

# Salsa: Leveraging Email to Create a Social Network for the Enterprise

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## Abstract

In this paper we describe Salsa, a plug-in that aggregates social and other content into an email client. Information in Salsa is collected from a variety of sources both inside and outside of email to create a profile for each person in our corporation that contains a photo, organizational details, friends, and an aggregated feed of shared content. Thus, Salsa uses a social networking approach to add social awareness to email. Salsa was deployed internally within our corporation and we trace its growth for six months and describe the results of a targeted user study. Findings demonstrate the extent to which and what type of social awareness is useful in our organization. Use of the aggregated feed is also discussed. In addition to identifying features that are useful for social networks in the enterprise, we explore the benefits of situating this type of application in email.

## Background

As corporations grow, knowledge becomes dispersed and communication and coordination become increasingly challenging (Ackerman, Pipek & Wulf, 2003). While face-to-face communication is not always possible, social computing tools are highly accessible, uniquely positioning them to provide enterprise-solutions. If leveraged properly, online social networks can be used to solve some of the major problems faced by organizations today by a) creating social awareness and b) improving information sharing. In this paper, we describe Salsa, a social networking tool for enterprise that provides these benefits in email, the habitat of the information worker (Ducheneaut & Bellotti, 2001). Salsa organizes files and messages around the people who create and share them and is strategically embedded as a side pane in Outlook that collects information from a variety of sources both inside and outside email to create pre-populated user profiles.

**Sharing in Email.** Although there are various tools that can be used to share information, email persists as the most popular since other tools; a) are not used universally and b) do not notify users when others update and share mail (Volda, et al. 2006). Because information retrieval is often difficult, various applications help users sort files by topic (Cselle, Albrecht, & Wattenhofer, 2007), category (Segal

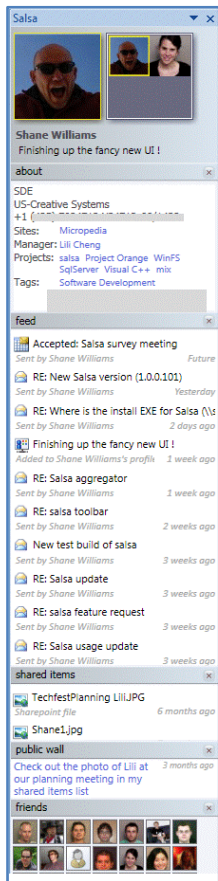
& Kephart, 1999) or even people (Turski et al., 2005). The Salsa prototype builds on other person-centered approaches and explores a direct link between the inbox and the plug-in.

**Person-Centered.** After visualizing their communication patterns in SNARF, users were better able to understand the nature of their email relationships and triage mail more effectively (Neustaedter, Brush & Smith, 2005). Somewhat similar to SNARF, the commercial system XOBNI ([www.xobni.com](http://www.xobni.com)) functions as a plug-in to Outlook and provides analytics on email use in addition to surfacing some social relationship information about people in the user's inbox. Salsa can be differentiated from XOBNI since it permits user contributions and automatically incorporates content from shared sources in the enterprise.

**Social network.** Person-centered approaches can be subtly contrasted with the social network approach which enables people to maintain social bonds through passive or lightweight usage (Joinson, 2008). Beehive was successfully deployed in the enterprise and allows users to interact through online profiles in an intranet social networking environment (DiMicco et al. 2008). Email contains an inherent social network and this can be leveraged to visualize connections (Nardi et al., 2002). SmallBlue uses content from email and other sources to display networked relationships and create user profiles. These profiles help workers find experts at IBM (Lin et al. 2007). Although Salsa does not create a visualization of a social network, it is similar to a social network since it a) displays friend of friend connections b) creates user profiles and c) supports lightweight interaction with these profiles. As a social networking display, Salsa encourages passive use by automatically aggregating content and surfacing information in the periphery of the email client.

## SALSA PLUG-IN

**Interaction.** When Salsa is enabled in Outlook it is displayed as a right pane in the message window (Figure 1). The sender of the email appears in the Salsa pane as the default. If the sender is within the corporate network, his/her profile details are shown in the "about" section. Profile pictures of the sender's "friends" list are also shown. Users can choose to view detailed information about any person who is a sender or recipient on the email message by clicking that person. When a person is



- 1 **1. Photo**
- 2 **2. Name**
- 3 **3. About**
- 4 **4. Feed**
- 5 **5. Shared Items**
- 6 **6. Public Wall**
- 7 **7. Friends**

Figure 1. Salsa pane only, some content obscured for space.

selected, their information becomes the focus. Users can click through Salsa profiles by selecting people (or projects) they are interested in. In this way, it is possible to traverse through a social network by clicking through friend of friend connections. Finally, people can access shared content in the “feed” and “shared items” sections of another person’s profile by double clicking.

**Content.** When users select another person in Salsa, they are able to view all the content that they have publicly shared and also the content that they privately share with this individual. This includes email subject lines, attachments and other shared files, and content from any external RSS feeds the person has added to Outlook.

