
What do we do about email? Part 1: User research

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Email has been, and remains, a key business communication and collaboration tool. This article reviews a selection of the research literature on email to identify key lessons for effective organisational use of this tool. It covers the purposes for which email is used, the ways in which employees manage their email inboxes and their relationships with others through email. It ends by looking at the key problems users identify having with email and what can be done about them.

DOES ANYONE STILL USE EMAIL?

No one *still* uses email do they? It's soooo last century. Isn't everyone on Facebook or Twitter or whatever the newest new thing is? Well, no. Email is still important. At a global scale, its proliferation is astounding.

In 2010, an estimated 100 trillion emails were sent worldwide (with 90% of those being spam), and 2.9 billion email accounts and 550 million on-premises corporate email boxes were in use.¹

In contrast, around 439 billion letters are posted annually² and six trillion SMS messages were sent in 2010.³ Facebook claims to have 800 million active users and two billion posts liked and commented on per day.⁴

Email is the default business communication tool. It is also the de facto information management tool. Even in organisations with Enterprise Content Management (ECM) strategies and technologies, office workers spend much of their time in their inboxes and this doesn't look like changing soon. A recent survey of US professionals and students by Microsoft and MarketTools⁵ uncovered some indicative results:

- a third (37%) of information workers spend half their day or more reading and replying to work emails, and most claim it increases their productivity (55%);
- email as a method of communicating with co-workers has increased more than other methods over the past year;
- more than half (51%) of 18-24 year olds expect their workplace email usage to increase in the next five years, with 40% seeing their personal email communication increasing as well;
- most people (58%) start their day by checking email on their computers and 48% end their day that way as well.

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All websites and webpages referred to in this article were viewed 8 January 2012.

¹ Royal Pingdom, *Internet 2010 in Numbers* (2011), <http://www.royal.pingdom.com/2011/01/12/internet-2010-in-numbers>; Radicati Group, "The Radicati Group Inc Releases 'Email Statistics Report, 2010-2014'" (Press Release, 19 April 2010), <http://www.radicati.com/?p=5290>; Radicati Group, "The Radicati Group Inc Releases 'On-Premises Email and Collaboration Market, 2010-2014' Study" (Press Release, 20 December 2010), <http://www.radicati.com/?p=6231>.

² Universal Postal Union, *Postal Services, An Important Motor of the World's Economy* (2010), <http://www.upu.int/en/media-centre/press-kit/fast-facts.html> (no longer available).

³ International Telecommunications Union, *The World in ICT 2010* (2011), <http://www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf>.

⁴ Facebook, *Statistics* (2011), <http://www.facebook.com/press/info.php?statistics>.

⁵ Microsoft, *Email Communication Survey – Summary of Findings* (MarketTools Inc, San Francisco, 2011).

It appears that email is well entrenched in many organisations and is not going to disappear in the near future, even among young people just entering the workforce. Its ubiquity means that we should be managing our collective and individual use of email to ensure that it generates value rather than causes problems.

This article is the first in a two-part series. It aims to support an improvement in email management. It explores the role the purposes to which email is put within organisations, the user behaviours that surround email, and the problems that email can cause. It draws heavily on the industry and academic literature generated by two decades of research into email as well as the author's own experiences. The follow-up article will explore the solutions that specific organisations have adopted to deal with the challenges and opportunities of email.

WHAT IS EMAIL USED FOR?

Simple and flexible technologies tend to be used for multiple purposes and email is no exception. One way of viewing email is as a communications tool. Every email has one address in the "From" field and at least one address in the "To" field. The Microsoft and MarketTools survey mentioned above addresses some of these communication aspects. More than 50% of people prefer email at work when they do the following:

- want to send a message to multiple people at once (74%);
- need to have a record of their communication (73%);
- need to have ongoing communication over time (60%);
- have detailed information they need to share, including related documents or images (65%);
- need to set up a meeting (57%);
- need to communicate to someone in other office locations (54%).

Ducheneaut and Watts would label this the *communication genre* view of email.⁶

However, email supports other functions apart from just communication. Mackay identified three additional functions:⁷

- Information Management – electronic mail is both a source and a repository of information for employees. Ducheneaut and Watts would label this the *filing cabinet* view of email.⁸
- Time Management – employees use their email inboxes to identify and prioritise tasks. Ducheneaut and Watts would label this and the next function together as the *production line* view of email.⁹
- Task Management – employees use email to delegate tasks to each other.

For many workers, the email inbox is their primary information environment – “email has become more like a habitat than an application”.¹⁰ This implies that applications that offer functionality that overlaps with email – communication, collaboration, workflow and document management – cannot afford to ignore the central role that email plays. Informal conversations with information managers indicate that a common contributing reason for the failure in uptake of a new information system is its lack of integration with the email behemoth. Such integration can be as simple as sending an email alert to the relevant people whenever a wiki page is updated or an item progresses along a workflow chain. The current primacy of email should be accepted and worked with rather than denied and ignored. The passage of time will see its primacy decrease but it may take longer than we expect.

