

# Avoiding the Avalanche: Records Management Techniques for Improving Workflow in Technology Transfer Offices

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## Introduction (a.k.a. You Realize How Important Good Records Management Is When You Don't Have It)

It's late in the day and you just received a frantic phone call informing you that a final deadline occurs today—you must make an immediate decision! Okay, you're a trained professional—you can handle this. You go to where the file is supposed to be, but much to your dismay, it's not there. A cry for help goes out to the whole office. Everyone is enlisted in a mad scramble to find the file. After what seems like an eternity, the file is found propping up the short leg of a desk. What a relief! Now you think you can make an informed decision—until you discover that the file is empty! It's times like these that technology transfer (TT) professionals are reminded that high-quality records management (RM) is essential to efficient operation of any office.

The National Institutes of Health Office of Technology Transfer (NIH-OTT) is responsible for evaluating, patenting, marketing, and licensing inventions made by NIH and Federal Drug Administration (FDA) scientists. Our RM challenges have been relatively large, in part, because NIH-OTT manages records totaling about four million pages. While almost half of these have been scanned into electronic form, paper records are still kept in a large number of folders (more than 17,000 folders). During recent years, the NIH-OTT has created and implemented ambitious improvements to previously utilized RM techniques. These improvements have greatly facilitated the workflow of TT operations and have made substantial contributions to NIH-OTT's increased productivity (during fiscal year 2004, NIH-OTT received 403 new invention disclosures, filed 396 U.S. patent applications, had 122 U.S. patents issued, 276 licenses executed, and received royalties of

approximately \$56.3 million). Other TT offices, especially those like NIH-OTT that handle a large volume of records, may find the following techniques helpful in having consistently high-quality RM.

## Improved Organizational Systems for Incoming Mail and Folders

### Color-Coded Multisection Folders for Ease of Filing and Retrieval (a.k.a. We Put a lot of Thought into our Folders)

While this seems very basic, the attributes of file folders can have a big impact on their ease of use. Different types of folders may be employed for each different population of records. Choosing the color of folders to clearly distinguish one type from another ensures that folders are filed into the correct population of records (i.e., when only yellow folders are stored in one spot, and only green folders are stored in another spot, it eliminates misfilings into the wrong population of records). Classification folders in a variety of colors are produced by many manufactures and are readily available from office-supply retailers.

Organization of papers within a folder may be facilitated by creating document categories (e.g., categories based on the documents' recipient, sender, type, chronological grouping, milestone, etc.), then using folders that have one section for each of these categories. Categories should be clearly defined and mutually exclusive so that a quick inspection of a paper reveals to which type of folder and category (and, hence, folder section) it belongs. Table 1 shows the color and number of sections for several types of folders that NIH-OTT uses.

**Table 1**

Folder Type*	Folder Color	Number of Sections
Invention report	Color changes each year	1
U.S. provisional patent applications	Salmon	3
U.S. utility patent applications	Bright blue	6
Patent Cooperation Treaty applications	Gray green	6
Foreign patent applications	Pussywillow gray	6
License applications	Dark green	6
Marketing	Yellow	6

\*Invention report folders are letter-size. All other types of folders are legal-size.

Table 2 shows, for three types of folders, the categories of documents that are filed into each section.

**Table 2**

Folder Type	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6
Invention reports	All papers					
U.S. provisional patent applications (salmon)	Invention report and correspondence with inventor and institutes	Documents completed at application filing	Correspondence between law firm and OTT			
U.S. utility patent applications (bright blue)	Correspondence between law firm and USPTO	Documents completed at application filing	References	References	Invention report and correspondence with inventors and institutes	Correspondence between law firm and OTT

With so many types of folders and sections, it could be laborious discerning into which section a particular document should be filed. However, making this information available in the form of a handy miniature booklet makes it more convenient to use, which encourages staff to use it more frequently. The point being that, in addition to creating an organizational tool, it can be highly advantageous to have it in a form that is easy to use.

### **Using Off-the-Shelf Folders rather than Custom Preprinted Folders (a.k.a. Sometimes it Is Better to Buy off the Rack)**

It is common practice for offices to buy custom-made folders preprinted with blanks on the front and back (e.g., a blank for docket number, a blank for inventor's name, etc.) and then hand-write information into each of the blanks on every folder. These preprinted folders can be relatively expensive because of fees for creating the printing plate (typically about \$100) plus a charge for printing each folder. While the fee for creating the printing plate may be touted as a one-time initial fee, with each new order of folders, there may well be some need to improve the printing-plate and, consequently, another \$100 charge

is incurred. Using preprinted folders also suffers from the disadvantages of incorrect information or illegible handwriting being written into the blanks and information changing, which makes the writing on the folders outdated. Consequently, folders may have to be thrown away, a new folder prepared, and the contents moved to the new folder.

