How do people interact with documents?
An ethnographic study

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In trying to answer the question as to how people interact with documents, we conducted an ethnographic study with 5 students and 5 mobile professionals. Results are analyzed into a tripartite framework:

a) the activity that people engage in - the particular task they want to have accomplished;
b) implementation - the actual thing that they do with the documents in order to accomplish part a;
c) the properties of the documents that made their implementation possible.

The Framework

Activity/Observation	Examples	Properties and Issues
Reading		
Print out long articles to read offline	Many people print out their documents because it is too hard to read on the screen. It is easier to turn a page by hand than to scroll down a page with the mouse.	Ease of reading, reading environment Size of reading area Ease of navigation
Comparing multiple parts of the same documents	People flip back and forth to compare sections within the same document	Ability to go back and forth easily
Reading on the web	Some people change the font size on their web browsers so that they can read easier	Ease of reading
Flip to search	Flipping is a common way to locate a particular section in a document or book. Many people use unique marks, sometimes in a different color, on the pages to facilitate their search.	Ability to go back and forth easily Distinct marks to facilitate search
Writing		
Writing reports	Reports are usually typed into the computer.	Ease of modification Ease of reproduction Permanent
Note-taking	Many people have a personal notepad in which they write down tasks, problems, reminders or short lists.	Ease of writing by hand Convenience of using paper Portability and availability

		of paper

Annotation		
For quick reference	Many people make distinct marks such as circles, lines, boxes, numbers, etc, or short comments, so that they can find a particular paragraph or page easily in the future. Color-coding is not used often. What is important is that the color of the annotation are distinct from the rest of the page.	Ease of making the marks Colors for easy identification
Checklist	Lists are often printed out so that the user can check off each item. The user can also write comments at the side if something cannot be resolved. The problem can be left aside for the time being.	Ease of writing check marks Ease of writing on paper
Accessing documents		
Active documents are kept visible	Several participants put sticky notes that act as reminders, in highly visible places, such as on the shelf above the desk at eye level, or on the wall. One participant has a system where she sticks sticky notes on the outside of plastic folders for her task list. Several participants put work-in-progress on the computer desktop.	Visibility
Active documents are kept closer and more accessible places than those that are less frequently used	Notepads are usually kept just beside the computer Several participants have the more active documents on their desks, whereas inactive documents and archives are kept on higher shelves, or inside cupboards, under the desk, etc. Some participants put ornaments in front of books on the shelves, and these books are not used often.	Spatial location
Remembering where things are	Many people seem to have a mental map of where everything is. They know where to find something, but do not know the exact details of what is in a folder, etc.	Spatial layout
Borrowed items are kept	Some students do not put borrowed	Ownership

in a separate location	materials together with the stuff that belongs to them.	
Electronic documents are printed out for easier access	Several participants print out documents so that they can easily refer to it, or carry it around.	Portability Ease of reference
Frequently changing documents are put online	Adobe has a lot of documents online, and one reason is that many of these documents change frequently and so hardcopies are not desirable. Web designers put their work online for the clients to see instead of emailing the files to them.	Volatility of content Document is for reading Remote accessibility
Maintaining access by carrying documents with you	Almost everyone carry notepads with them wherever they go. Important and frequently used paper documents are carried around. One participant actually bikes to work and carries work documents in a sling bag while cycling. One participant puts interesting articles on his PDA to read when travelling, another puts driving directions (received via email on her laptop) on her PDA for easier access when on the road.	Portability Ruggedness of paper Ease and efficiency of accessing document
Transferring files between machines	One student has a need to transfer files between his computer and his lab computer so that he can work on them. One participant transfers files from a remote shared drive to the home computer when she works at home. One participant uses email to transfer files between machines instead of FTP. One participant uses Zip disks for transferring large files between her home and office computer because even the DSL connection is not fast or reliable enough.	Ease of transfer Remote accessibility Speed and reliability of remote access
Remote access	Many Adobe personnel have wireless modems on their laptops, which seems to work well for them. Web designers put up their work online for the clients to see.	Remote accessibility Speed and reliability of remote access Ease of configuring

