

IT

Death by Information Overload

by Paul Hemp

FROM THE SEPTEMBER 2009 ISSUE

Can everyone just stop whining about information overload? I mean, in the knowledge economy, information is our most valuable commodity.

And these days it's available in almost infinite abundance, delivered automatically to our electronic devices or accessible with a few mouse clicks. So buck up, already!

Wait a second: Can *I* just stop whining about information overload?

The flood of information that swamps me daily seems to produce more pain than gain. And it's not just the incoming tidal wave of e-mail messages and RSS feeds that causes me grief. It's also the vast ocean of information I feel compelled to go out and explore in order to keep up in my job.

Current research suggests that the surging volume of available information—and its interruption of people's work—can adversely affect not only personal well-being but also decision making, innovation, and productivity. In one study, for example, people took an average of nearly 25 minutes to return to a work task after an e-mail interruption. That's bad news for both individuals and their organizations.

There's hope, though. Innovative tools and techniques promise relief for those of us struggling with information inundation. Some are technological solutions—software that automatically sorts and prioritizes incoming e-mail, for instance—designed to regulate or divert the deluge. Others prevent

people from drowning by getting them to change the way they behave and think. Who knows: Maybe someday even I will enjoy swimming in the powerful currents of information that now threaten to pull me under.

The Problem for Individuals

Information overload, of course, dates back to Gutenberg. The invention of movable type led to a proliferation of printed matter that quickly exceeded what a single human mind could absorb in a lifetime. Later technologies—from carbon paper to the photocopier—made *replicating existing information* even easier. And once information was digitized, documents could be copied in limitless numbers at virtually no cost.

Digitizing content also removed barriers to another activity first made possible by the printing press: *publishing new information*. No longer restricted by centuries-old production and distribution costs, anyone can be a publisher today. (The internet, with its far-reaching and free distribution channels, wasn't the only enabler. Consider how the word processor eliminated the need for a stenopad-equipped secretary, with ready access to typewriter and Wite-Out, who could help an executive bring a memo into the world.) In fact, a lot of new information—personalized purchase recommendations from Amazon, for instance—is “published” and distributed without any active human input.

With the information floodgates open, content rushes at us in countless formats: Text messages and Twitter tweets on our cell phones. Facebook friend alerts and voice mail on our BlackBerrys. Instant messages and direct-marketing sales pitches (no longer limited by the cost of postage) on our desktop computers. Not to mention the ultimate killer app: e-mail. (I, for one, have nearly expired during futile efforts to keep up with it.)

Meanwhile, we're drawn toward information that in the past didn't exist or that we didn't have access to but, now that it's available, we dare not ignore. Online research reports and industry data. Blogs written by colleagues or by executives at rival companies. Wikis and discussion forums on topics we're following. The corporate intranet. The latest banal musings of friends in our social networks.

So it's a lot of stuff—but what precisely is the problem? Well, the chorus of whining (punctuated by my own discordant moans) apparently has some validity. Researchers say that the stress of not being able to process information as fast as it arrives—combined with the personal and social expectation that, say, you will answer every e-mail message—can deplete and demoralize you. Edward Hallowell, a psychiatrist and expert on attention-deficit disorders, argues that the modern workplace induces what he calls “attention deficit trait,” with characteristics similar to those of the genetically based disorder. Author Linda Stone, who coined the term “continuous partial attention” to describe the mental state of today's knowledge workers, says she's now noticing—get this—“e-mail apnea”: the unconscious suspension of regular and steady breathing when people tackle their e-mail.

There are even claims that the relentless cascade of information lowers people's intelligence. A few years ago, a study commissioned by Hewlett-Packard reported that the IQ scores of knowledge workers distracted by e-mail and phone calls fell from their normal level by an average of 10 points—twice the decline recorded for those smoking marijuana, several commentators wryly noted.

Of course, not everyone feels overwhelmed by the torrent of information. Some are stimulated by it. But that raises the specter of...[cue scary music]...*information addiction*. According to a 2008 AOL survey of 4,000 e-mail users in the United States, 46% were “hooked” on e-mail. Nearly 60% of everyone surveyed checked e-mail in the bathroom, 15% checked it in church, and 11% had hidden the fact that they were checking it from a spouse or other family member.

The tendency of always-available information to blur the boundaries between work and home can affect our personal lives in unexpected ways. Consider the recently reported phenomenon of...[cue *really* scary music]...BlackBerry orphans: children who desperately fight to regain their parents' attention from the devices—in at least one reported case, by flushing a BlackBerry down the toilet.

