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Electronic Databases for Claims Analysis

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Construction projects are often very complex and therefore document-intensive. When construction disputes become claims and lead arbitration or litigation, every project document and communication can be of legal significance. With the advancement of technology, the traditional paper project correspondence files have now grown to include faxes, e-mails, voicemails, digital photos, and other electronic document discovery. For claims consultants, analyzing this documentation can be a daunting task. However, consultants can now have the luxury of transporting their case of what may have been two boxes or 500 boxes, all within the confines of their laptop's hard drive.

This paper will discuss methods of organizing and converting project documentation into an electronic database, and utilizing current electronic project database software to share, search, organize, and analyze the information. With the support of computers, mega-storage devices, high-speed scanning and the availability of database software, the transformation of paper project documents into an electronic database is easier, more efficient and more necessary than ever.

Greyhawk North America, LLC is a construction consulting firm based in Woodbury, New York and has been using electronic document management on its cases for several years. Although there are many different programs available to perform database functions, this article focuses on the approach methodology, rather than a specific software package and will be articulated from the perspective of the expert construction consultant's use and analysis.

BACKGROUND

"It is a very sad thing that nowadays there is so little useless information," Oscar Wilde, Irish dramatist, novelist and poet (1854 - 1900).

Many years ago when the copy machine became common place office equipment, the volume of project documents escalated, no longer constrained by carbon paper. Advances in word processing technology made correspondence easier to create, thus again increasing the volume of documents. These developments alone made the reviewing and organizing project documentation a formidable task. However, this task has become even more com-

plicated with the use of electronic communications such as emails and scanned documents. The ability to distribute project documents and information, enhanced once in the past by the copy machine, is now at a new level through electronic distribution.

Presently, paper files co-exist on a project along with emails and scanned documents. Projects may vary greatly in the relative mix of electronic and paper documentation, however, with few or no exceptions, all projects have some combination of the various types of document storage, further complicating the claims consultant's task.

Many of today's projects have records so voluminous they could fill a room full of cabinets. However, consultants can now have the luxury of cataloging and transporting these records in an electronic format. With the support of computers, mega-storage devices, high-speed scanning and the availability of database software, the transformation of paper project documents into an electronic database is easier and more efficient than ever.

Technology has brought construction claims analysis to a point where some, if not all claims, should use an electronic database for document management, replacing a paper management system. Computers have, are presently, and will continue to advance significantly in capability, speed and efficiency, compared to models just a few years prior. Hard drive sizes have increased from kilobytes (KB) to megabytes (MB) to gigabytes (GB) and now to terabytes (TB). Storage devices are portable and can even be transported attached to a keychain.

Clearly, computer and related technology has reached a point to physically accommodate the storage of large amounts of electronic files. Additionally, high-speed scanning for the creation of electronic image files has advanced concurrently, supporting the method of electronic document database management.

With the technology in place, it allows us to examine the benefits and capabilities of using an electronic document database.

BENEFITS OF ELECTRONIC DOCUMENT DATABASES

An electronic document database is a collection of electronic pictures of documents, or images. Through the use of scanning or imaging, a machine creates computer images from paper documents, much the same way that photocopies are produced; however the output is an electronic file rather than another paper



New consultant's first week at GREYHAWK

Figure 1—Construction Claims Project With Over 300 boxes, All Subsequently Sorted, Imaged and Analyzed in an Electronic Document Database

copy. An image file (.tif, .bmp, .jpg, etc.) can be generated for every physical page of paper that exists in the document inventory. Electronic files, such as emails, can be simply imported into the database. The end result of developing an electronic document database is to have a collection of information from a multitude of sources compiled into one all inclusive repository that can be located within your computer's hard drive, or shared on a server.

To coordinate these scanned images, databases link entered data information with corresponding scanned images, providing the claims consultant with much more efficient access to and use of project documents than using traditional paper files. The categories of information typically entered include date, document type, author, recipient, issue, and many other standard or custom desired fields. The use of a database in this manner allows for easy sorting, searching, sharing and organizing of the project information. For example, if searching electronically for a specific letter from John Smith during the month of March, the possible results will be provided in seconds, as opposed to searching through stacks or binders of papers manually for all documentation during that month.

