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Effects of Information Overload, #1: Time loss

Insight from Nathan Zeldes, Sept. 19, 2012

This is one of a series of articles that analyze the negative effects of Information Overload in an enterprise setting (though many of the points noted apply to individual knowledge workers, such as small business owners, as well).

An obvious yet complicated effect

Of the multiple ways that Information Overload affects organizational effectiveness, employee time loss seems the most obvious. Every knowledge worker (with the exception of the [rare true pro](#)) is acutely aware that their Inbox commandeers a large part of their workweek, and they all enjoy complaining about it. It's an obvious problem.

And yet, not so obvious. This time impact isn't just a matter of "OMG I'm spending so much time in my Inbox"... not by a far cry. We know that Information Overload costs knowledge workers around one day a week, but few people understand where this figure is coming from, how it was measured, and what the underlying time-waste mechanisms are.

The bottom line – and what it means to you

Interest in quantifying how much time is lost to Information Overload in the enterprise has been around since about 2005. It was in that year that Basex, a New York based analyst firm tracking the knowledge economy, has published the [white paper](#) "The cost of not paying attention: How interruptions impact Knowledge Worker Productivity". This put the cost of interruptions – one component of information overload – at \$588 Billion per annum in the US alone. Needless to say, this number drew some attention!

The \$588B figure comes from the finding that interruptions consume 28% of the knowledge worker's day, based on surveys and interviews. It should be noted that there is more to IO than interruptions, so this would be an underestimate. Since then Basex has extended its research to include all forms of information overload; their 2008 figure has risen to \$900B for the US.

Another data point comes from a [study](#) done at Intel corporation by myself and two colleagues in 2007, when we wanted to give our management a clear idea of the extent of the damage. We concluded a loss of 8 hours a week, which could be translated to about \$1B per annum for the corporation. In this work we explicitly separated the cost of processing unnecessary email from that of interruptions.

There is more data, such as [McKinsey's 2012 report](#) that finds knowledge workers spending 28% of their time on reading and writing email; similar numbers are often seen, but they seldom differentiate useful from unnecessary email, making the 28% an overestimate of the email component of IO.

Translating these time estimates into dollar values is of course based on defining the average salary and converting time to money accordingly. This practice lends itself to criticism, since on one hand there is no assurance that any time saved would be converted to output (conceptually, though this is unlikely, people might just go home earlier); and on the other hand, there are additional effects of Information Overload (as will be discussed in future articles in this series) that increase the monetary loss to far above the salary loading. For this reason I prefer to speak of the extra time consumed by IO (above that needed in its absence) and not of dollars; you can do the conversion if you wish based on your own interpretation of the “time is money” equation, or you can just spend a moment thinking about paying employees full-week salaries for essentially four days of real output generation. Either way, it’s a disturbing situation; and it’s universally present.

Time loss type 1: Clearing the Inbox

When we consider the time loss due to email processing, we must first define what counts as *lost* time in the context of information overload. Obviously, this is not the entire time people spend on reading and writing email (some 20 hours a week according to our Intel study, or 28% of the day in the McKinsey report). Email is an important business tool, and much of it is useful and necessary. The time we want to tally is only that portion of the 20 hours spent on useless messages that would not exist absent the overload-related behaviors.

You’d think it’s hard to precisely define a “useless message”, but when querying users I manage quite well by saying “messages that, were they to disappear before being read, no one would care”. Somehow, everyone knows exactly what I mean! Such useless messages, I’ve found in many surveys in different organizations, comprise some 30–35% of incoming mail. This does not mean that they take up this fraction of “Inbox time” – obviously many of them are deleted quite rapidly. The Intel study cited above concluded that of the 20 hours per week spent on email in general, 2 hours went to handling the unnecessary traffic.

Time loss type 2: Interruptions and Attention Loss

The interruptions component of work-related information overload is under-appreciated, and few realize that it represents the greatest impact.

By interruptions I mean anything that causes the knowledge worker to stop what they’ve been doing and start doing something else. This includes causes that have been around a long time, like telephone calls and coworkers popping into one’s office with a question (or a bit of gossip); it also includes computer-related causes like incoming emails, instant messages, blackberry alerts, and – more recently – social media (which I cover in the next section).