⁶ Ducheneaut N and Watts LA, “In Search of Coherence: A Review of E-mail Research” (2005) 20(1-2) *Human-Computer Interaction* 11 at 29-36.

⁷ Mackay WE, “Diversity in the Use of Electronic Mail: A Preliminary Inquiry” (1988) 6(4) *ACM Transactions on Information Systems* 380.

⁸ Ducheneaut and Watts, n 6 at 14-22.

⁹ Ducheneaut and Watts, n 6 at 22-29.

¹⁰ Ducheneaut N and Bellotti V, “Email as Habitat: An Exploration of Embedded Personal Information Management” (2001) 8(5) *ACM Transactions on Information Systems* 30 at 30.

HOW DO PEOPLE MANAGE THEIR EMAIL?

It is useful to know what email is used for but we also need to understand the strategies and behaviours that employees put into practice with email – and this has not been easy to discover. Early researchers relied on user reports from surveys or interviews and then observing the state of respondents' email boxes at particular points in time. More recent research has involved usability lab techniques such as eyetracking and, most importantly, clickstream data from web-based email systems. While some of this work has been carried out by university researchers, much of it has been the work of the research units of major software and/or hardware providers, eg Google, Microsoft, IBM, Yahoo, HP and Xerox PARC. Sometimes the fruits of this research finds its ways into the products that many of us use – but not always.

Whittaker and Sidner observed that email users tended to deploy three management strategies:¹¹

- *No filers* made no current use of folders but relied on full-text search to find information.
- *Frequent filers* made strenuous attempts to minimise the numbers of inbox messages, made frequent use of folders, and were relatively successful in their use of these.
- *Spring cleaners* dealt with the overloaded nature of their inboxes by intermittent clean-ups, normally every one to three months.

When Fisher et al carried out similar research a decade later, they found that while email archive size had grown tenfold, the number of daily messages and the number of emails in an inbox were of similar sizes in 1996 and 2006.¹² They found that some people did fit into the three categories (and a fourth category, *few folder filers*) but that many people fell along a continuum of behaviours.

Recent research by Whittaker et al simply distinguished information retrieval behaviours in email that are preparatory or opportunistic.¹³ Preparatory behaviours include using folders and tags that users deliberately create in anticipation of retrieval. Opportunistic behaviours do not rely on preparatory activity, ie sorting, scrolling and searching. Automatically logging over 85,000 refinding actions by 345 users, the researchers found that opportunistic behaviours dominate. These accounted for 87% of accesses (scrolling being especially popular). This is not necessarily a bad thing as results also indicated that preparatory strategies such as foldering were less efficient and no more successful than opportunistic strategies. The research also indicated that foldering was not a response to increased demands for refinding emails; filers were no more likely to reaccess messages. Instead, filing seems to be a reaction to receiving many messages. Users who receive many messages were more likely to create folders because this serves to rationalise their inbox, allowing them to better see their “to dos”.

Of course, folders are one way of organising emails, newer online email tools such as Gmail offer tagging and threading as well as folder filing.¹⁴ Civan et al note:¹⁵

Better support for information organization may need to go well beyond folders and tags or their artful combination. As revealed in participants' sketches, people think of their information in ways that go well beyond the representational ability of either folders or tags. Participants appeared to organize information internally, for example, with respect to time and the steps of a workflow. These internal

¹¹ Whittaker S and Sidner CL, “Email Overload: Exploring Personal Information Management of Email” in *Proceedings of the ACM CHI 1996 Conference on Human Factors in Computing Systems* (ACM, New York, 1996) pp 276-283.

¹² Fisher D, Brush AJ, Gleave E and Smith MA, “Revisiting Whittaker & Sidner's ‘Email overload’ Ten Years Later” in Hinds PJ and Martin D (eds), *CSCW 2006: Proceedings of the 2006 ACM Conference on Computer Supported Cooperative Work* (ACM, New York, 2006) pp 309-312.

¹³ Whittaker S, Matthews T, Cerruti J, Badenes H and Tang J, “Am I Wasting My Time Organizing Email?: A Study of Email Refinding” in *Proceedings of the ACM CHI 2011 Conference on Human Factors in Computing Systems* (ACM, New York, 2011) pp 3449-3458.

