
INFORMATION OVERLOAD

A Problem Of The Ages

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- Information Overload cost the U.S. economy \$997 billion in the year 2010 and the problem shows no signs of abating. Indeed, mankind is constantly developing new and innovative tools that, while applauded as "the next big thing", also exacerbate the problem of Information Overload at the same time. Information Overload has caused people to lose their ability to manage thoughts and ideas, contemplate, and even reason and think. Many e-mail exchanges which go on for days and weeks at a time could have been resolved with a five minute phone call. There are many things individual knowledge workers as well as large and small companies can do to lessen its impact, but the first step is both simple and clear: raise awareness of the problem.
- In 2010 kostte information overload de Amerikaanse economie \$997mld en er is geen enkel signaal van enige ommekeer. Inderdaad worden er nog steeds nieuwe en innoverende hulpmiddelen ontwikkeld, toegejuicht als "the next big thing" toch tevens het probleem van information overload aanwakkeren. Information overload heeft ertoe geleid dat mensen niet meer in staat zijn om hun ideeën en gedachten te beheren, om te overwegen en zelfs om te redeneren en te denken. Veel e-mailverkeer, een "send and reply" dat dagen of weken aansleept, kan dikwijls worden opgelost met een telefoontje van enkele minuten. Individuele kenniswerkers en ondernemingen kunnen de impact verminderen, een eerste stap is eenvoudig en duidelijk: zich bewust worden van het probleem.
- En 2010, la surcharge informationnelle a coûté 997 milliards de dollars à l'économie des États-Unis, et la tendance ne montre aucun signe d'affaiblissement. En effet, l'être humain s'ingénie à développer en permanence de nouveaux outils qui, bien qu'accueillis comme la prochaine innovation majeure, ne font qu'aggraver le problème par la même occasion. La surcharge informationnelle a pour conséquence que beaucoup ne sont plus en mesure de gérer leurs idées ou leurs pensées, d'imaginer, ni même de raisonner et de penser. De nombreux échanges de courriers électroniques, étalés sur plusieurs jours ou semaines, auraient pu être épargnés par un simple appel téléphonique de 5 minutes. Pour atténuer cet impact, les travailleurs du savoir, tout comme les grandes ou les petites entreprises, peuvent accomplir de nombreuses démarches, mais la toute première est simple et évidente : faire prendre conscience du problème.

"Why are you so passionate about the problem of information overload?" is perhaps the question I have been asked most often in the past decade.

Information Overload has been a passion of mine since the time (in grammar school) when I learnt about the Library of Alexandria. The library was charged with collecting all of the world's knowledge, the first effort of its kind, and became home to scholars from around the world. [It also had one of the most original acquisition policies ever, namely it (possibly apocryphally) confiscated every book that came across its borders (Alexandria had a man-made port and was an early international trading hub) and copied each one, usually returning the copy, not the original, to its owner.]

I was exposed to how information flows (and does not flow) throughout an organization at an early age as my father was the CEO of a company in the photographic industry and one of my earliest jobs was assisting with the selection and deployment of office automation systems.

What I saw and learnt made an indelible impression on me.

We started Basex, the research firm where I served as chief analyst, to understand how new and emerging technologies, including e-mail (which was new then), could work in harmony with business and to help organizations understand how these tools could positively impact what we call "productivity".

Productivity is an elusive goal for every organization. But let's first look at how we view information.

Today, information is both a currency and a product. Somewhat contrary to the normal laws of supply and demand that dictate the value of other currencies and products, information has become self-perpetuating, in part because we have built technology that easily allows us to create new information without human intervention.

Indeed, we've become so good at generating information that it becomes effortless and, as a result, we end up creating far more than we can comfortably manage.

While some may contend that there's no such thing as too much information per se, what does exist is a great inability to manage the flow of in-

formation so that people can easily find what they are looking for and not feel overwhelmed.

This is information overload.

As I've written and said many times, information overload throttles productivity, reduces our capability to absorb and learn, puts our physical and mental health at risk, and interferes with personal and business relationships.

According to research that I conducted at Basex, the costs of information overload is extremely high, and this is not only a monetary cost. Indeed, research conducted by me at Basex and published in my book *Overload! How Too Much Information Is Hazardous To Your Organization*, information overload shows the financial cost the U.S. economy to be \$997 billion per year. But that is only a part of the overall cost.

As the tools we use happily chirp to alert us of new information, day in and day out, they take a toll, emotionally and intellectually.

Things were simpler in the olden days

Before the dawn of the Industrial Revolution, knowledge work was hard work. The tools used by early knowledge workers required stone, chisels, quills, and parchment simply to store information and allow it to be distributed.