**User Profiles.** Salsa profiles (Figure 1) look similar to other social networking profiles and include a picture, one-line status, other organizational details, feeds, a “friends” list and a public “wall”. Salsa “friends” are automatically populated and managed by the Salsa web service. Friends are derived from the people on the corporate network users emailed most frequently over the last 30 days, along with managers and direct coworkers. Although the friends list in Salsa is inferred, it is also possible to “pin” or “unpin” friends. Users can also actively contribute to Salsa through personal status updates and public wall posts also managed by the Salsa web service. Salsa pulls photos and other company information like title, department and manager

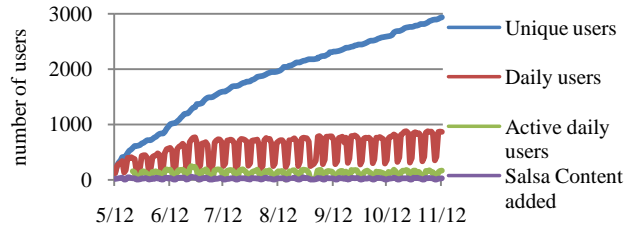


Figure 2. Salsa usage, 3 months

from Active Directory. Automatically completing parts of the profile ensures that users enter Salsa with a pre-populated profile and with the ability to see profiles for other employees who have not yet downloaded Salsa.

**Projects and Groups.** Projects and email-based groups (distribution lists) in our organization also have Salsa profiles.

### Feed Content

Salsa aggregates information from email and other sources into a feed. The Salsa feed combines private information that is visible only to those with access, and public information that is available to all. Private data are gathered using Windows desktop search to find local RSS feeds, email, calendar details and shared files while public feeds are extracted from SharePoint’s shared document library and from other documents that the recipient has published on internal SharePoint sites. Most content is automatically incorporated into Salsa profiles but since information is incorporated from desktop search, users can set up RSS feeds in Outlook to view even more content from external sources (e.g., status updates from Facebook).

We consider both the “shared items” and “feed” section to be feeds. Attachments and other shared files are found in “shared items” and all other content including email messages and RSS items are found in “feed”.

## SALSA USAGE

Here we analyze six months of instrumentation data and conduct a more in depth user study to describe how embedding social networking features in email created social awareness. Specifically we examine a) the type of use generated by the peripheral display b) whether social networking features created social awareness and c) if automated aggregation of content into the feed made file sharing easier.

### Beta Launch

**Usage Summary.** Salsa was deployed internally at our large, multi-national technology corporation using word of mouth. Usage was instrumented and patterns of use over six months were analyzed. Salsa grew from 117 to 2,932 total users, 864 of whom were daily users (meaning that they were running Outlook with Salsa installed). Since the Salsa plug-in can be hidden, we also identified the users

who were showing Salsa (“daily users” in Figure 2) and this number (N=656 on 11/12) was slightly lower than the number of people who had Salsa installed.

A plot of Salsa usage over time can be found in Figure 2. Here “active daily users” are those who make clicks in Salsa (N=162) and “contributors” are those who add content (e.g., by updating their status or contributing to a wall post) (N=23). Due to an error in the instrumentation, the first two weeks (5/12-5/23) of clicks on people in the Salsa pane were not recorded and therefore this specific content is excluded from all analyses.

**Passive Usage.** Salsa pre-populates many of its fields and therefore, we expected that the majority of interactions with the plug-in would be passive. Though the unique users and daily users grew rapidly over six months, the number of users making clicks in Salsa did not show impressive growth over time (from 132 to 162 users). Similarly the number of users contributing content to Salsa (from 12 to 23 users) stayed relatively constant. On average users made a total of only 1.4 clicks per user per day within Salsa (sum of all actions, Table 1). When users did engage with Salsa, they interacted for an extended pattern of clicks. The average sequence in Salsa lasted for approximately 2.7 clicks. This provides support for the idea that Salsa is most useful as a lightweight side pane.

**Social Awareness.** As anticipated, social features in Salsa received more attention than other content. The Salsa display is centered on people, and users are over six times more likely to click on other people than other project or file content surfaced in the feed (Table 1). We analyzed the type of social clicks that users made broken down by “friend”, “other” (not a friend in Salsa) and “self”. Users were 6 times more likely to click on someone who was not their friend than someone who was their friend or themselves (Table 1), and thus the aggregated content provided in Salsa seemed to be most interesting to users when it pertained to unfamiliar others.

Although Salsa automatically populates the “friends” field for each user, it is also possible to pin or un-pin friends to grow one’s social network. Very few people used this feature (Table 1), opting to use Salsa’s inferred social network. In fact, although Salsa has unique features that allow users to communicate inside the plug-in, they chose to interact very little with others in Salsa. For instance, although people could communicate using the public wall or update their own status, these features were used infrequently, again suggesting that Salsa was most useful as a lightweight social awareness display (Table 1).

Clicks per user per day					
Person	#	Project/Group	#	Action	#
Self	0.14	Project/ Group	0.02	(Un)Pin Friend	0.01
Friend	0.14	Feed/Shared	0.13	Wall Post	0.01
Other	0.88	File		Status	0.02
<b>Sum</b>	<b>1.16</b>	<b>Sum</b>	<b>0.15</b>	<b>Sum</b>	<b>0.04</b>

Table 1. Clicks in Salsa per user per day, across 6 months.

