

# Giving Files Behaviours

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**Abstract:** To improve Personal Information Management (PIM), we propose to extend static files in static file systems by augmenting documents with controllable and programmable behavioural properties. Files with behaviours may aid the user by reacting to their actions, common tasks, and other files; e.g. the document dances when a report reaches the word-limit; when a document is added to a directory, the files investigate each other, to establish their own new relationships. We propose potential file behaviours and identify key research questions, such as maintaining effective user control, and finding the right level of file autonomy.

## 1 Introduction and Background

Static files in static file systems are logically stored, but typically do not support the activities we perform with computers effectively [VME08], including PIM tasks. We intend to apply the ideas of nature and behaviour to documents, using techniques such as animation [Ba97] and reality-based computing, to make interfaces more natural.

PIM continues to receive a lot of research focus and criticism, with recent studies suggesting that users react favourably towards navigation and leave search methods as a last resort [Jo10]. To improve on the limited support that current PIM and file systems provide, alternative access models have been tried, with Voida et al [VME08] taking an activity-based focus. Oleksik et al [Ol09] used tagging to separate the way we access documents from how we store them. Bergman et al [Be09] created GrayArea as a space where old files could ‘die’, as users often feel anxious about deleting files. We wish to extend such ideas for improving file usability, with independent file behaviours.

## 2 Potential File Behaviours

*Grouping/Magnetism* – is the idea that you could communicate file relationship to a user; for example, files with a common reference, might be better represented huddled together. Would huddling effectively portray the relationships between the files? How would this affect user interaction and interpretation?

*Emotional response* – an emotional response from a file might help to communicate to a user its status. More exploration into the strengths and weaknesses of this anthropomorphic approach is needed. Can a user process all the communicative information, from multiple behaviours expressed in file(s)?

*Create new child files* – The idea is simply creating a child file with information inherited from two or more parent files e.g. generating a bibliography from range of files. Are there any benefits for the user in having a relational PIM system?

*Gathering data* – One of the most fundamental tasks for a user is gathering data. Automating this task could be useful, giving the user freedom to focus on other tasks [SAK08].

### 3 Summary and Research Questions

There are many opportunities and subsequent research questions for behaviour-oriented files to better support users in PIM and file systems. Is information easily communicated and understood through behaviours and emotions? What file behaviours would be useful for a user in a PIM system? How proactive should files be and how do we balance user control and file independence? Are there any benefits of files behaving autonomously in a domain of rules, compared to the current top-down control of files? Initially we intend to explore the value of such behaviours in prototype systems, and will later focus on providing users with lightweight control mechanisms (e.g. [SAK08] and like the programmable actions and agents for nodes in Tinderbox<sup>1</sup>), while taking in account the three main areas of PIM: task management, personal archiving, and contact management, while aiming to aid user interaction and data representation.

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### 4 References

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<sup>1</sup> <http://www.eastgate.com/Tinderbox/>