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DOD CONTRACT FILES: PAPER VERSUS DIGITAL

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DOD CONTRACT FILES: PAPER VERSUS DIGITAL

June 2018

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Data were collected from the DoD, Defense Procurement and Acquisition Policy (DPAP), the Assistant Secretary of the Navy for Research, Development and Acquisition, and a civilian agency via survey. The data and findings indicate that agencies that have adopted electronic contract files have realized efficiencies. The data and findings also indicate that agencies that retain paper contract files have concerns regarding conversion to electronic contract files. The investigator finds that the issues uncovered regarding conversion to electronic contract files requires resolution to enable all agencies to move to electronic contract files successfully. Further research is recommended to resolve the issues identified and allow DPAP to mandate the use of electronic contract files.

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DOD CONTRACT FILES: PAPER VERSUS DIGITAL

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requirements for the degree of

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LIST OF ACRONYMS AND ABBREVIATIONS

ASN RDA	Assistant Secretary of the Navy for Research, Development, and Acquisition
CAC	Common Access Card
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDEA	Department of Defense Education Activity
DON	Department of the Navy
DPAP	Defense Procurement and Acquisition Policy
EDA	Electronic Document Access
ePS	Electronic Procurement System
FAR	Federal Acquisition Regulation
IRB	Institutional Review Board
NARA	National Archives and Records Administration
NSN	National Stock Number
PALT	Procurement Administrative Lead Time
PCF	Paperless Contract Files
SECDEF	Secretary of Defense
SPS	Standard Procurement System
SSO	Single Sign-On

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I. INTRODUCTION

The purpose of this chapter is to provide an overview of this joint applied project. The background, purpose, and scope of the project are presented to identify the problem and present the benefits of the study. The chapter concludes with a description of the primary and secondary research questions addressed during this joint applied project.

A. BACKGROUND

Contracting officers are tasked with executing sound business decisions to procure supplies and services at the best value. The contract file tells the story of the acquisition by documenting this decision. The storage of the contract file is mandatory. To that end, the Federal Acquisition Regulation (FAR; 2017) 4.802(f) states that "agencies may retain contract files in any medium (paper, electronic, microfilm, etc.)." The FAR leaves room for interpretation on the best method for retaining contract files.

Department of Defense (DoD) and civilian agencies have contrasting methods of storing contract files. Some contracting activities have moved to electronic contract files, while others retain paper-based contract files. Memoranda and policy promoting electronic contract files exist: however, regulation has not been enacted to mandate the use of electronic contract files. In the absence of legislation, contracting activities have implemented an array of solutions to retain contract files. This potentially presents a loss of savings that could be gained by a single solution. Commercial vendors have solutions available, and combining the efforts of all agencies would leverage the government's power to achieve a best value solution.

Data were collected from the DoD, Defense Procurement and Acquisition Policy (DPAP), the Assistant Secretary of the Navy for Research, Development and Acquisition (ASN RDA), and from a civilian agency via survey. The data and findings indicate that agencies that adopted electronic contract files have realized efficiencies. The data and findings also indicate that agencies that retain paper contract files have concerns regarding conversion to electronic contract files. Why do agencies have concerns and issues with converting to electronic contract files? That is the question and underlying

problem that needs to be explored, identified, and solved. Once a solution is found, all contracting activities can move forward to realize the efficiencies of electronic contract files.

B. PURPOSE

First, with this research, the investigator aims to identify why agencies are hesitant to adopt electronic contract files. The data presented in this project was collected from several different contracting activities to highlight the issues with conversion to electronic contract files. An analysis of this data provides immediate opportunities for improvement and can also guide future research in order to resolve the issues.

Second, with this research, the investigator aims to present lessons learned from agencies and to identify policy regarding electronic contract files. The data presented in this project was collected from agencies that employ either paper-based or electronic contract files as well as DPAP and ASN RDA. An analysis of this data provides options for agencies considering moving to a different method of retaining contract files.

