COSIMail and COSIFile: Semantic Desktop Extensions for Email and File Management*

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ABSTRACT

In this poster, we present COSIFile and COSIMail, semantic desktop tools for enhanced file and email management that are based on the X-COSIM semantic desktop framework. They are implemented as extensions for an email client and file manager, specifically designed to enhance support for the personal information managment tasks of information organization and re-finding.

1. INTRODUCTION

On a semantic desktop, semantic metadata describes i) resources such as files, emails, persons, ii) the relations among them, and iii) their classifications by user-defined structures (e.g. folder hierarchies). Various services and tools can be envisioned that exploit such semantic metadata. In this poster, we present two such tools: COSIMail, an add-on for the Thunderbird[1] email client, and COSIFile, an extension for the KDE file manager Dolphin[2]. Both tools have been developed using the semantic desktop framework X-COSIM [6] to contribute and access semantic metadata that links email and file system resources. They have been designed to enhance support for information organization and retrieval tasks considering findings of studies in personal information management (PIM).

2. RELATED WORK

Four major PIM tasks have been identified in [1], namely aquisition, organization, maintenance, and retrieval. For the retrieval of information, studies on PIM behavior [8, 3] have shown that many users prefer manual search, i.e. searching for documents by browsing through folder hierarchies, over the usage of a desktop search tool. Findings presented in [2] show that standard file attributes like file size and modification date are of limited use for information re-finding. COSIMail and COSIFile have been developed to further enhance support for information organization and manual retrieval considering findings of PIM studies mentioned before.

Prior implementations of a semantic desktop such as [4, 7, 9] have been implemented as monolithic applications that either require users to abandon established applications or impose extra user interface users need to learn. In contrast to such approaches, COSIMail and COSIFile are implemented to add semantic desktop features to conventional desktops in an unintrusive and easy to learn mannor by *augmenting and extending* existing PIM applications and their user interface widgets.

3. COSIMAIL

Email management tools are not only utilized for reading and sending emails but commonly employed to support a variety of PIM tasks [5]. COSIMail has been developed to extend support for tasks related to the management of email attachments.

COSIMail contributes and exploits metadata related to email communications. Utilizing the X-COSIM API, data about emails such as sender, recipients, or files attached to an email are stored to and retrieved from a central desktop repository. As shown in Figure 1, COSIMail adds widgets to the Thunderbird message pane that enable users to directly access email attachments the user has stored on the file system.

4. COSIFILE

File managers play a central role in personal information management as they are used to organize, retrieve, and initiate the modification and creation of information.

Figure 1 shows a screenshot of Dolphin running the COSIFile extension. As indicated, COSIFile enhances the detail view of Dolphin enabling users to select additional file properties that provide supplementary contextual information about a file, e.g. the sender of a file if it was sent as email attachment. Like any other file attribute, the additional attributes can be used for sorting files, a strategy that users commonly employ in manual search [3]. In particular, we believe that providing such additional attributes improves support for information re-finding where additional, meaningful file attributes enable users to identify files more effectively [2].

As indicated on Fig. 1, for switching between file management and email mangement tasks, COSIFile enables users to directly view the email to which a file was attached by means of a context menu.

5. ARCHITECTURE

The X-COSIM framework implements a conceptual architecture that consists of four layers (cf. Fig. 2): The storage layer provides an RDF store where all metadata is kept. The

*This work was supported by the X-Media project, funded by the European Commission under grant number IST-FP6-026978.