Such unnecessary consumption of time and money may be avoided by purchasing blank, off-the-shelf folders, printing identifying information (e.g., by making a screen print) from a docketing system or database (NIH-OTT uses TechTracS from Knowledge Sharing System LLC) onto a 8 1/2 x 11-inch, self-adhesive label, then adhering the label onto the front of the folder. Compared to writing information on the folder, this avoids problems with errors in transcribing information since the information comes directly from the docketing system or database, illegible handwriting since the information is produced from a printer, and, information becoming outdated since an updated label may periodically be printed and applied over the outdated label. Blank, off-the-shelf folders can cost only half as much as custom-made preprinted folders.

### **One-Piece Color-Coded Labels on Folder End-Tab Facilitates Identification, Filing, and Retrieval**

To clearly differentiate one folder from another within a population of folders, and to facilitate filing and finding folders, one-piece, self-adhesive, custom-designed, color-coded labels may be applied to the end-tabs of all folders. Label-printing software may be employed (which uses a PC and either an ink-jet or laser printer) to produce labels according to predetermined designs. For example, one label design may be used for patent folders, another label design for license folders, etc. Label designs may be customized to suit a wide variety of user needs. For example, labels may include numbers, text, graphics, logos, color-coded indexes, key information coded into bar codes, etc. One example of this type of labeling software is NetLabels from GBS Corp.

Because most offices have a unique number for each folder, such as a docket number, license application number, etc., and store many folders on open shelving, the end-tab label designs may focus on maximizing the visual clues that help with filing and finding folders. For example, when folders are lined up side by side, the end-tab labels may produce a visual indexing system via bands of color. For example, along the top of a row

of folders, the labels may have a horizontal band of green, then, just below that band, the labels may have a horizontal band of red, and below that, a band of blue, and so on. Such a design makes it very easy to avoid, or identify, misfiled folders because they don't match the pattern of color bands of the adjacent folders. Labels of this type also eliminate the need for out-cards because it's so easy to ascertain where a folder should be filed that there is no need to use an out-card to mark where a folder belongs.

It's very common to see color-coded labels on the end-tabs of folders, for example, in physicians' offices. However, frequently, these are not one-piece labels (that cover the entire folder-tab), but rather are made up of several smaller labels, that is, each character/number is a separate self-adhesive label of a unique color. These separate smaller labels are commonly called *rolled labels* because they are sold as rolls of labels. Rolled labels may suffer from disadvantages such as these small labels peel off or are damaged far more easily/frequently than one-piece labels, and it may be difficult to keep track of the inventory of so many individual labels. Consequently, an office may frequently run out of the most commonly used letters/numbers but still have to store a plethora of rolls of infrequently used letters/numbers. Frequent ordering can make using rolled labels far more time-consuming and expensive. Additionally, they present a storage problem because everyone who applies labels has to store a collection of rolls of labels for each letter/number that he or she might need—typically, in a TT office, each of these collections could include more than twenty rolls of labels.

### **Immediately Filing Incoming Mail into a Folder (a.k.a. No Loose Papers Means no Lost Papers)**

One of the most effective RM techniques that may be implemented is also one of the simplest. In most large TT offices, all incoming official mail is handled in a mailroom, where it is sorted, date stamped, and filed into a folder. If the folder into which a piece of mail belongs is not readily available to the mailroom staff (e.g., the folder is not in the central file room [CFR]), it may seem most expedient to give the mail to the licensing specialist so as not to delay its delivery. However, because some licensing specialists prefer to store folders in their offices, they will receive a large volume of loose mail. In practice, such loose mail may not be filed into the folder—but may instead mysteriously

find its way to a floor, or shelf, or cardboard box with the expectation that it will be filed tomorrow. Tomorrow never comes! The solution? When incoming mail that needs to be filed into a folder (other than advertisements or general notices) is received, it should, almost without exception, be filed into the folder before it leaves the mailroom—even if the mailroom staff has to search for the folder and bring it to the mailroom. A note may be attached to the outside of the folder indicating what was filed, and the folder put into the licensing specialist's in-box.