A typical project encountered by the claims professional includes file drawer after file drawer or box after box of paper documents. These documents are generally organized by who the correspondence is to and who it is from, such as the owner, architect, contractor, subcontractor, or supplier, much the same way as certain categories are labeled within the database. Often times these documents contain duplication, with multiple copies of the same letter filed under different headings, or with certain stand-alone documents being sent as attachments to later correspondence. Rather than making multiple copies for multiple issue binders, the consultant can simply list in the database, the various issues associated with each document, and that same document image file will then be linked to these electronic issue files.

In addition to the above examples, there are many more advantages of assembling an electronic document database. Some of the greatest benefits we have experienced from this process include:

- Ability to work efficiently at home, office or client's office,
- Travel to trial with entire project record,
- Easy archival and retrieval of case documents,
- Sharing of information,
- Quick retrieval of exhibits,
- More thorough analysis,
- Environmentally friendly (paperless),
- Preserves originals,
- No paper cuts or dusty documents,
- Cost benefit.

With an understanding of the capabilities and benefits of using an electronic document database, we turn our attention to compiling and preparing the database.

DATABASE PREPARATION

This section will provide a plan of attack to organize your client's information, regardless of how it is presented, and ensure that the data being captured is usable and complete.

It is important that the client involves the consultant in the scanning process before the scanning even begins. The pre-scanning preparation of the documents is the first step to ensure that the claims project progresses with the greatest efficiency. Some clients may feel that coordinating the scanning prior to the consultant's involvement, will save money by reducing the consultant's work with these perceived administrative tasks. Contrary to

this belief, the consultant's involvement in the pre-scanning tasks is critical to a successful project and will likely save the client money.

By participating in the pre-scanning tasks the consultant is already beginning to understand the type of documents that exist and the informational quality and substance of the project file. The original documentation should be physically reviewed based on a high-level understanding of the project file content. For example, it is not necessary to review all of the meeting minutes for the issues at this point, however it is necessary to be aware if the file contains all of the meeting minutes or whether there are any gaps in data. Additionally, the consultant is often better equipped to decide whether a type of document should be scanned and assimilated into the database or whether it is irrelevant to the analysis and need not be included.

Identifying and eliminating extraneous documents prior to scanning can save significant amounts of money for the direct costs of scanning, as well as in other ways. It can be a substantial waste of both time and money for a claims consultant to spend his or her time coding and reviewing these scanned images, only to filter them from the working database, when the documents should never have been scanned at all.

In our experience, once the documents have been identified, the most efficient way to handle the imaging process is to out-source this task to a qualified scanning service bureau with a proven track record. For a professional scanning bureau, the ability to generate images of your paper files will be nearly as quick as creating a photocopy. Typical major-market production facilities can scan 150,000 to 200,000 images per week. In consultant talk that is about 60 to 80 banker's boxes per week.

In addition to document organization and document relevance, unitization must be addressed prior to the scanning process. Unitization is the ability to maintain the images as a single document as would be found in the project file in hard copy. If the documents are properly organized and the scanning service bureau is well informed; a ten page document should contain 10 images that are all combined as one record, or file, in the database. When unitization is not properly executed the database software is unable to correlate a single image as part of a larger document and is represented as a single page document. It is then up to the software user (consultant) to relate all of the single pages and combine them as one document. Improper unitization would be equivalent to removing all of the staples, binder clips and rubber bands from your project records and mixing all of the pages together - once these document pages are thoroughly interspersed attempt to begin your analysis. As you can imagine, it would take quite an effort to recombine all of those documents into their original state.

During the initial review of the documents it is important to identify guidelines for the scanning bureau to follow. Easy to follow instructions, sometimes referred to as a scanning specification, need to be provided to the scanning bureau to allow them to capture information related to a file folder, binder label, and/or box source information. Explicit instructions need to be defined on how to handle paper that is larger than tabloid size, 11" x 17", if imaging is desired at all.