Interruptions involve multiple damage areas, but here I consider the time loss alone. This obviously depends on the impact of each interrupt and on their frequency during the workday. There is ample research about the impact of individual interruptions, much of it listed at <http://interruptions.net>. Generally speaking the human brain is not good at multitasking or fast task-switching, and the very act of stopping and resuming the task involves a loss of time while the brain gets in gear – the so called “switching cost”. The magnitude of this cost depends on the kind of work being done, with some tasks – those requiring “getting in the flow”, such as computer programming – requiring as long as 30 minutes to resume full effectiveness after an interruption. More routine work still requires recovery, around a minute at least. A minute may seem short, but if you receive 100 emails a day and

let each of them interrupt you with an alert, you can do the math. Various laboratory studies find that the time to complete a task increases by 20–40% when it is fragmented by interruptions.

The frequency of interruptions has been studied as well, and the findings are dismal. Victor González and Gloria Mark of UC Irvine have conducted extensive field observations and [found](#) that knowledge workers switch tasks every five minutes on average, and move between *working spheres* – higher level projects – every 12 minutes. This finding was used by my colleagues and myself at Intel when we estimated the cost of the interruptions component of information overload; even using a very conservative methodology showed a 6 hours per week time loss due to the switching costs.

Note that the time to process the interrupting task itself is not part of all these estimates.

Time loss type 3: Social Media (Jury's still out on this one)

The arrival of social media in the workplace is relatively new, but promises to become a third major component of information overload. Being new, it is still not as well studied as email and interruptions; and being spearheaded by younger people, much of the concern that has been voiced involves excessive personal use (“Social Media addiction”) at home rather than the enterprise impact that interests us here. Still, one can speculate where it is headed.

We need to consider two scenarios (and ignore a third – the use of social media as part of one’s specific job definition, e.g. by HR recruiters interacting with potential job applicants). The two are use of employees’ personal social media for personal use during work time, and use of inter-company social media as a work communication channel.

I make no secret of my [passionate support](#) for allowing employees to use social media and the web in general for reasonable personal use at work. This should be done right, with a well thought out policy, and carries multiple advantages for the company. However, just like email before them, these new tools can be overused to the point of adding to the information overload situation. Whether this is going to happen is not straightforward to predict because the Gen Y and Gen Z employees most likely to use personal Facebook or Twitter accounts at work are much better adapted to these media, and the multitasking way of life they’re associated with, than the Gen X and Boomer cohorts who fell victim to the sneaky arrival of email overload.

Use of social tools for and at work is a different matter. With more work communications being moved to internal social channels, it may well come to overload; but generally speaking this move involves a reduction in email traffic, and message-for-message, social media tend to be more effective than mail (among other reasons, because information is mainly distributed in pull rather than push mode). The overall effect may therefore actually be positive. That is what Atos (a large IT company in France) is hoping to achieve when they [drop internal email entirely](#), as they plan to do by 2014. On the flip side, new communication tools tend to take a life of their own, so social channels may bring in additional conversations above those we used to do by email.

As I say, the jury is still out here, but if past implementations of new technology are any indication, social media have both potential and risk, and whether they add to the earlier overload, reduce it, or keep it the same will depend in large measure on how wisely they’re adopted and supported with proper planning, policies and training. Unfortunately, if past implementations of new technology are an indication, one can’t be too optimistic...

What you can do with this

This article doesn't aim to discuss solutions, which are many and are discussed [elsewhere](#). However, even before discussing solutions, I recommend a serious consideration of the damage analysis given above. In my experience, while practically all managers and knowledge workers are aware of email overload from personal pain, they seldom realize the implications of interruptions, or the fact that these cost 3X the time of the unnecessary email. They also rarely appreciate the bottom line, that they and their groups are losing at least one workday per week.

If you want to lead your organization to solve information overload, you need to bring these facts to the attention of your management. Having been in the position of change agent in this space, I've often seen the beneficial effect of data-based evangelizing for a solution. This article, and some of the links it references, may serve you well in this role.

Nathan Zeldes has been working on Info Overload for 18 years, during which he's developed and deployed original solutions at Intel and other companies. He's exchanged knowledge and solutions with scores of organizations worldwide, and has founded the Information Overload Research Group, which he chairs. He now [advises managers](#) on solving this problem in their groups.

For more insight on Information Overload, check out Nathan's blog at www.nathanzeldes.com and consider subscribing to his RSS feed and to his Newsletter on that site.