¹⁴ Tang JC, Wilcox E, Cerruti JA, Badenes H, Nusser S and Schoudt J, “Tag-it, Snag-it, or Bag-it: Combining Tags, Threads, and Folders in E-mail” in *Proceedings of the ACM CHI 2008 Conference on Human Factors in Computing Systems Extended Abstracts*, (ACM, New York, 2008) pp 2179-2194; Rodden K and Leggett M, “Best of Both Worlds: Improving Gmail Labels With the Affordances of Folders” in *Proceedings of the 28th International Conference on Human Factors in Computing Systems: CHI 2010 Extended Abstracts* (ACM, New York, 2010) pp 4587-4596.

¹⁵ Civan A, Jones W, Klasnja P and Bruce H, “Better to Organize Personal Information by Folders or by Tags?: The Devil is in the Details” (2009) 45 *Proceedings of the American Society for Information Science and Technology* 1 at 13.

organizations evolve over time. How can our tools better support us so that corresponding external representations can stay in synch? What if, for example, people could use a digital “sketch pad” to create, expand, and refine the organization of an information collection over time? The ultimate model of information organization may be neither “place this” nor “label this”, but instead, “this is how I see things”.

HOW DO PEOPLE MANAGE THEIR RELATIONSHIPS WITH EMAIL?

With an emphasis on communication rather than information management, Tyler and Tang examined the “rhythms” of email conversations.¹⁶ They found that users:

- Display typical patterns of response behaviours. Most checked their email constantly. Some only checked their email intermittently. This was either a conscious choice to avoid distraction or a result of poor connectivity.
- Maintain a *responsiveness image*. Some users wish to present themselves as highly responsive and meticulous. Others do not wish to appear too available and so deliberately delay responding.
- Take advantage of contextual cues to explain responsiveness. Users sought to understand why an expected response did not come. Out-of-office messages, previous behaviour and discussions with colleagues were all brought into play.
- Use email with other media such as instant messaging, SMS and telephone calls. Individuals and groups tend to develop protocols such as combining written details in an email with a brief voicemail for items requiring urgent attention.
- Use email *peri-synchronously* when quick replies are expected. Peri-synchronous means the practice of sending short emails in quick succession between users so the experience is almost synchronous.
- Reciprocate the email behaviour of others. Responsiveness or non-responsiveness tends to foster similar behaviour in others.
- Often experience apprehension when contacting a new email correspondent. If we don’t know someone, we have concerns as to whether they will read our email and respond to it.

The dynamics of email reading and response have also been explored by researchers at Carnegie Mellon University.¹⁷ Their experiments indicate that people open and reply to emails for a range of reasons – importance, sociability and curiosity. Some of their results are obvious. Email users are more likely to read an email if it is marked as important. The more messages they get, the less likely they are to read any one message and the fewer messages they read overall. However, curiosity (based on subject lines) also seems to be a major driver in whether people read messages or not. Curiosity has less of an effect when email users are overloaded with messages or motivated extrinsically (ie were paid to read specific messages).

WHAT PROBLEMS DOES EMAIL GENERATE?

The issue of personal email “overload” has been identified for quite some time. Whittaker and Sidner were discussing it back in 1996 – although information overload more generally was first mentioned over 30 years before.¹⁸ Things do not appear to have changed much in the interim. In a 2009 Association for Information and Image Management (AIIM) survey of email management, the most frequently identified user issue with email was “sheer overload”.¹⁹ Although as Fisher et al noted in

¹⁶ Tyler JR and Tang JC, “When Can I Expect an Email Response? A Study of Rhythms in Email Usage” in Kuutti K, Karsten EH, Kirkpatrick G, Dourish P and Schmidt K (eds), *ECSCW 2003: Proceedings of the 8th Conference on European Conference on Computer-supported Cooperative Work* (Kluwer Academic Publishers, Norwell, MA, 2003) pp 239-258.

¹⁷ Wainer J, Dabbish L and Kraut R, “Should I Open this Email? Inbox-level Cues, Curiosity and Attention to Email” in *Proceedings of the ACM CHI 2011 Conference on Human Factors in Computing Systems* (ACM, New York, 2011) pp 3439-3448; Dabbish LA, Kraut RE, Fussell S and Kiesler S, “Understanding Email Use: Predicting Action on a Message” in van der Veer GC and Gale C (eds), *Proceedings of the ACM CHI 2005 Conference on Human Factors in Computing Systems* (ACM, Portland, Oregon, 2005) pp 691-700.

¹⁸ Gross BM, *The Managing of Organizations: The Administrative Struggle* (The Free Press, New York, 1964) p 856.

¹⁹ AIIM, *Email Management: The Good, the Bad and the Ugly* (2009), <http://www.aiim.org/Research/Industry-Watch/Email-Management>.