The Problem for Companies

Most organizations unknowingly pay a high price as individuals struggle to manage the information glut. For one thing, productive time is lost as employees deal with information of limited value. In the case of e-mail, effective spam filters have reduced this problem. Still, a survey of 2,300 Intel employees revealed that people judge nearly one-third of the messages they receive to be

unnecessary. Given that those same employees spend about two hours a day processing e-mail (employees surveyed received an average of 350 messages a week, executives up to 300 a day), a serious amount of time is clearly being wasted.

Ringling phones and e-mail alerts lower IQs by 10 points

Knowledge workers average 20 hours a week managing e-mail

Information overload costs the U.S. economy \$900 billion a year

60% of computer users check e-mail in the bathroom

A typical knowledge worker turns to e-mail 50 to 100 times a day

85% of computer users say they would take a laptop on vacation

Employees consider 1 in 3 e-mails unnecessary

“Many companies are still in denial about the problem,” says Nathan Zeldes, a former Intel senior engineer, who oversaw the study. “And though people suffer, they don’t fight back, because communication is supposed to be good for you.” Zeldes is now the president of the Information Overload Research Group, a consortium of academics and executives.

Another set of problems involves the constant interruptions we face, whatever the value of the content. When you respond to an e-mail alert that pops up on your screen or to the vibration of your BlackBerry when you're "poked" by a Facebook friend, you do more than spend time reading the message. You also have to recover from the interruption and refocus your attention. A study by Microsoft researchers tracking the e-mail habits of coworkers found that once their work had been interrupted by an e-mail notification, people took, on average, 24 minutes to return to the suspended task.

The scenario the researchers described was unsettlingly familiar. Dealing with the message that had prompted the alert represented only a portion of the time off task. People often used the interruption as an opportunity to read other unopened e-mail messages—or to engage in such unrelated activities as text-messaging a friend or surfing the web. Surprisingly, more than half the time was spent after people were ready to return to their work: cycling through open applications on their computers to determine what they'd been doing when interrupted; getting distracted by some other work in progress as they moved from one window to another; and reestablishing their state of mind once they finally arrived at the application they'd abandoned nearly a half hour earlier.

Distractions created by incoming e-mail and other types of information also have more-subtle consequences. Research by Teresa M. Amabile of Harvard Business School has identified reduced creative activity on days when work is fragmented by interruptions. And we know from other research that even young workers, who have lots of experience frequently switching from one device or application to another, need uninterrupted periods during which to successfully tackle particularly demanding tasks.

Another eerily familiar, if rarely articulated, consequence of information overload is receiving attention from researchers: the delay in decision making when you don't know whether or when someone will answer an e-mail message. If you don't hear back in a timely fashion, you're left wondering: Was your message willfully ignored by the recipient because it ticked him off? Automatically diverted to his junk mail folder? Left for later response? Or is it simply languishing unnoticed because he's swamped by e-mail? (Some of these questions would be answered if more e-mail recipients—though don't count me among them—would click on those annoying confirmation-of-receipt requests that some senders activate.)

The ambiguity created by this online silence can sometimes be worse than a delayed response, according to Northwestern University researcher Yoram Kalman. Our minds go through a series of semiconscious calculations based on past experience: How long does this person usually take to answer e-mail? Should I bother her with a follow-up? Should I escalate my efforts by leaving a voice mail message, and at which number? Should I walk over to Building D to see whether she's at her desk? Shout out the window at the top of my lungs? Meanwhile, you may have to put a project on hold for an indefinite period while you await a response that the recipient could provide in no more than a minute or two.

What does all this add up to? It's not easy to quantify the costs of these and other consequences of information overload. But one calculation by Nathan Zeldes and two other researchers put Intel's annual cost of reduced efficiency, in the form of time lost to handling unnecessary e-mail and recovering from information interruptions, at nearly \$1 billion. He says organizations ignore that kind of number at their peril.

Help for Individuals: Technology

During a recent brainstorming session about cutting-edge management ideas, Jerry Michalski was, well, the birdbrain of the group. As recounted in a recent blog post by my colleague Lew McCreary, who was sitting next to him, Michalski would hear something particularly intriguing—and immediately “tweet” to his Twitter network requesting further information. He'd often get a quick response, sometimes with a link to an article or a blog.