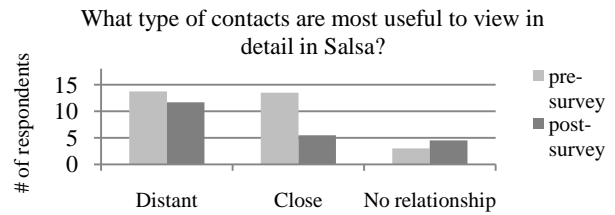


Figure 3. With both pre AND post survey responses.

**Aggregated content.** Salsa structured content in the feed using the social organization inherent in email so that users could view and find files that they shared with others. As stated, click analyses suggest that users engaged far more in social exploration than exploration of items in their aggregated feed. They rarely chose to open and view shared items exposed in the feed (Table 1). Since interaction with Salsa tended to be passive rather than through active clicks, survey responses helped explain interactions.

## User Study

**Survey overview.** Eighteen employees who previously indicated their interest in Salsa, completed a pre survey and a post survey after one month of usage. Here we discuss relevant responses.

**Passive Usage.** In the post survey, participants responded to the item, “Of all your Outlook interactions, what percentage involve a passive use of Salsa?” We clarified that in this case “passive means you look at the Salsa Pane but do not click it”. On average participants reported that 61% of all their interactions with Outlook involved passive use of Salsa.

**Social Awareness.** We wondered if social networking features contributed to social awareness. When we asked participants in the post survey, “What is the primary function of Salsa?” users selected from a list and indicated that the primary function of Salsa was to create awareness within the email client (N=7). Others thought that Salsa’s primary function was to simply show pictures (N=5) or to create a social network for email (N=4). This suggests that Salsa is at least in part useful for social awareness.

Our analyses of the beta launch demonstrated that users viewed other *people* in Salsa most frequently. More specifically, they viewed other non-friends. We asked participants both before and after Salsa use, “What type of contacts are most useful to view in detail in Salsa?” Prior to use, participants expected that it would be useful to view both close and distant colleagues, however after using Salsa they found that enjoyed learning about distant relationships including distant co-workers, colleagues they expected to meet in the future and colleagues they communicated with mainly in email (Figure 3).

**Aggregated content.** In the post survey participants were given a chance to indicate which Salsa features were most useful, 3 of 10 indicated that they liked viewing content in the feed. Also, when participants were asked in a free

response item how they used Salsa, 30% of the respondents suggested that they used Salsa to find relevant emails or files. Thus files surfaced in the feed were useful for some.

## Discussion

Salsa generated passive usage through its positioning as a peripheral display in email and by displaying automatically aggregated content each time users read or composed mail. Users did not necessarily interact with the display by making clicks or contributing new content since relevant information was already visible, yet, participants reported passively glancing at the display for more than half of mail they read or composed. By using a lightweight interface that is blended into the email client, we believe Salsa actually encourages passive rather than active interaction. First, because Salsa activity is linked to activity in the inbox, as users receive and send mail, Salsa automatically surfaces relevant and interesting content without the user doing any work. Also, when users are using email with Salsa showing, they are typically performing work in the email client and cannot afford to be distracted. This distinguishes Salsa from other web-based social networks for the enterprise like Beehive (DiMicco et al. 2008) that users actively choose to visit to engage in social tasks. The fact that Salsa is most useful in times when users are typically also deeply engaged in work may be why interactive features like the wall were less popular: When people enter email, typically they are doing so to accomplish a task in email, and social networking, even for work-oriented purposes is unlikely to be the goal of the user at that time. In sum, we suggest that integrating social networking features into email has the significant upside of tying into existing behavior very naturally, but precisely because users are engaged in email tasks, usage will tend to be passive.

One goal of Salsa was to create awareness for other people in the enterprise. Participants in the user study reported that Salsa was useful for learning about people in the organization and that it was particularly helpful for learning about distant colleagues who they collaborated with or expected to collaborate with. These findings are consistent with analyses of the beta-launch that also demonstrated that users clicked most frequently on people rather than non-social content, and specifically on people who were not their friends. These analyses also indicated that users do not frequently add others as “friends” and grow their social network. Finally, although participants reported that they used the feed to find project and file content, they clicked on this content far less frequently than they clicked on social features.

Salsa usage analysis and questionnaire findings reflect key differences from findings in the personal social network domain. While users of personal social networks actively craft their identity by completing multiple profile fields (Ellison, Steinfeld & Lampe 2007), we find that in contrast, users of Salsa do not contribute as much content to their profile or actively work to create their identity.

Although users interact with Salsa heavily (for 61% of all email interactions), these interactions are largely passive. Also, while those in personal social networks focus on those in their immediate friend network (Ellison et al. 2007), attempting to supplement their face-to-face interactions, users in Salsa attempt to supplement very different face-to-face interactions by interacting with people outside of their friendship network. DiMicco et al. (2008) also find that users look outside of their friendship network when using a social network for the enterprise suggesting that this trend might extend more broadly.

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