everything and

just ignore certain new insights. You can't undo knowledge, and you can be held responsible for not using information as much as for using it.

In fact, there is a new rule emerging from the examples I detailed: *The more a certain use of data is removed from the original goal and the original measurement instrument, the bigger the chance that issues will arise.* The insurer's community website can be used for research but wasn't meant for tracking length of use. TomTom data can be used for analyzing the effects of roadwork, but people may object to using it to plan speed traps. In both cases, the problematic uses were one step too far removed from the original purpose.

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ETHICS QUESTIONS SHADOW DATA WAREHOUSES

ETHICS CONSIDERATIONS ALSO have implications for best practices in data warehousing. A data warehouse is supposed to be application-neutral. Data stored there is disconnected from the original source system (usually, though not always, by creating a separate physical copy), and it should be integrated and modeled in such a way that there are minimal constraints on how to use it for all different kinds of analysis.

According to my proposed rule on the distance between data's original purpose and planned additional uses, the nature of data warehousing triggers potential ethical issues. Once data is consolidated and loaded into a data warehouse, it is not possible to check whether the way you intend to use it corresponds with the original purpose for utilizing that data in the source system. As a result, data warehouses should have underlying metadata that clearly describes the purposes for which the data stored in them can be used. ■

But universalists shouldn't cheer so soon. Even with my new rule, their position is hard to maintain as well. Analytics today is interac-

MODERN DATA MINING TOOLS CRAWL THROUGH DATA AUTOMATICALLY AND ANSWER QUESTIONS THAT WEREN'T EVEN ASKED.

tive and iterative. Analyzing data is not just about answering questions; it's explorative in nature. When you begin, you don't necessarily know where your exercise will end. Also, modern data mining tools crawl through data automatically and answer questions that weren't even asked.

There are no easy answers to the ethical dilemmas. With so much

development going on in analytics technology, and analytics having so much impact on business models and strategies, we need to have a debate—in businesses and in public—on what is the right thing to do. I hope this debate comes before any damage is done. But I am afraid a more likely prediction will come true first: Some large enterprises will suffer major public-relations damage by making mistakes in their analytics programs and upsetting the general public. It is not inconceivable that regulators will step in and restrict the use of data for analytics. It is not impossible that some businesses will even have to fold after failing to recover from legal actions filed against them.

I'll end with a consequentialist view. Something good may come out of this analytics conundrum: new analytics best practices that protect not only companies but also their customers. ■

Check the "In Search of Wisdom" [BeyeNETWORK Expert Channel](#) for more articles by Frank Buytendijk.

Frank Buytendijk is a frequent conference speaker on IT and business issues and the author of five books, including *Socrates Reloaded: The Case for Ethics in Business & Technology*, published in July. He works as chief marketing officer at Be Informed, a vendor of business process management software. Email him at f.a.buytendijk@planet.nl.

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Managed effectively, a business intelligence competency center helps prioritize BI projects and align them with corporate goals. But it also can become a bottleneck or organizational orphan. By Alan R. Earls

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A **S COMPANIES BUILD UP** their business intelligence programs, one of the issues they eventually need to consider is whether they should create a centralized team to coordinate and oversee all of their BI activities. A formal business intelligence competency center is the ultimate manifestation of the team concept, and BI consultants say BICCs can provide a wide array of benefits. But, they caution, the process of setting one up must be carefully planned to ensure that what results is a good fit.

For example, imposing a BICC on a company that is just getting started with BI initiatives is a recipe for disaster, warned Estelle Nicholson, an independent consultant in Washington, D.C., and creator of the BI Competency Centers group on social

networking site LinkedIn. “The top-down approach in a company with no BI culture is essentially providing a solution to a problem that nobody thinks they have,” Nicholson said, adding that the BICC could find it hard to win support from business-unit managers.

The biggest mistake companies make with BICCs is starting them up too early, before they’ve “earned the right,” said Jill Dyché, a BI and data warehousing consultant who now is vice president of thought leadership at software vendor SAS Institute Inc.

“One of my clients told me that he wanted to establish a BICC so his team could ‘get more attention from the business.’ That won’t work,” Dyché said. “The BICC should be credible and productive at the outset. People should recognize its value and be engaged from day one.”

