

## Chapter 7

# Semantic Technology for Improved Email Collaboration

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### ABSTRACT

*Digital means of communications such as email and IM have become a crucial tool for collaboration. Taking advantage of the fact that information exchanged over these media can be made persistent, a lot of research has strived to make sense of the ongoing communication processes in order to support the participants with their management. In this chapter, a workflow-oriented approach is pursued to demonstrate how, coupled with appropriate information extraction techniques, robust knowledge models, and intuitive user interfaces, semantic technology can provide support for email-based collaborative work. While eliciting as much knowledge as possible, the design concept in this chapter imposes little to no changes and/or restrictions to the conventional use of email.*

### INTRODUCTION

Despite the rise of competing technologies, email remains a crucial business communication tool and an important source of enterprise information. Email's successes are attributed to a very simple,

effective protocol, whose asynchronicity frees the participants from the constraints of time and space. However, email also has many disadvantages, the majority of which are attributed to the many ways in which people use email, which are beyond its intended design. The use of email for these functions results in email overload, and it

DOI: 10.4018/978-1-4666-0894-8.ch007

induces widespread (inter)personal information management problems, especially affecting users that thoroughly depend on email to carry out their daily work.

Email serves as a virtual extension to the user's workplace, within which they collaborate, generating and sharing new personal information in the process. From this perspective, email overload can be considered as a workflow management problem where, users become overwhelmed with the increasing amount and complexity of co-executing workflows. Although ad-hoc in nature, these workflows are conceptually well-formed. This approach considers the source of email overload to lie partly in the lack of structure imposed by the email model, and partly in the fragmented way in which these workflows are represented on the user's desktop. Thus, it was necessary to investigate whether by providing automated support for structured email workflows, email overload and the ensuing information management hardships can be reduced.

## **BACKGROUND**

Many related research efforts have targeted the email overload problem (Whittaker & Sidner, 1996) by enabling machines to support the users with better managing their email data. Some have taken a direct approach, e.g., through automatic email classification, enhanced search and retrieval; whereas others have taken less direct approaches to solving the problem, e.g., by facilitating email visualization. Most of these efforts however, offer only a somewhat superficial solution that does not target the source of the problem -- which lies in email technology being utilised not only as a simple communication means, but also to effectively perform collaborative work. From this perspective, the email overload problem can be projected as a workflow management problem where, users become overwhelmed with the increasing amount (and complexity) of co-executing workflows, re-

sulting in a loss of control over their email-based collaborative work. The source of this problem lies partly in the lack of structure imposed by the email model, and partly in the fragmented way in which these workflows are 'represented' on the user's conventional desktop. This 'representation' amounts to nothing but a number of physically-unrelated, albeit workflow-related, resources such as messages, contacts, documents, events, tasks, etc. At one stage or another, all these different types of data abstractions participate in the execution of the workflow, and can thus be considered as workflow artefacts. Unfortunately for the user, these artefacts are stored separately in different desktop data silos such as email folders, system folders, contact lists, calendars, task managers, etc., with no links or associations being retained in between.

## **TOWARDS A SEMANTIC COMMUNICATION SUPPORT SYSTEM**

### **Research Challenges**

Our approach to easing email overload addresses the following problems:

1. How can one model and represent email workflows?

Given the ad-hoc nature of email workflows, each conversational move – or update to the workflow – is largely unpredictable. However, analogously to spoken conversations, it also manifests repeated patterns of communication. Therefore, the modelling pursued needs to investigate whether, and to which extent, can email conversational moves be predicted. Nevertheless, email's flexibility must at all times be considered as an intrinsic characteristic, as despite its obvious modelling disadvantages, it remains email's most favourable feature.

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