It was possible to distribute information over a distance back then as well, but it was tricky. Sending a message might have involved beacon fires, flags, carrier pigeons, drums, mirrors, or even a man on a horse. Clearly, typing on a keyboard or touchscreen and hitting send pales by comparison.

Of course, the easier it became to publish information, the more overloaded we became.

Today, innovation comes quickly and today's state-of-the-art tools become yesterday's news in a nanosecond. What will be available even a few years down the road is hard to fathom, and what we will be using 20 or 30 years hence is the stuff that science fiction is made of. I have no doubt that the individual who updates this discussion in 2084 will look back at today's rather primitive tools and smile knowingly.

In the early 1990s I began to realize that the spread of then-new technologies within the enterprise, such as e-mail, were creating as many problems as they were solving.

It is only getting worse.

Not too long ago, I was in a meeting room with colleagues trying to prepare for a conference on information overload that I was moderating. I was receiving so much "input" from so many people (both in the room and on-line) relating to the meeting that I found myself unable to compose a simple paragraph for a news release.

Ironically, preparation for the information overload conference had simply overloaded me to a point I hadn't yet reached before.

I stopped what I was doing, took a meditative stroll through some empty rooms, and returned to the task at hand about half an hour later. Paragraph complete, I was ready to move onto other matters.

Society

Information is the most democratic of institutions, the great leveler of society and business. Today, practically everyone everywhere is more informed than even the most informed person was a mere 25 years ago (yet paradoxically knows a smaller percentage of the available knowledge).

Governments, too, are far better informed, particularly about what other nations are doing (which one may only hope leads to fewer misunderstandings) although perhaps too well informed in some areas as the recent news of the wiretapping of German Federal Chancellor Angela Merkel's mobile phone would indicate.

Information can also be used to move people out of poverty. Young people in poorer nations, witness India for example, have been able to capitalize on the flexibility of an information society to create better lives for themselves as knowledge workers, something unimaginable a mere quarter century ago.

Think about your day – and mine.

I recall with great nostalgia a CNBC interview on productivity issues in 1993. The reporter, Bob Pisante, opened the segment by saying *"It's not just meetings that are taking up a ton of time, there's also a problem with mail. And in this day and age, mail means e-mail. You think you're busy? Jonathan Spira can get 150 e-mails a day."*

If only that were the case today.

The knowledge worker

Today, millions of workers around the world are knowledge workers. In the United States alone, that figure is 78.6 million people, a plurality of the workforce today.

A "knowledge worker" is defined as a participant in the knowledge economy. The "knowledge economy" connotes an economic environment where information and its manipulation are the commodity and the activity (in contrast to the industrial economy, where workers produce a tangible object with raw production materials and physical goods).

Knowledge workers are found at all economic stations. An accounting clerk is a good example of an entry-level or rudimentary knowledge worker. An architect or engineer is an excellent example of a skilled knowledge worker, as is an airline pilot or physician. And a rocket scientist or Nobel Prize-winning economist is representative of the top echelon of knowledge workers.

Knowledge workers think for a living to varying extents depending on the job and situation, but there is little time for thought and reflection in the course of a typical day. Instead, information – often in the form of e-mail messages, reports, news, Web sites, RSS feeds, blogs, wikis, instant messages, text messages, *Twitter*, and video conferencing walls – bombards and dulls our senses.

We try to do our work, but information gets in the way. I liken this to playing *Tetris*, where the goal is to keep the blocks from piling up. You barely align one, and another is ready to take its place.

When computers first began to encroach upon our everyday lives, they were in distant, glass-walled rooms run by scientists in white coats. The closest most of us came to them were punch cards that came with utility bills. Indeed the term "Do not fold, spindle, or mutilate" became a running gag among late-night comedians (as well as the name of a movie in the 1970s about a computer dating service).

Computerization was the source of conflict in earlier films as well. Some films presaged the disappearance of the work-life balance (*Modern Times*, *Metropolis*). *Desk Set* (1957), where Spencer Tracy and Katherine Hepburn clash over the computerization of a TV network's research department, presented an epic man versus machine struggle.

Information overload was first mentioned in 1962 by Bertram Gross in *Operation Basic: The Retrieval Of Wasted Knowledge*. It was predicted by

Alvin Toffler in *Future Shock* (1970). In 1989, Richard Saul Wurman warned of it in his book *Information Anxiety*.

But it's no longer a problem of the future: it's something that we have to address and manage right now.