To help make that happen, she recommends that companies deploy at least two successful BI applications—demonstrating that they've addressed some real-world business problems—before they move to set up a centralized team.

ALL IN THE SAME BI BOAT

An effective BICC can help get all the business units in a company to “put their oars in the water and move in the same direction” on BI, said Claudia Imhoff, president of consultancy Intelligent Solutions Inc. in Boulder, Colo. But business executives sometimes see BICCs as a bottleneck—and they can become one if they aren't managed properly, Imhoff said.

She added that the power and responsibilities of BICCs vary depending on the structure and culture of companies. “If you have an organization with a tendency to centralize functions, a BICC makes perfect sense,” Imhoff said. “On the other hand, if you have a more decentralized company, a BICC may face more resistance.” In that case, she said, a BICC could still be worthwhile, but its role might focus more on advice and strategic planning than on hands-on deployment and management of BI systems.

The formalized BI processes and consistent project-management approach that a strong BICC implements should reduce costs and ensure that BI investments support overall business objectives, accord-

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STAFFING A BICC: INSIDE OR OUTSIDE JOB?

COMPANIES SETTING UP business intelligence competency centers must assign dedicated resources or free up time for people in IT and business units to participate in a BICC's activities—or they can adopt a hybrid approach that mixes the two. In addition, there may be a need to bring in outside personnel with specific BI expertise to help lead and staff the new operation, said independent BI consultant Estelle Nicholson.

For example, a company might have to hire a new executive to manage its BICC. In other cases, Nicholson said, it might be more convenient to outsource the process by using consultants to kick off a BICC initiative. “The route a company chooses really depends on the level of expertise in BI that already exists and the culture of the company,” she said. ■

ing to Nicholson. "In a company with BI projects in silos and no overarching BICC, efforts may not be aligned toward a larger corporate goal," she said.

But it doesn't have to be a massive undertaking if a company isn't ready for or doesn't need that. "A BICC could be very small, with just a few people maintaining a collection of procedures and approved applications," Nicholson said.

In such cases, she added, a good starting point is to simply document the BI initiatives that are going on in a company and the software being used. That alone can lead to cost savings by prompting a streamlining of redundant BI tools.

ALIGN, PRIORITIZE, COMMUNICATE

Ideally, a BICC should function as "a program management office for BI," Dyché said. In that role, its duties would include working with corporate executives and business-unit managers to align BI initiatives with business objectives and plan and prioritize projects, while also communicating progress and measuring the business impact of BI investments. But she also said that the exact boundaries of what a BICC is responsible for will depend on a particular company's culture and organizational structure.

Rick Sherman, founder of Athena IT Solutions, a consultancy in Maynard, Mass., said end-user training

is another aspect of implementations that BICCs can help with. "Companies typically send their business users for vendor training [on how to use BI software], but that usually overwhelms people with too many features," Sherman said. Instead, he added, a BICC's staff can oversee the training process and help users get started with the new tools.

There's no single recipe for structuring a BICC. But Nicholson said it requires a mix of people with business knowledge, technical skills and BI experience, headed by "someone with the authority to do what needs to be done." Diplomatic skills are also important because of the need to work with different functional units and get them to agree on common practices, she said.

Another big issue is deciding where a BICC belongs in an organizational structure. The IT department is a popular choice, but Nicholson warned that if it is segregated from business units, putting a BICC in IT "could doom it to wither and die." The bottom line, she said, is that both IT and the business side need to be committed to the concept to make it work. ■

Alan R. Earls writes for several TechTarget sites, including SearchBusinessAnalytics.com and SearchDataManagement.com. He has also done freelance work for publications including *The Boston Globe*, the *Chicago Tribune* and *American Cemetery*. Email him at alan.r.earls@gmail.com.

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TEXTUAL DATA BECOMES NEW FRONTIER FOR BI APPLICATIONS

Unstructured text data can hold valuable insights, but analyzing it has been a challenge. New tools are changing that, opening up additional data-analysis opportunities and enabling better decision making.