This procedure can make a dramatic difference in the completeness of files and save hundreds of hours each year in not having to look for lost papers or having campaigns to file batches of accumulated loose papers. Also, it may give staff members an incentive to return folders to the CFR, because they know that they will receive their mail more quickly if the folder is stored in the CFR. In those rare circumstances where the mailroom staff cannot find a folder within a reasonable period of time (depending on the urgency of the mail), a photocopy of the mail may be given to the licensing specialist for his or her action, while the original is retained in the mailroom until the folder is located so the original can be filed. Simple, but effective!

### **Incoming Mail Has Critical Information where it's Easy to Find**

Many TT offices contract with law firms for patent prosecution and related services or have other contractors with whom they correspond frequently. Consequently, they receive a large volume of mail from these contractors every day. Typically, every person in a TT office who deals with this mail must sift through the text to try to find information needed for its processing (What folder should it be filed into? What do I docket?) or for formulating a response (What action is needed? What is the due date?). Also, critical information may sometimes be inadvertently omitted from the mail.

These problems may be avoided by examining several samples of such correspondence, and, in light of typical issues and program requirements, determining what categories of information are needed for processing and responding to the mail. The contractors may then begin each piece of mail with a list of the information for each of these categories. For example, the following categories of information are typical of what might be listed

at the beginning of mail from a law firm providing patent prosecution services:

- relevant patent application number, country/region, and filing date
- NIH-OTT's docket number (of a specified format)
- law firm's docket number
- immediate parent application (to help identify the correct case)
- inventors
- title of the invention
- action that the law firm is requesting
- requested (i.e., preferred) response date
- deadline date (e.g., statutory deadline for response)
- number of the work-order number (if any) under which this work was produced

Thus, a law firm could begin every piece of mail with the aforementioned information numbered from one to ten for easy reference. Such a listing may also work well because it prompts the contractor to supply information that he or she would not have provided otherwise. Also, for a few key pieces of information needed for docketing, law firms may provide the information as bar codes. These bar codes can be read directly into docketing systems using a laser-wand rather than entering them by hand. This makes entry of critically important data much faster and more accurate by eliminating transcription errors.

While this may seem to be a minor procedural change, it can produce remarkable results. Papers may be routed far more quickly, and the licensing specialists can easily ascertain what needs to be done and when it needs to be completed. Also, the contracting law firms may benefit because they do not have to receive as many questions about information that needs clarification or that they omitted.

## **Moving toward a Paperless Office: Almost Two Million Pages Scanned into Electronic Form**

### **Scanned Records Provide Faster and Easier Access, Improved Indexing, and Reduced Storage Costs**

Scanning documents into electronic form has become so commonplace that its advantages are well-known and readily apparent. NIH-OTT has attached the scanned records to

the docketing system, which makes them available to everyone in the office. It can be quite an adjustment for office staff to let go of paper. But once they have experienced accessing any of tens of thousands of documents in a matter of seconds without getting up from their chair, they grow to appreciate the advantages. Scanned images attached to TechTracS cannot be deleted or edited by the users, so they cannot be lost or their contents adulterated. TechTracS is a very powerful electronic-filing system because it permits scanned documents to be attached to any record in almost any screen/table. For example, the scanned image of a patent can be attached to the TechTracS patent screen that pertains to that specific patent. Consequently, the document may be accessed and viewed with its corresponding docketed data. The majority of the scanned documents are also indexed into the categories of documents described in the above section “Color-Coded Multisection Folders for Ease of Filing and Retrieval (a.k.a. We Put a lot of Thought into our Folders),” thus, permitting a desired document to be found very quickly. Having documents in electronic form reduces costs in several ways. First, less labor is expended searching for folders. Second, less labor is required to access records. Third, charges for archival storage may be lower because many of the records that had been archived can be destroyed after they are scanned. Lastly, office staff can spend less time archiving, tracking, and retrieving archival records.

Over the past two years, NIH-OTT has scanned almost two million pages into electronic form and then disposed of the majority of the paper documents. Such an undertaking can be a logistical nightmare and an opportunity for disaster. A scanning program should only be undertaken after a great deal of research and planning. In addition to the obvious questions—What hardware and software best suits my needs? How do I make the scanned images available to everyone who needs them?—there are also many less obvious questions: How should the scanned images be indexed? What file format is best? What scanning resolution optimizes image quality without making file sizes too large? There are many potential pitfalls—so it’s best to work with someone who has experience in this area.

