The Explosion of Data

How To Make Better Business Decisions by Turning "Infolution" into Knowledge

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The amount of data is exploding, endangering organizations that don't take the proper steps now to turn this threat into an opportunity.

By 2012, 20 typical broadband households will generate more traffic than flowed across the entire Internet in 2008.[1] By the end of 2010, half a zettabyte[2] of data will travel across the Internet—equivalent to the information contained on a bookshelf 36 billion miles long (10 times the distance from Earth to Pluto).[3] And every five minutes, we create a blizzard of digital data equivalent to all of the information stored in the Library of Congress (U.S.).[4] This amazing growth is happening for three main reasons:

1. **Video.** According to Cisco Chairman and CEO John Chambers, "Video is the new voice." Because video is a rich form of communication, it contains much more data than text-based documents. In addition, the amount of video is expected to increase dramatically. By 2012, more than 9 percent of Internet traffic will come from rich media (video, audio, and photos).[5] By 2015, movie downloads could equal 100 exabytes,[6] equivalent to the information contained in 5 million Libraries of Congress.[7] And while the world's data will increase sixfold over the next couple of years, corporate data will grow 50 times.[8]
2. **The burgeoning Internet.** The Internet is still expanding rapidly. In fact, the next 1 billion people (about 20 percent of the earth's population) will get online using wireless devices.[9] In addition, the number of nodes and devices (cars, buildings, appliances, and so forth) on the Internet is expected to double every 5.32 years.[10] This means that by 2020, there will be more *things* on the Internet than people.[11] Once connected to the Internet, devices and people become content creators.
3. **Ubiquitous cameras.** Almost every new device—from PCs to iPhones—now comes equipped with a camera. This allows ordinary citizens to become amateur photographers and videographers. In addition, most TVs will have an embedded camera within two years.[12] With the proliferation of inexpensive, high-quality, easy-to-use cameras, the amount of data from rich media will continue to increase dramatically.

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The Challenge of "Infolution"

Pollution is defined as the introduction of contaminants into a natural environment, causing instability, disorder, harm, or discomfort to the ecosystem.[13] Similarly, the sheer amount of data being generated today can often "contaminate" the corporate "environment" and cause "instability, disorder, harm, and discomfort" for businesses. This phenomenon has been termed "infolution"—pollution caused by the rapid proliferation of data.[14]

The impact of infolution can be seen in the amount of money corporations spend to store excess data. Cisco, for example, spent $77 million in 2010 to store data that hasn't been accessed in more than a year.[15] And Cisco is not alone. Gartner estimates that more than 70 percent of all data in a typical enterprise has not been accessed within the past year.[16]

Another challenge is learning how to convert this mountain of data into information that creates knowledge. Data by itself isn't useful; data must be tagged, organized, searched, combined, and filtered before it can be considered information. Finally, information must be processed into a form that helps people do something productive, such as making an important business decision. In short, knowledge is information that can be acted upon based on accurate and reliable data.

In addition to the challenge of managing the sheer volume of data, companies are finding it difficult to use the increasing amount of video coming into their organizations. To date, there is no effective way to categorize, index, and search video. With video representing an increasing percentage of data being created, companies may not be able to find and use important information contained in videos stored on their systems.

Turning Data into Information

How can companies turn data into knowledge? The answer may come from the human brain. For example, people are adept at filtering out noise to concentrate on what is important to them; blood rushing through our ears creates an audible noise that we can't hear because our brains have determined the sound isn't important.

Companies are successfully mimicking the human brain to manage the data onslaught by enabling information to find employees, rather than the other way around. This is done by allowing employees to register their interests based on categories of information such as accounting, marketing, product engineering, and so on. When information on these topics is created or found, it is sent to the person who needs it.

A good example of this approach is Cisco Pulse, a network-based appliance that "listens" to network traffic and creates relationships from the data it scans. In a practical sense, Cisco Pulse delivers a powerful new way to harness the collective expertise of a company's workforce, making it quick and easy for employees to find the people with whom they need to collaborate.

Turning Information into Knowledge

Once information has been generated from data, the next step is to turn this information into knowledge. This is critical because knowledge is essential for executives to make important business decisions. Cisco is one of several companies successfully turning information into knowledge by changing how information is made available to employees.

