

Personal Information Management

Andrea Connell

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Instructor: Dr. Luz Quiroga

Problem Statement

In 1983, a study was published on what some call “Messy Desk Syndrome.” Are some people just naturally disorganized, or are the towering stacks of documents just a symptom of a deeper problem? According to Malone and cited by Lansdale, there is an underlying cause [6]. People with very procedural jobs tend to have a defined flow of information. There are clear distinctions between when a document is needed and when it is not. Others are required to juggle multiple projects at once, keeping a number of resources close at hand. Some leave documents in obvious locations as reminders to act upon them. Even when papers can be filed, it is hard to always know how to categorize them so they can be found again. When people are hesitant about losing information to the depths of the filing cabinet, sometimes it seems better just to leave it where it is. Contrary to what some may believe, computers are not a solution to these problems [10]. In fact, the issues are often compounded by the seemingly infinite content available on the Internet. These are the problems addressed by Personal Information Management (PIM).

Background

Although PIM wasn't formally studied until the 1980's, it has been a problem for as long as people have been keeping information. In 1938, William Pollard said "Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit" [5]. In 1945, Vannevar Bush imagined a machine he called a "memex" which would keep track of all of our documents and retrieve them whenever they were needed [2]. This was possibly the first conception of a Personal Information Management tool - and researchers are still working on perfecting this today.

Challenges

There are a number of difficulties preventing easy management of personal information. This paper will cover four such challenges.

The first problem is *information overload*. This is characterized by the reality that too much information can actually make decisions more difficult. Users do not have the time to process and organize all of the information that is available, which can be overwhelming [10]. The problem has exploded in recent years with the ease of publishing electronic content [9].

Electronic content has also compounded the issue of *information fragmentation*. This means that resources are separated based on how and where they can be used [5]. Various file formats may require information on the same subject to be opened in separate applications. Many users now have multiple devices - home, work, and mobile - and information is often spread throughout them [5, 9]. Even organization schemes differ as users struggle to categorize paper documents, email messages, web bookmarks, and electronic files [5, 3].

This introduces the third problem, *organization and labeling*. Filing systems -- electronic or otherwise -- are inherently problematic because each document can only be in one classification. Human brains do not generally work in hierarchical classifications [2]. Remembering how a specific document is organized relies mostly on a good labeling system

which will still be recognized months or years later. It is possible to use shortcuts or links to represent electronic documents in more than one category, but personal experience shows that the majority of users do not take advantage of this option.

The last challenge is the *personal nature* of information [4]. The same document could be given to five users, and they might all categorize it in a different way. Information is linked very strongly to past experiences and knowledge, and these experiences evolve over time. This is also known as context. Examples of characteristics that influence context are demographics, domain expertise, and lifestyle [8]. Creating a one-size-fits-all solution to PIM and meeting every user's expectations is an extremely difficult undertaking.

Research

Current researchers in many fields are working on solving these problems. These disciplines range from psychology and artificial intelligence to human-computer interaction and information architecture [5]. Experts consider the immense amount of information that relates to an individual user. Considering the sheer amount of information – whether it is about, by, sent to, or helpful to the user -- it becomes clear that managing it all will be virtually impossible, so users typically break it into smaller groups. These subsets are called Personal Information Collections (PICs) and allow the user to apply organization and control over a more homogeneous group of resources. Examples of collections are photo albums, website bookmark lists, and documents pertaining to a specific project. Managing a PIC is a three-step process. Users have to determine which information to store, then maintain the collection, with the ultimate goal of re-finding resources as they are needed [4, 5].

Tools

A number of tools have been developed toward the goal of managing PICs. The majority of these applications provide tools for group communication (email) combined with reminders

(calendar, to-do lists, contacts, etc). Some applications act as recommenders and assist in finding relevant resources. Another group of applications focuses on storing, managing, and re-finding resources (for example, Mendeley and EndNote) [12]. One of the most interesting developments is tagging for desktops. These tools allow resources to be included in multiple categories rather than one rigid file system [7]. A tool created by Microsoft Research called “Stuff I’ve Seen” attempts to mimic the memex device conceptualized by Vannevar Bush over fifty years ago by automatically indexing web pages, email messages, calendar appointments, and electronic documents and making them available for full text searches [3]. The Keeping Found Things Found group has created Planz, which allows users to link any electronic files that pertain to a certain subject in one place [11].

Conclusion

Even with all of these efforts towards managing our collections, users still struggle with PIM on a daily basis. Reckoning electronic and paper files, finding the right tool for their situation, and knowing which information to manage in the first place are consistent issues. These problems make PIM an interesting challenge for the future.

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