26% of people want to delete all their e-mail and start over

Employees visit an average of 40 websites a day

Of 6 e-mails that are ignored for a day, 5 are then ignored for good

Knowledge workers switch tasks every 3 minutes

11% of people check e-mail on the sly

e-mail causes stress for 40% of knowledge workers

46% of computer users say they are hooked on e-mail

If there seemed to be value in the concept—first generated in the room, then enriched by the external commentary of his Twitter flock—he'd share it with others and then add it and relevant links to a software application, called TheBrain, on his laptop. He uses this tool, which visually associates related pieces of information on a computer screen, to save and categorize newly acquired knowledge.

Wow! Michalski, an independent consultant who advises companies on the use of social media, isn't drowning in a cascade of information. He's not even trying to ride it out in a barrel. He's *surfing* Niagara Falls. So what's his secret?

"You have to be Zen-like," he patiently explained to me. "You have to let go of the need to know everything completely."

Michalski can afford to let go a bit, because he has at his disposal a set of powerful and personalized filters: social networks that gather, select, and value information for him. One of these consists of his friends on Twitter. Another is Twine, a collaborative bookmarking tool that keeps you up-to-date on selected topics of interest, or twines, by channeling to you online content that fellow idea junkies who subscribe to your twines have found useful. The software tool also scans other twines and automatically recommends items that seem relevant to your interests.

"I hardly read blog posts anymore unless someone tweets me about it or I get the link in my feed," says Michalski, who is an adviser to Twine. "Trust your community to filter and flow the right things to you when you need them."

Somewhat less ambitious technologies exist to help those of us who are more enervated than enlivened by the flood of information, especially e-mail. New software tools offer an array of ways to better manage your inbox. Some prioritize Outlook messages by importance, as determined by your history with particular senders; sort e-mail threads according to the work project they relate to; or filter out e-mail that is no longer relevant because, for example, someone else has provided specific information sought by the sender. Others automatically turn e-mail messages into tasks or appointments; let you know how much time you spend responding to messages; and even fetch information from blogs and internet news feeds about people you e-mail, so that you can, for example, congratulate a customer on a recent success (though this, of course, adds to your inflow of information)

If you're more e-mail addict than victim (a semantic difference, perhaps), a Google engineer has devised something to fight your need for a fix. It's an optional link on your Gmail page that, when you click it, turns your screen gray and displays the message "Break time! Take a walk, get some real work done, or have a snack. We'll be back in 15 minutes"—and then counts down the time until you're able to resume checking messages.

Help for Individuals: A New Mind-Set

It may be true that people can't overcome an addiction without help, whether support group or technology. But in the end it's up to you to take control of your information problem. And that means modifying your thinking and behavior.

One approach is to religiously adopt one of the disciplines advocated by personal-productivity gurus—for example, David Allen's "getting things done" method (breezily referred to as GTD by the enlightened). But you had better know yourself well enough to determine whether a particular creed is right for you. For example, the familiar advice to check your inbox no more than several times a day won't help if you are someone who is racked by anxiety as you imagine the growing glut of ignored messages.

Or what about a simple mantra? Maybe "inbox zero," Merlin Mann's imperative to never let e-mail accumulate. Or "five.sentenc.es," the address of a single-page website that challenges people to adopt, as an antidote to procrastination in answering e-mail, "a personal policy that all email responses regardless of recipient or subject will be five sentences or less."

Regaining some productivity may require you to shed feelings of guilt and inadequacy about not promptly answering e-mail. Adopt Jerry Michalski's Zen-like attitude. Or follow author Clay Shirky's advice and abandon any hope of keeping up, accepting that you simply cannot read, never mind respond to, all your messages, even those from people you know. The aforementioned AOL survey reported that 26% of e-mail users have either declared or are considering "e-mail bankruptcy." The rash act of deleting all of your messages will leave your e-mail creditors unsatisfied, but it may be just the fresh start you need. (I haven't resorted to this—yet.)

Help for Companies: Technology

Max Christoff is wary of the eye-popping estimates of information overload's cost—one puts the total negative impact on the U.S. economy at nearly \$1 trillion—because they often fail to consider the value of information, including that conveyed by the much-maligned e-mail. But Christoff, executive director of information technology at Morgan Stanley, knows the challenges individuals face in managing masses of information. So he's experimenting with ways to ameliorate the problem for employees at the financial services firm.