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Cisco is in the process of building its Integrated Workforce Experience (IWE) platform, which will replace the company's existing employee portal. IWE is contextual and dynamic—it brings information to employees when they need it. When attendees join a meeting, for example, IWE will provide background information on other participants, including areas of expertise, relevant documents based on the topic of discussion, and links to external sources of information. IWE consists of three components:

1. **People.** The people section of IWE adds to the traditional employee directory by including information such as skills, documents created, and communities of interest (see below).
2. **Information.** The information area of IWE is a repository of all the information created by Cisco employees. When employees search on a specific topic, IWE will provide a list of relevant files and documents. In addition to the filename and brief description, users will be able to see other information created by the same author, as well as related content.
3. **Communities.** Communities are the most powerful aspect of IWE because they make it easy for employees to collaborate with others and find the information they need to do their jobs better.

The three areas of IWE are fully integrated, so employees have easy access to the information they need no matter where they are in the system.

An Enabling Technology Architecture

IWE is supported by Cisco Quad, an enterprise collaboration platform that combines the power of social networking with communications, business information, and content management systems. Cisco Quad helps businesses:

- Improve productivity by optimizing and scaling employee expertise, and by encouraging collaboration and knowledge transfer.
- Enhance innovation by building environments that encourage employee participation, protect sensitive documents and materials, and move products to market faster.
- Generate growth by customizing communities and content around specific sales opportunities, making specialists and other subject-matter experts more available and accessible to people in the field, sharing best practices and lessons learned, and driving a collaborative sales culture.

Next Steps

To transform the data explosion from "challenge" to "opportunity," Cisco IBSG recommends CIOs take four steps:

1. **Analyze and project.** Assign a team of employees to analyze the current situation and project how the company will be affected by the huge increase in data over the next two to three years. This information can then be used to demonstrate storage and management costs to the company. It is also important to survey employees about the challenges of finding the right information to do their jobs effectively. This, combined with the cost information, should be enough to convince CEOs that something needs to be done now.

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2. **Explore and evaluate available data management solutions.** Although it may be several years before video data can be effectively tagged, sorted, and searched, new tools are emerging almost daily that can help companies manage the video avalanche. Evaluating and deploying solutions available today will make it easier to benefit from the large amounts of data coming in the future.
3. **Create a vision and gain support.** Once there is support for change, it is important to have a clear vision of where the company should be in three to five years. This will make it easier to establish interim, attainable goals to reach the end objective.
4. **Execute.** Once there is a clear and achievable vision, execution can occur in a phased manner to keep costs low and manageable. Even though some level of investment is necessary, Step 1 can be used to show that development of the right platform will save money in the long term.

By taking these steps now, CIOs can ensure their companies are not only prepared for the coming data onslaught, but can lead their industries by turning infolution into knowledge that improves business results.

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Endnotes

1. Source: Jim Cicconi, senior executive vice president, AT&T.
2. A *zettabyte* is a unit of information or computer storage equal to 1 sextillion bytes (1000^7 or 10^{21}); http://en.wikipedia.org/wiki/Zettabyte
3. Source: "Internet Data Heads for 500 billion Gigabytes," *The Guardian,* May 18, 2009.
4. Source: Discovery Institute's Technology and Democracy Project, January 29, 2008.
5. Source: Cisco, 2010.
6. An *exabyte* is a unit of information or computer storage equal to 1 quintillion bytes. One exabyte equals 10^{18} bytes; http://en.wikipedia.org/wiki/Exabyte
7. Source: Human Productivity Lab, 2010.
8. Source: Human Productivity Lab, 2010.
9. Source: IDC, 2009.
10. Source: Internet Mapping Project, Bell Labs / Lumeta Corporation, 2010.
11. Source: Dave Evans, Cisco Futurist, Cisco IBSG, 2010.
12. Source: Dave Evans, Cisco Futurist, Cisco IBSG, 2010.
13. Source: Merriam-Webster online dictionary, August 13, 2010.
14. Source: Dr. Paek-Jae Cho, former president and CEO of Korean Telecommunication Corporation.
15. Source: Cisco, 2010.
16. Source: Gartner, 2010.

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More Information

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