		computer
	One participant doesn't go online on her laptop when outside because it will mean changing the network configuration from the one used at home.	
Searching	One participant uses email software for typing notes because of its search feature.	The need to search among large number of documents
Sharing documents		
Online references	Documents are placed online when they are for a group to see. One participant mentions that once things are put online they are more or less "permanent," which seems to contradict the practice of putting more volatile content online. One way to resolve this is that what is online is more public and is in a sense perceived as more "permanent" and "final" because that will be what other people will see of your individual work. You can no longer make your changes privately.	Remote accessibility "Public-ness" of online documents
Emailing documents around	Many participants rely heavily on email for sending and receiving documents. Professionals in management positions get documents that are mainly for them to read. A response may or may not be required. PDFs are popular because of they can be read by everybody. However, any editing has to be done on the original document.	Ease and speed of electronic transfer Ability to read these documents Ability to distribute to multiple people at once
Collaborative work without a shared space	Multiple versions of the same document are emailed around. One person is usually in charge of collating the changes and producing the final version. Identifying who made changes to which part of the document can be a problem.	
Collaborative work within a shared space	Documents are printed out, whiteboards are usually used in meetings when collaborative work needs to be done. Some participants use the phone when there is a need for both parties to see the same thing on the screen, or they simply walk over to the other person, bringing their	Ability to have many people see and talk about the same document at once Ability to be edited at once by several people

	papers with them if the document is not online. Programs scripts are printed out so that several people can refer to it easily and write changes on it.	
Face-to-face interaction	One participant tends to initiate a process by delivering paper documents directly to the person. He believes that the face-to-face interaction is important and the act of giving the document by hand causes the other party to attach more importance to the request. Some participants mention that people do not always respond to email requests. One participant mention that when she send something out by email to be handled by another department, she doesn't know who will be handling it.	Importance of face-to-face contact in sharing information Delivery of paper by hand carries a "contact" with it
Printing to show other people that work has been done	One participant mentions that her clients like to receive hardcopies when she presents her work to them just so that they feel that work has in fact been done.	Tangible property of paper compared to electronic documents
Archiving documents		
Backing up documents	One participant backs up his work on CD-ROMs and also duplicates it on another computer. Another participant also backs up her work on CD-ROM regularly, just in case clients need to refer to previous versions. Both mention that CD-ROMs are cheap.	Cheap backup medium Ease of backing up Reliability of disk storage CDs are "permanent"
Not throwing away stuff	Everybody we interviewed keeps things for a long time, usually for years. Except for the obvious junk, most email and documents, paper or electronic, are archived away. Some people gave the reason that they might be useful later. For electronic documents, many people have large hard disks and choose to simply leave the documents (usually email) on the computer. Only one has to constantly clear out stuff onto CD-ROMs because of the large files he has to work with. One participant keeps paper documents for	Human tendency to keep stuff Large storage capacity Size of documents Sentimental value

	their sentimental value.	

As an audit trail	One participant's department prints out reports regularly to file away. They also have the same data in electronic form. One reason given is that it is easier to show people the paper reports and refer back in time.	Ease of referring to previous versions Ease of showing people Paper is "permanent"
For legal purposes	Several participants print out confirmations from online transactions, "just in case". One participants receives faxes with signatures via a fax software but prints them out to keep	Paper is "permanent" Paper has more legality Reliability of electronic storage
Organization		
Groups of documents	Physically, paper documents are stored in files. Even a pile of stuff is a group of some kind, e.g. "things I don't have time to deal with yet". Piles are also organization. On the computer, most people use folders to organize their files and emails. Some people don't organize their email, so email is subject to personal preferences. Some people have distinct groups of files on their computer desktop. One participant has active documents on one side and frequently used programs on the other side. There is at least one student who has matching physical and electronic organization schemes.	Maintaining consistency across electronic/non-electronic media. Exploiting spatial grouping
Sections within groups	There is often further organization within the groups. Sub-folders, tabbed sections, etc, are used. Over time these sub-sections may change. Several participants described to us how a particular folder was formed, and there were always new sections, deeper sections, or rearrangement. One student had a "Job search" folder in his email, which later transformed to further distinguish between active job applications, "keep-in-view", job offers, etc.	Dynamic nature of organization over time Ability to refine or change organization schemes

Email filtering	Several participants tried email filtering to various degrees, but overall they don't provide a complete solution. Often filter settings don't stay fixed, and it is a hassle to change them. It is hard to see if there is any new email for every folder. Sometimes things get missed.	Automated organization Dynamic nature of organization over time