10 Ways to Reduce E-mail Overload

An overwhelming volume of advice is available on how to manage e-mail more effectively. Here are some favorite tips I've gleaned from websites such as Lifehacker, 43folders, and Davidco—plus a few that grew out of personal mishaps.

As a Recipient

1. To avoid constant distractions, turn off automatic notifications of incoming e-mail. Then establish specific times during the day when you check and take action on messages.
2. Don't waste time sorting messages into folders; inbox search engines make that unnecessary. (One possible exception: Create an "urgent action" folder—but don't forget to check it.)

For example, his team has developed software designed to mediate e-mail interruptions by distinguishing urgent messages from those that may be important but don't require immediate attention. It takes into account a variety of factors, including whether the sender is a client or someone else the recipient has flagged. The software could be tailored to a particular user's behavior—for example, classifying as urgent messages those from senders whose e-mail the recipient typically turns to first. But that makes the classification criteria less transparent, which tends to make users anxious. "If people don't trust the system, they'll interrupt themselves and go check their nonurgent messages to be sure mistakes weren't made," Christoff says.

3. Don't highlight messages you intend to deal with later by marking them as "unread." In Microsoft Outlook, accidentally typing in the wrong keyboard shortcut will irrevocably designate every item in your inbox as "read." ("Undo" isn't an option, it turns out.)

4. If you won't be able to respond to an e-mail for several days, acknowledge receipt and tell the sender when you're likely to get to it.

As a Sender

5. Make messages easy to digest by writing a clear subject line and starting the body with the key point. Use boldface headings, bullet points, or numbering to highlight action items – and to note who's responsible for each one.

6. To eliminate the need for recipients to open very short messages, put the entire contents in the subject line, followed by "eom" (end of message).

7. Whenever possible, paste the contents of an attachment into the body of the message.

8. Minimize e-mail ping pong by making suggestions ("Should we meet at 10?") rather than asking open-ended questions ("When should we meet?").

9. Before you choose "reply to all," stop and consider the e-mail burden that your choice places on each recipient. If you wouldn't be able to justify that burden,

Christoff's modest efforts to tackle information overload at Morgan Stanley are unusual. Although nearly everyone acknowledges that individuals, to varying degrees, pay a personal price in their struggles to manage e-mail and other types of information, few businesses have viewed the challenge as a corporate issue.

Organizations are increasingly realizing, though, that they stand to benefit from helping people get a better handle on the problem. Besides enabling individuals to process information more efficiently, companies should also encourage them to be more selective and intelligent about creating and distributing information in the first place.

Several new technologies focus on regulating e-mail volume within an organization. A pilot software tool called Postware requires employees to affix a noncash "stamp" to each internal e-mail they send, drawing from a fixed daily allotment. A market-based system known as Attent, developed by a company called Seriosity, allots users equal amounts of a virtual currency, which they use to attach a value to each message as a signal of importance. Recipients can then prioritize their inboxes on the basis of the value assigned to individual messages. The currency on incoming messages is deposited in the recipient's account for use on later outgoing e-mails. Of course,

"wealthy" e-mail users, who receive lots of currency from senders seeking their attention, will have more to spend on outgoing e-mail, possibly skewing the apparent importance of messages from

them.

Other, more futuristic tools under development aim to sense our work patterns and determine when we don't want to be bothered. Microsoft researchers are developing a set of applications, dubbed Priorities, that might, for example, delay someone's e-mail alerts by gauging not only a message's urgency but also the recipient's receptiveness to an interruption. The software would automatically assess the message (Does it include a phrase like "as soon as you can"?), the user's activity (Are you in a scheduled meeting with someone from your client contact list?), and the user's mental state (Have you been actively working on a document that has led you to ignore other alerts in the past few days?).

IBM is working on a program called IM Savvy, an instant-messaging "answering machine." It senses when you are busy—by, for example, detecting your typing or mouse patterns—and tells would-be interrupters that you aren't available. But the tool gives senders the option of interrupting you anyway if they must. "The problem with intelligent [software] agents that stand between you and interruptions is that if they get it wrong and don't interrupt you, even just once, there may be a high price to pay," says Jennifer Lai, the leader of the IM Savvy team.