[1] http://www.mozilla.com/thunderbird/

[2] http://dolphin.kde.org/

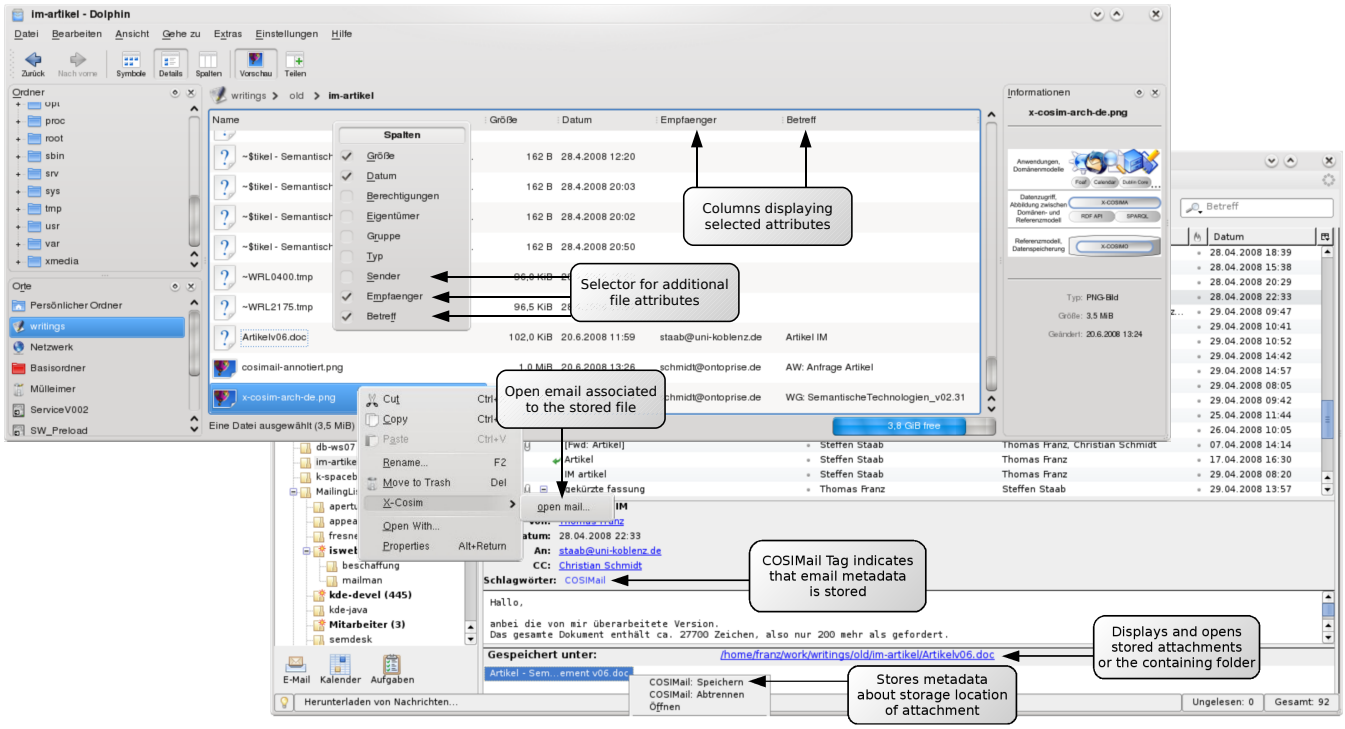

Figure 1: COSIFile and COSIMail Extensions

ontology layer provides the X-COSIM ontology, a formal model for the stored metadata as contributed and retrieved by the various applications that may be attached, e.g. email clients, file managers, task managers. Components of the mapping layer transform between contextualized views of information – as employed in applications – and the reference model given by the X-COSIM ontology. The X-COSIM API is one such component and enables programmatic access to stored metadata offering domain specific programming objects that abstract from the complexity of the underlying conceptual model given by the ontology. The software components presented in this poster are located on the application layer that build upon the mapping layer to retrieve and contribute metadata.

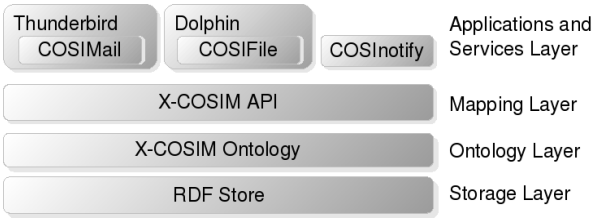

Figure 2: X-COSIM Architecture

By means of the file manager, the command line, or the clipboard provided by desktop systems, files can be moved and copied among directories. For the correct functioning of both COSIMail and COSIFile, it is crucial that the metadata describing the location of files is valid. The COSInotify component (cf. Fig. 2) has been implemented as a service that tracks file-movement and copy operations to update the metadata repository accordingly and keep the meta data contained in a valid state.

6. CONTRIBUTION

The presented work contributes to research on the semantic desktop and PIM. The tools presented illustrate novel semantic desktop components with respect to i) the implemented functionality that is based on findings on PIM studies, ii) a conceptual architecture for implementing such tools and ii) the level of user interface integration.

7. REFERENCES

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