2006, at first glance the volume of email that users received had not increased dramatically in a decade.²⁰ It is tempting to pursue a technical solution to the perceived problem of email overload, however, it may be a situation that is insoluble in the short term. An email inbox is a critical work site for many employees. It is an extension of their desk, cubicle and work space (even themselves). It is a habitat. And yet, like their desk or cubicle, it is only partially under their control. Emails arrive uninvited, some demanding immediate attention. The sense of overload is very likely a function of this lack of control. Workplace stress is exacerbated by lack of control²¹ and email overload can be understood as a particular form of workplace stress.

Unless organisations deliberately limit the use of email and other communications tools, then email overload will remain. Some organisations are enacting limits on email, however, for most, the flexible, ad hoc nature of email remains too good a fit for the flexible, ad hoc work that senior managers feel they need to take in pursuit of success. Shifting to other forms of collaboration and communication may reduce the absolute number of messages that employees receive and it may increase their ease of collaboration but it is not yet clear that they will reduce the sense of overload as this is something intrinsic in the nature of the work most of us now do. The alternative to email overload (over-connection) is isolation, a sense of being “out of the loop”, which I suspect that most people do not want either.

The AIIM survey identifies other issues with email.²² The next two focus on mailbox management. They are more prosaic but potentially more costly in terms of direct business risk: “Finding and recovering past emails” and “Keeping track of actions”. Finding and recovering past emails and actions has become a major headache for businesses since the US *Federal Rules of Civil Procedure* were changed in 2006 to require the disclosure of all electronic document types in pre-trial discovery, including emails. Similar requirements now apply in varying degrees in Australian courts.²³ Over a third of respondents to AIIM had no policy to deal with litigation or legal discovery.

Two further issues in the AIIM survey highlight the limits of email as a communication and collaboration tool: “FYI and Reply-to-All copies” and “Doesn’t work for collaboration”. FYI (for your information) and reply-all certainly adds to the absolute number of emails that employees receive and a sense of email overload. However, FYI is closely related to another TLA (three letter acronym): CYA (cover your ass). In my experience, a lot of email communication is not about communicating to generate action but communicating to prevent future punishment. This professional insurance does not come without a cost premium to both parties (in terms of time and attention). One imaginative solution to the issue of excess email is that suggested by Kraut et al: email senders should be charged a “postage” for each email they send that can be levied if the respondent indicates that the email was unwanted.²⁴ More generally, FYI and reply-all emails are as much a function of cultures that display risk-aversion or high levels of consultation around decision-making, as they are a function of technology. Developing clear protocols around decision-making (using tools such as RACI charts) may reduce this problem.

As I have discussed before,²⁵ email is perhaps the most heavily used document collaboration tool in most enterprises (combined with the Microsoft Office suite or equivalent) and yet the results are often painful. Tools such as Microsoft SharePoint or Google Docs are beginning to replace email in this space. However, in many organisations, this change is happening at the speed of the slowest. If one user in a team cannot access these systems then the team has to resort to email or a shared folder set up. We already have technological fixes to this issue but it also requires changes in behaviour.

²⁰ Fisher et al, n 12.

²¹ World Health Organization, *Stress at the Workplace*, http://www.who.int/occupational_health/topics/stressatwp/en.

²² AIIM, n 19.

²³ Byrne SE, *E-Discovery: Where Information Management and Litigation Meet* (2010), http://www.iim.org.au/attachments/20100427_SeamusByrne_IIM_EDiscovery_PublicDraft.pdf.

²⁴ Kraut RE, Sunder S, Morris J, Telang R, Filer D and Cronin M, *Markets for Attention: Will Postage Email Help?* (Human-Computer Interaction Institute, Pittsburgh, 2002), <http://www.repository.cmu.edu/hcii/100>.

²⁵ Moore M, “Successfully Managing Corporate Information Environments” (2011) 25 OLC 182.

CONCLUSION

“Relatively few studies have investigated the specific strategies that e-mail users have developed to handle their e-mail in practice.”²⁶

In reviewing the literature around email, it is noticeable how key issues in the effective use of this tool were identified decades ago and that these issues have still not been resolved. It is also noticeable how our understanding of more recent information and communication tools (eg HTML-based websites) is more advanced than our understanding of email. Email perhaps suffers from a lack of attention because it is not new, its interface is crude and simplistic compared to newer tools, and perhaps most importantly, the only email inbox you regularly see is your own. Problems with email are rarely identified and tackled collectively.

However, despite the budget and/or attention attached to ECM systems and social media, email is still at the core of business communication and information management. It is the invisible elephant on the desktop. Organisations need to take into account the current popularity of email when introducing new approaches if they want those approaches to succeed. They also need to improve the individual and collective management of email. I hope that some of the research that this article points to can assist with those endeavours. The next article will explore some practical attempts to manage email more effectively by a range of organisations.

To be continued ...

²⁶ Ducheneaut and Watts, n 6 at 19.