By W. H. “Bill” Inmon

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FOR YEARS IT and business intelligence (BI) teams have focused on repetitive structured transaction data. But structured data represents only about 20% of the overall data in most companies. That means they're missing out on the business insights that can be found in the other 80%—the unstructured data. It's time for a change.

New technology allows unstructured data to be included in the decision-making process. For example, standalone text analytics tools can be used to look for patterns in text data and assess its meaning and sentiment. Organizations can also now place text in standard relational databases, so it can be stored in data warehouses for mainstream BI tools to analyze.

Having this previously unstruc-

tured data available for analysis presents valuable information that can be used to make better decisions. In addition, new business opportunities can be uncovered that would never see the light of day by analyzing conventional record-based data only.

Here are a few examples of the kinds of text data that companies can now use more effectively:

- **CORPORATE CONTRACTS.** Business management has always had the ability to compare and analyze a small number of contracts. But without the ability to incorporate text data in BI and analytics processes, there was no way to analyze 10,000 or 100,000 contracts at a time. When a company has the ability to look collectively at the text in

corporate contracts, management can answer questions such as these:

- How many contracts expire in six months?
- How much liability do we have?
- How much could we save if we had a single master contract with a customer?

■ **HEALTH CARE DATA.** Medical data is permeated by text that was difficult to analyze in the past. But now it is possible for hospitals and health care organizations to capture, store and analyze huge amounts of text data in an automated manner.

■ **EMAIL MESSAGES.** Many corporations depend on email as an essential part of the business. But typically, once an email is read, it effectively goes into the corporate trash can. That's a shame because emails often contain important information about business transactions, customer attitudes, complaints, product malfunctions and so forth. Now email messages can be saved, organized, filtered and analyzed.

■ **WARRANTY CLAIMS DATA.** Warranty claims contain a large amount of information in text form. Certainly that information is important to customers who have had problems with products or services, but it's also

extremely valuable to a company's engineers and product designers. Properly analyzed, warranty claims data can help them detect—and then correct—product flaws and weaknesses.

■ **LOAN APPLICATIONS.** The U.S. economy was thrown into a recession in late 2007 partly because of risky mortgage-lending practices by banks. In addition, the number of loan applications that were being generated before the economic crash overwhelmed the capacity of bank workers to analyze them manually. Now, by using BI tools to analyze text from loan applications, banks can more easily assess the underlying value and risks of their loan portfolios.

■ **CALL CENTER RECORDS.** In many organizations, call centers are at the heart of interactions between consumers and the company, and they generate large amounts of text data. In addition to the customer service representatives who deal with customers, there are many other parties in a company who can benefit from the ability to analyze that information. For example, senior management can get feedback on products and services and how they could be improved, or they can gauge the interest in new products and strategic directions. Being able to analyze

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written records of call center conversations opens a new avenue of insight for companies.

■ **LOG DATA.** System, network and Web server logs hold cryptic but useful text-based information. For example, suppose a significant systems event occurs at an organization. IT managers can use the log data to examine and analyze the activity that preceded the event and determine whether there were any warning signs or predictors that can guide future actions. In doing so, companies can become proactive rather than reactive.

And the list goes on. Practically everywhere you look in any company, you find text. And everywhere you find text, there is a latent business problem waiting to be solved through BI and analytics processes. ■

W. H. "Bill" Inmon, known as "the father of data warehousing," has published more than 40 books and 1,000 articles on data warehousing and data management. Inmon speaks frequently at seminars and industry events, does consulting work and is president and chief technology officer at Forest Rim Technology LLC, which develops software for integrating text data into data warehouses. Email him at whinmon@msn.com.

Check the [BeyeNETWORK Expert Channel](#) on data warehousing for more articles by **Bill Inmon**.



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Barney Beal
Senior Executive Editor

Jason Sparapani
Managing Editor, E-Publications

Jean Schauer
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Craig Stedman
Executive Editor,
[SearchBusinessAnalytics.com](#)
and [SearchDataManagement.com](#)

Linda Koury
Director of Online Design

Mike Bolduc
Publisher
mbolduc@techtarget.com

Ed Laplante
Director of Sales
elaplante@techtarget.com

TechTarget
275 Grove Street, Newton, MA 02466
www.techtarget.com

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