Threading Centric Approach Towards Email Client

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ABSTRACT

Email has changed from its original vision of a simple asynchronous communication system to a core application for digital personal information management. In its current form, Email lets you glance at all of your information at once. Mechanisms introduced into Gmail (Google's email client) such as starring, labeling, sorting into folders, importance markers were initially proposed as a means to classify and de-clutter the mailboxes. But in contrast they have overloaded the mailbox with information. We propose a solution based on tagging, threads and visualization techniques to make the email system much more organized and effective. We mainly focus on threads and our understanding of the life-cycle of communication to arrive at the solution.

Author Keywords

Email Client; Threading; Semantic Clustering; Tagging.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Today email has converted into a "habitat", the central place from where work is received, managed, and delegated in organizations (Ducheneaut and Bellotti, 2001). It is used as a personal information manager with functions like task management, personal archiving, and contact management (Whittaker and Sidner, 1996).

Paul Graham from *Frighteningly Ambitious Startup Ideas* states, "Email was not designed to be used the way we use it now. Email is not a messaging protocol. It's a to-do list. Or rather, my inbox is a to-do list, and email is the way things get onto it."

As a result, users are increasingly frustrated with their collaboration tools in general and email in particular. Several attempts have been made over the years to solve this recurring problem of email overload. A Thrask (Threaded Task Centric Collection), groups all related incoming messages such as replies in a thread along with any attendant files or links together based on analysis of message data (Bellotti et. al., 2003).

Over the past few years, applications with features such as auto categorization, efficiency improvements, better workflow integration, better attachment handling, social

integration, prioritization and analytics have been developed. Also, there have been explorations in visualization techniques (Immersion, MIT). In his paper Bernard Kerr (2003) has presented his approach to visualize email thread. He discussed key qualities like chronology, relationships, compactness, stability, scale, attribute highlighting and interpretation, all of which needs to be considered while conceptualising and designing such visualizations.

Building on this literature research, refined and strengthened by our user study, we designed a structurally innovative and intelligent email client that manages all email messages through threads and tags.

METHODOLOGY

We followed a user centered design approach (Norman and Draper, 1986). Beginning with the literature research, we gained a perspective into how email has evolved and the problems its users currently face. We then investigated existing email clients. This was followed by a qualitative study in which we conducted semi-structured interviews with 5 users (2 professors in the department of design, IIT Guwahati, India and 3 professionals working in the industry). We gathered insights into their email usage, preferences and pain points. Their responses were examined using affinity analysis. Simultaneously, we conducted a quantitative survey with 155 users to identify patterns in email usage.

We evaluated needs of the users based on the existing literature and the insights we had accumulated over the course of qualitative and quantitative user study. Mind maps were chalked out to further expand our understanding of the topic at hand and to get a new perspective of the overall big picture. A couple of iterations based on different design concepts like data visualization and smart filtering were initially suggested and presented to the members of the team after a brain-storming session. Towards the end of the session, the concept was finalized. The aim was to simplify email by eliminating the confusion pertaining to the abundant sorting features in today's email client.

DISCUSSION

Whittaker, Bellotti and Gwizdka, 2006 suggested the importance of conversational threading and semantic clustering when one considers task management. However, as discussed earlier, the categorization systems employed in the current email system have cluttered it further. To cater to this, we tried to introduce one unified concept of tags.

Our solution proposes information management system which categorizes all emails on the basis of computer-assisted tags finalized by the sender. While the user is

composing an email, (s)he is focused on his task and is aware of the message's contents. This in turn means it is easier for the sender to spend a small amount of time pre-categorizing it than it is for the recipient to absorb the message and organize it. By reducing the overall sorting effort, the amount of organized email is expected to increase. Once a user enters the email id of the recipient, the email client begins suggesting tags based on recent conversations with the recipient and the content of the email. Selecting a tag is completely optional for a sender - he can always attach tags to a conversation at a later point. Once the mail is sent, the receiver is also notified about any prior tags attached by the sender and then given suggestions based on their own tagging scheme. Adding tags to conversations would slowly become an invisible process since the client would intelligently recognise and assign tags based on user's usage patterns.

A thread is a collection of email messages with the same tags. Tags would help group similar emails into a single thread, which would bring about a major structural change; thereby de-cluttering the email client. Automatic tagging would ensure that mails would automatically be added to an existing thread and grouped by user's tagging scheme. It is important to mention here that tags define threads and the basic structure of your emails. These tags are assigned by the users based on their personal preferences.

In order to test this concept, four members of our team took our own Gmail accounts for reference and applied this concept hypothetically to a set of 100 email conversations (horizontal bars). The results showed that with tagging, 100 such conversations were grouped, restructured and reduced to 40, 31, 10, and 22 threads (horizontal bars) respectively, with the average length of a thread being 5.2 messages. The average maximum length of a thread was 33.25 messages.
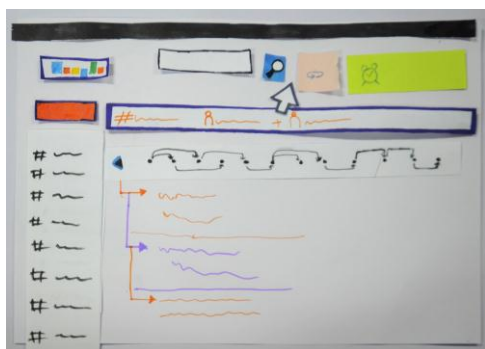

Figure 1: Paper prototyping of final concept. (Fast Five, 2013)

The concept of tagging can be extended to cater to diverse problems like to-do lists, calendars, social mails, attachment management etc. For example, a "#Reminder" tag can be used to populate the reminder widget. It can greatly help by managing activities extending over a period of time and by maintaining threads of activities and discussions. It can make searching easy and can help in efficient organization.

Also, based on our explorations of visualisation techniques, we designed dynamic and interactive visualisations for representing threads and connections. We used Thread Arcs (Kerr, 2003), which help people see various attributes of conversations, trace its evolution and find relevant messages in them easily.

CONCLUSIONS

Through our study we found out the present email usage patterns across a varied set of users. We found the problem of cluttered mailbox common amongst all. With the application of our simple concept of threading and clustering by tagging, we have been able to overcome the shortcomings of the current email client. It is a radical change in its structure and is a major step in carving out the probable future of email.

Future possibilities include the extension of this concept to attain higher degrees of task management, personal archiving and contact management. Another idea in consideration is the subsequent (after the first mail) replacement of recipients and subject of an e-mail by the tag itself, thereby achieving three functions i.e. recipients, subject and sorting in a single go. We aim to explore the two previously points in the immediate future.

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