Indeed, the term "information overload" has become part of the vernacular. While spending the better part of a week at the remote Blackberry River Inn in Connecticut to focus on writing my book, I found that people I ran into had much to say on the topic. They also had an encyclopedic knowledge of the dangers of multitasking and cited several incidents where texting resulted in train crashes and other accidents.

Two women dining next to me at a local restaurant asked about my visit and, when I mentioned the topic of the book, they both started rattling off the dangers of multitasking and the problems of finding accurate information online.

Another time, at a cocktail party, the chief information officer at a large software company quizzed me endlessly on what he could do about the problem to make his workforce more efficient and effective given the severity of the problem.

Information, please?

"Let your fingers do the walking" was the ubiquitous slogan for the Yellow Pages directories in the United States, conceived in 1964 by Geers Gross. It presaged a culture that today one can find anything and everything online. The premise in 1964 was that, rather than going from store to store, you could find what you were looking for in the commercial telephone book.

Back then, getting "information" was practically synonymous with asking the telephone company operator for a number. How things have changed: Today it might be a challenge to locate a telephone book or getting a live person on the line when calling directory assistance.

Given the information explosion that followed the introduction of the Web a mere 25 years ago into almost every corner of the earth, it is clear to me that our fingers never stop walking.

Please, sir, I want some more

From the dawn of civilization, every generation has had access to more information than the one preceding it. Indeed, some historians maintain that Aristotle in his day knew everything – that is

to say, he knew almost all that was to be known in his time. The same has been said for other polymaths, such as Francis Bacon and Thomas Young.

One thing is clear: such an accomplishment would be impossible today.

It's debatable as to whether any one person had in the past known all there was to know (and also unprovable). One thing, however, is clear, namely that each person who comes into the world today is able to know a progressively smaller and smaller percentage of the world's knowledge.

More information has been produced in the last 25 years than in the last five centuries. Indeed, it has been said that a weekday paper edition of the *New York Times* contains more information than an average person living in the seventeenth century would have been exposed to in a lifetime.

The impact of the amount of information created merely in the last decade, not to mention the last 12 months, is mind numbing.

Real problems

To see the problems that can result from Information Overload, we need to look no further than the reaction of the U.S. National Archives and Records Administration (NARA) in 2009 when it discovered that the outgoing Bush administration would be turning over approximately 100 terabytes of data. That is 10 times that of what the Clinton administration generated in the same amount of time eight years earlier. To deal with the impending flood of content, NARA launched an "emergency plan." And this is an agency whose sole mission is to keep records.

Over the past year, we have literally created billions of pictures, documents, videos, podcasts, blog posts, and tweets. Let's not even stop to think about how much information has been created in the past decade. If this information remains unmanaged, and it most likely will, it may well be impossible for anyone to make sense out of any of this content later on since we have no mechanism to separate the important from the mundane.

This presents us with a colossal paradox. On one hand, we want and need to ensure that what is important from our time is somehow preserved. If we don't preserve it, we are doing a disservice to generations to come; they won't be able to learn from our mistakes as well as from the great breakthroughs and discoveries that have occurred in our time. On the other hand, we are

creating so much information, which may or may not be important, that future scholars may shake their head in wonder and confusion as they give up trying to make sense of it.

Key inventions and discoveries, starting with papyrus (ca. 3500 BCE) and ink (2697 BCE) but more recently photography (1839), the commercial telegraph service (1844), the typewriter (1868), the telephone (1876), xerography (1938), the DEC PDP-1 mini computer (1960), ARPANET (the military predecessor to the Internet, created by the U.S. Defense Department's Advanced Research Projects Agency, which today is called DARPA) (1969), e-mail (1971), mobile phones (1973), the personal computer (1974), and the World Wide Web (1991), as well as more recent developments including smartphones, tablets, and social media, have facilitated increased access by democratizing content creation and distribution.

How democratic has information become? The answer may best be illustrated by what Tim Berners-Lee, inventor of the World Wide Web, wrote in 1999 in his book *Weaving the Web*:

"Suppose all the information stored on computers everywhere were linked. Suppose I could program my computer to create a space in which anything could be linked to anything. All the bits of information in every computer... on the planet would be available to me and to anyone else. There would be a single, global information space."

The discoveries in the past 150 years have changed where, how, and with whom we work. They have facilitated the creation of a workforce comprised largely of knowledge workers, rewritten (or in some cases eliminated) the boundaries between work and private life, and created new workplace problems, such as information overload, which were heretofore considered only in theoretical terms.

Larry Bowden, a vice president at computer giant IBM, told me he knows this firsthand. *"Information overload basically slows me down because I'm interacting with information that's irrelevant and out of context and not allowing me to get to the end point to have the impact that I want."*

Bowden is in charge of IBM's portal and "digital experience" software. If he is running into difficulty with too much information, what's going to happen to the rest of us?