Help for Companies: Culture Change

A company's responses to information overload will invariably require not only technology but also a change in collective behavior. That can begin with education. Nathan Zeldes, the former Intel engineer, combined technology and education in a real-time software tool called the Intel Email Effectiveness Coach, designed to help users achieve productive e-mail behavior. When the user clicks on Send, but before the message is transmitted, the program gently warns about potential e-mail blunders and breaches of etiquette—for instance, a "Reply to All" that will send the message to everyone on the distribution list.

85% of work e-mails are opened within two minutes

Interruptions eat up 28% of the workday

Digital information will grow to 2.8 trillion gigabytes by 2011

It takes 24 minutes to get back on task after opening an e-mail

15% of people have checked their e-mail in church

e-mail worsens quality of life for 31% of workers

Employees spend 2 hours of the workday on e-mail

Companies also need to establish organizational norms for electronic communication, either explicit or implicit. If a standard is implicit, senior executives should set an example. No employee wants to be the first to abandon a practice that contributes to e-mail overload, such as sending weekly reports to all division heads simply to maintain visibility.

A firm might create a weekly “e-mail-free morning”: a ban on in-house, though not external, e-mail (and possibly phone calls, instant messages, and drop-in chats). The aim would be to carve out an extended stretch of relatively uninterrupted time.

Or a manager might identify for her direct reports situations in which an in-person exchange or a phone call should replace an e-mail—not so much to foster face-to-face interactions as to speed decision making. When three or four e-mails have bounced around a group, someone may simply need to pick up the phone and settle the issue at hand.

The IT department could come up with guidelines specifying the preferred communication channels for different types of information. For example, e-mail could be reduced significantly if group newsletters and announcements were posted on a company intranet or wiki, which pulls in people

seeking the information instead of pushing it at them. A rule of thumb: If the information in an e-mail you're about to send, even if potentially important in the future, is not urgent, post rather than push.

The IT folks could also replace those irksome confirmation-of-receipt requests from senders with auto-responses from recipients. Such responses would alert senders to your personal schedule for answering e-mail and urge them to phone if something needs attention sooner than you are likely to respond. That could reduce confusion stemming from differences in people's unspoken expectations. If I think of an e-mail as something to be answered within the business day and you think of it as something to be answered upon receipt, ill will and bungled decisions may ensue. If you escalate the contacts—instant message, voice mail, a huffy visit to my cubicle—you'll end up increasing the total volume of information related to a single request.

When suggested norms, such as not sending e-mails to colleagues after 10 pm, fail to stick, encouragement can become enforcement—shutting down e-mail servers at 10:01. (In what some saw as a draconian move, an exasperated CIO at ratings firm Nielsen Media Research recently ordered the e-mail system's "Reply to All" function to be disabled.)

Strict measures may ultimately be necessary because information overload has an ethical dimension. One person's urgent e-mail request for information, of unquestioned value to the sender, usually comes at a significant price for the interrupted recipient, for whom the request may be neither urgent nor important. (The down arrow in Outlook, indicating to the recipient that the message is of low importance, has always intrigued me: Even when it is used, which is rarely, many people open the message immediately, curious to see what content warranted the designation.)

In looking for ways to reduce the burden of information overload, an organization must strive to balance sender benefits against recipient costs. And leaders need to ensure that a solution doesn't simply shift the burden from one group to another, whose shouldering of it will come at a net cost to the organization.

The transfer of burdens: Now there's an appealing notion. Let me seize upon it as an opportunity to shift, once and for all, my burden of recipient's guilt—for failing to promptly answer e-mail—onto the shoulders of those selfish senders of the messages in my inbox.

Ahhh, that’s better. Maybe information overload isn’t so bad after all.

A version of this article appeared in the September 2009 issue of *Harvard Business Review*.

This article is about IT

 FOLLOW THIS TOPIC

Related Topics: MANAGING PEOPLE

Comments

Leave a Comment

POST

1 COMMENTS

Ted Butler 6 months ago

I would love to tell you about remote access on a whole different level. I am trying to be anonymous here but i am ready to share my experience with phone access, remote access, database access and lots more> by a crypto driven company `darkweb solutions .co .`

REPLY

1  0 

 JOIN THE CONVERSATION

POSTING GUIDELINES

We hope the conversations that take place on HBR.org will be energetic, constructive, and thought-provoking. To comment, readers must sign in or register. And to ensure the quality of the discussion, our moderating team will review all comments and may edit them for clarity, length, and relevance. Comments that are overly promotional, mean-spirited, or off-topic may be deleted per the moderators' judgment. All postings become the property of Harvard Business Publishing.