Once the documents are imaged and uploaded into a document management system, the initial coding of the documents,

known as objective coding, must be performed. The objective coding does not require any experience or knowledge of the project or construction industry and is best-suited to be performed by administrative staff or project interns, to be sensitive to the budget.

However, depending on the size and administrative support within your company you may elect to have the scanning bureau perform this labor intensive objective coding. In many cases these scanning service providers will have developed relationships with off-shore coding companies that provide a significant cost-savings for large volume projects.

Regardless of who performs the objective coding, this work is essential for document retrieval prior to the analysis. Without basic coding such as document type and document date, voluminous quantities of images are unmanageable. Typical fields of objective codes may include document type, such as daily report, document date, author company, recipient company, all of which should be easily discernable from the project documents.

The electronic image can be provided by the scanning bureau to optical character recognition OCR. This is a software process that recognizes the printed text images as alphanumeric characters, however there are sometimes errors in recognition depending on the clarity of the text in the original document. Well designed systems allow users to correct OCR errors from within the system, but, when thousands of pages are scanned it is usually not practical to clean up the text. Because the OCR process does not have perfect accuracy, it is important that the document management software supports fuzzy logic searches, which allow for misspellings and will find words even if the OCR engine failed to recognize them correctly.

The electronic document database easily allows for field coding, information that is manually entered into the database, to be searched in order to retrieve the documents with certain words in the designated fields or categories. Using OCR however, enables full-text searches of the actual documents, capturing every occurrence of designated words in every electronic image. Although the results of an OCR search can sometimes be overwhelming, OCR is a useful tool for very specific searches, or in the early review stages, while the consultant is identifying important issues, prior to complete database coding.

After completing the pre-scanning tasks of establishing the project scanning requirements and providing the necessary direction to the scanning bureau, the scanning can commence. On large projects in which the scanning will span many weeks, it is useful to provide the scanning bureau with documents in batches so that part of the coding can begin while the remaining documents continue to be scanned.

Once the objective coding is complete, the data can be sorted by document date, allowing the consultant to review the documents as they occurred on the project, in chronological order. The consultant can now begin subjective coding, identifying the key issues. The area of subjective coding is reserved for the consultant, whose experience and training allows him or her to associate a document with an issue, thereby assembling the chronology of events to render their findings and conclusions.

The first pass of subjective coding should be performed based on review of the images for key words, either visually or through OCR searches. This is the initial review for the purpose of segregating

gating the documents into its main claim issues, and the documents should not be reviewed for comprehension at this point. Once all of the documents are coded by issue, they should be organized by issue, electronic issue files, and then reviewed for comprehension, as the consultant performs his or her analysis.

Regardless of your choice of project record management and analysis, the human connection and experience of the construction consultant cannot be replaced. We have been able to successfully utilize electronic document management to increase our effectiveness and provide a better cost efficient work product for our clients.

The benefits of electronic document databases include the ability to quickly organize and sort data. While some data within the documents can be located through an OCR search, the accurate coding and assessment of the documents, the subjective coding, must still be performed by an experienced professional. No software data organization can take the place of the claims consultant's assessment of the importance and meaning of a document. The intellectual tasks of a claims analysis remain the same, however the database is a tool to expedite the process and make it easier. No software exists yet to do the thinking and analysis required to evaluate and resolve a dispute. Electronic document databases cannot be relied upon to provide answers, but rather to provide the data in an organized and efficient way to allow professionals to develop those answers and solutions.

Construction projects are, like other businesses, migrating closer and closer towards communications and records that are entirely in electronic format. Thus, it is an inescapable requirement for those in the construction industry, including claims professionals, to be prepared for the ever expanding electronic record keeping. With the mix of electronic and paper files that comprise the documentation of the typical project today, it is necessary to translate these differing media into one, in order to manage the information. The choices are to either create paper copies of the electronic files such as emails and organize the data as in the past in a paper format, or convert the paper to electronic files, through scanning, and manage the data electronically. Given that the second option, the electronic document database, provides greater efficiency and flexibility, the choice is clear. As more projects and project records become electronic in format, the database approach will become the only realistic option. The data will already be electronic and the stacks of sorted paper files will go the way of carbon paper.

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