What information overload has wrought

Information overload is causing people to lose their ability to manage thoughts and ideas, contemplate, and even reason and think. We are becoming instead, as Ted Koppel told his *Nightline* television audience in 1986, "a nation of electronic voyeurs whose capacity and appetite for dialogue is a fading memory."

Active engagement, it would appear, belongs to an earlier generation. Bursts of 140 character messages in the form of individual tweets seems to have replaced more thoughtful means of communication for millions of people; instead of in-depth analysis and thought, we accept brief, fleeting, ephemeral thoughts that are of little consequence and have little impact.

I spend much of my time in meetings with people who are extraordinarily tech savvy, many of them senior and top executives at large companies that either create or consume large amounts of software and information (or often both).

Literally every person I have spoken with has confessed how he feels overwhelmed by the sheer quantity of information he is expected to deal with on a daily basis. This doesn't even take into consideration the technologies that noisily compete for a person's attention. What no one has yet realized is, however, the tremendous economic impact that this has on organizations and the legions of knowledge workers employed by them.

If for no other reason than to make it possible for future generations to be able to access information generated by us in the present, as well as what they themselves generate, we need to take the appropriate steps to solve this problem – and we need to do this now.

How do we accomplish this? It is clear (at least to this writer) that the tools we need to find information are lacking. The amount of information we have is simply too much for individuals to manage unaided by some form of technology, yet the tools we have available simply can't keep up. Even the latest advances in search and discovery don't seem to be able to keep up with the massive amount of information that accumulates when we are not looking.

The dawn of a new information age?

Technology and our use of it have evolved in the past 150 years in ways that truly numb the mind.

However, man has not necessarily evolved along the same path. A computer is designed to accomplish a specific task, to compute things, but this does not mean that it is an extension of how we humans work; we do not work the same as machines. This puts us in conflict with our tools, which takes a toll, not only emotionally and intellectually but on the bottom line as well.

For all intents and purposes, we are at the very beginnings of a new information age, and unlike past epochs, such as the industrial age, we are moving at such a fast pace that mistakes are amplified. The term "information age" is not new, however, even though, according to *The Death Of The American Telephone & Telegraph Company* by James R. Messenger, AT&T coined the phrase in 1982. The first mention of the term that I can locate (thanks to *Google Books*) dates back to 1915, in an article entitled *The Demand For The Illustrated Information Article* although the author, A.H. Martin, had a very different sense of what was meant.

The very notion of a modern-day corporation, something that came about once the industrial revolution was under way, will most certainly change as the information age evolves. Companies are already becoming somewhat virtual, but this trend will increase dramatically in the coming years.

A true virtual company might work more like the way movie producers in Hollywood form a production company for a single film. Workers with the right set of skills come together for the duration of the project and then move on to something else. In the next decade or so, smaller and more flexible organizations will be able to compete favorably with their larger counterparts as a result of being able to draw on resources previously available only to the larger ones – as well as on some resources larger organizations simply cannot tap into.

Meanwhile, workers will be more attracted to such smaller entities because of the greater flexibility offered by such organizations for these very reasons.

Today, a virtual workforce is the calling card of a few leading-edge companies. JetBlue, a U.S. airline founded in 1998, never built a traditional call center to take reservations. Each and every person in the call center works from home, something that few if any callers are aware of.

While many believe that all of our technological innovations and changes have done much good for humankind by raising the standard of communications and living, these changes must be looked at critically, with the recognition that they

may in fact do far more harm than anyone anticipated.

Key information overload facts to consider¹

- There are 78.6 million knowledge workers in the U.S. alone
- Information Overload cost the U.S. economy almost \$1 trillion in 2010
- A minimum of 28 billion hours is lost each year to information overload in the United States.
- Reading and processing just 100 e-mail messages can occupy over half of a worker's day.
- It takes five minutes to get back on track after a 30 second interruption.

- For every 100 people who are unnecessarily copied on an e-mail, eight hours are lost.
- 58% of government workers spend half the workday filing, deleting, or sorting information, at an annual cost of almost \$31 billion.
- 66% of knowledge workers feel they don't have enough time to get all of their work done
- 94 %of those surveyed at some point have felt overwhelmed by information to the point of incapacitation.
- One major Fortune 500 company estimates that Information Overload impacts its bottom line to the tune of \$1 billion per year.

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Note

¹ Spira, Jonathan B. *Overload! How Too Much Information Is Hazardous To Your Organization*. John Wiley & Sons, 2011