### **PDF Image Plus with Optical Character Recognition (OCR) Provides both a Photographic View of Documents and Recognition of Characters**

NIH-OTT selected the PDF Image Plus format for scanned records. One component of this format is PDF (portable document format). PDF permits viewing and printing of a

file exactly as it was designed, without the need for the same application or fonts used to create it. PDF has come into common use for electronic distribution that faithfully preserves the look and feel of the original document complete with layout, fonts, colors, and images. PDF files typically have smaller file sizes because they are compressed (this reduces required storage space and file transfer time). Also, PDF files may be viewed and printed using free Adobe Acrobat Reader software. PDF is extremely useful with legal documents because it captures a photograph-like image of each page and, therefore, faithfully reproduces signatures, date-stamping, and hand-written notes. The second part of PDF Image Plus is OCR, which recognizes each character (i.e., it *knows* what each letter/number/symbol is). An example of software that may be used for OCR is ABBYY FineReader from ABBYY Software Ltd. Using PDF alone requires less work; however, using PDF Image Plus permits searching documents by word or phrase (e.g., documents may be opened in Adobe and the standard Adobe search function used). While searching has the obvious benefit of finding the portions of a document that might be of particular interest, it also has the benefit that, if used across a population of electronic files, it can locate any misfiles (i.e., electronic files that are not properly indexed/filed).

## Tracking Folder Locations Using Radio Frequency Identification (RFID)

### An RFID Tag Containing a Unique Identifier Can Distinguish Each Folder

An RFID tag (e.g., in the form of a self-adhesive patch) may be attached to each folder to allow it to be identified electronically. These tags consist of a computer microchip programmed with a unique identifier, connected to an antenna that is typically in the form of a coil. Passive RFID tags do not contain a power source, such as a battery. Rather, they employ an antenna that receives a signal from an RFID reader (a.k.a., a transceiver) and conveys the signal to the microchip. The microchip then sends back out to the reader a signal representative of the unique identifier programmed into the microchip. RFID tags may be preprogrammed with unique random numbers (these typically cost a little over \$1 each). Because these numbers are random (i.e., they do not connote a specific meaning), the user has to rely on a database to correlate each specific number to its corresponding folder. Alternatively, RFID tags can be programmed with a self-explanatory identifier (such as a docket number, patent application serial number, etc.), and other information.

## **RFID Tag and Location Data May Be Read Quickly and Easily Using a Transceiver-PDA and the Data Downloaded, Stored, and Viewed in Folder-Location Tracking Software**

RFID tags may be used to track folder locations using a three-step process. First, an RFID reader connected to a personal digital assistant (PDA) is used to read a location-designation. Second, the transceiver is used to read the RFID tags of the folders in that location. Third, the location and RFID data are downloaded from the PDA into folder-location tracking software. For example, each shelf in a CFR may have a unique location-designation assigned to it and be labeled with a bar code of that location-designation (while in theory, an RFID tag could be used to designate each shelf, RFID tags do not work well when applied to metal, consequently, it is recommended that a bar code be used instead). The transceiver is used to read the bar code, then read the RFID tags of the files on that shelf (this only requires a few seconds and can easily be done at a distance of up to one foot), then the data are downloaded from the PDA into folder-location tracking software that associates that location-designation with all of the folders corresponding to the RFID tags read. An example of such software is Opus 32 from Thoroughbred Technologies Inc.

### **Advantages of RFID: No Line of Sight or Contact Required**

Bar-code labels attached to each of the folders may be used, via an analogous process, to track folder locations. However they suffer from the disadvantage that the bar-code reader requires a line of sight to each bar-code label. This slows the reading process greatly, because folders often have to be re-positioned to expose the label or to provide proper orientation to the reader. Also, bar codes frequently do not read on the first try—so two or three attempts are often required. It may also be difficult to print bar-code labels on site of sufficient quality to be read easily, and, as would be expected, bar-code labels frequently peel off the folders or are damaged. It used to require about twenty-four to thirty-two hours to read all the folders in our CFR (about 8,000 folders) when we used bar codes. By contrast, the same operation using RFID tags takes only four to five hours.

## Conclusion

The RM techniques described here clearly illustrate that effective RM may have a significant impact on the efficiency with which a TT office operates. Many of the aforementioned RM procedures/systems may be implemented at little or no cost, but still significantly improve the quality of RM. Even the techniques that *do* require significant effort or investment can yield improvements to operations and morale that make such expenditures well worthwhile.

*Note:* Products are mentioned only for the convenience of the reader and for purposes of illustration. Readers should make their own independent evaluation as to whether these products, or other equivalents/alternatives, meet their specific needs.

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