The objective of this project is to provide a case study for contracting activities that utilize a paper-based contract file versus an electronic-based contract file. An analysis of this data informs DoD agencies that are considering their own contract file policy. This research includes

- an analysis of the challenges of adopting paperless contract files,
- a review of DoD contract policy issued and DoD contract policy planned,
- lessons learned from the case studies, and
- recommendations for further study.

C. SCOPE

DoD and civilian agencies are required to retain contract files. Furthermore, within each agency, contract files must be retained for every contracting activity. This creates a large population from which to gather data. The scope of this project regarding

contracting activities includes the DoD and a civilian agency. DoD contracting activities were available through the Naval Postgraduate School (NPS) cohort. The civilian agency was selected in order to provide insight into potential differences among the agencies. The various agencies were solicited via survey to guide the research.

The purpose of including various DoD agencies and a civilian agency was to generate a large enough sample size. The response was anticipated to be between five and 10 completed surveys. Five surveys were deemed the minimum number necessary to obtain responses from agencies that use both paper-based and electronic contract files. This response size was proposed in order to provide sufficient data to analyze and produce recommendations. The data were collected on the contract file method each agency employs to determine how disparate the methods are and to gather actionable data. The results of the survey exceeded expectations—14 responses were received, which provided excellent data for analysis.

The scope of the research for this joint applied project also included DPAP and ASN RDA. The purpose of including DPAP and ASN RDA was to determine whether current or planned regulation regarding contract files exists. DPAP "is responsible for all Pricing, Contracting, and Procurement policy matters, including e-Business, in the DoD. DPAP executes policy through the timely update of the DFARS and PGI" (DPAP, n.d.). As DPAP is responsible for policy and inclusion of regulation in DFARS, the response to the survey by DPAP is considered critical. ASN RDA "represents the Department of the Navy to USD(AT&L) [Under Secretary of Defense for Acquisition, Technology, and Logistics] and to Congress on all matters relating to acquisition policy and programs" (ASN RDA, n.d.). Because ASN RDA is responsible for policy for the Department of the Navy (DON), the response to the survey by ASN RDA is considered critical. The investigator was successful in securing a survey response from both DPAP and ASN RDA.

D. RESEARCH QUESTIONS

The questions identified in this section structure the research. The intent of this joint applied project is to answer these questions and to provide data to support those answers.

1. Primary Research Question

The primary research question reflects the main problem addressed in the research:

- Why are agencies hesitant to adopt paperless contract files?

Electronic contract files offer efficiencies that cannot be realized with paper contract files. However, there are barriers that encourage agencies to continue using paper contract files. This question explores the reasons why some agencies choose not to adopt electronic contract files.

2. Secondary Research Questions

The secondary research questions attempt to provide lessons learned and to detail policies implemented or planned regarding contract files. The first of these questions is as follows:

- What can be learned about contract files from various contracting activities?

The research presents lessons learned from agencies that employ both contract filing methodologies. The gathered data provides a benefit analysis to agencies that are considering changing their contract file methodology. The next research question is as follows:

- Has the Department of Defense (DoD) provided guidance regarding contract file methodologies, and do they plan to provide guidance regarding contract file methodologies going forward?

The purpose of this question is twofold. First, the investigator will research and determine if DoD regulation regarding contract files currently exists. Second, the investigator will research whether DoD authorities plan to issue further guidance regarding contract files. This research provides agencies a record of existing regulation and potential updates to regulation. To answer this question, DPAP and ASN RDA were requested as participants for this research.

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II. LITERATURE REVIEW

The purpose of this chapter is to provide a literature review on contract files. The chapter begins with an analysis of NPS theses to summarize the ideas and recommendations in completed research. The chapter concludes with a review of policy and guidance regarding contract files.

A. NPS THESES

A search of NPS's Dudley Knox Library for prior NPS theses produced two closely related publications. In this section, the concepts and findings of those publications are presented to enhance the research and recommendations for this project.

1. *Paperless Policy: Digital Filing System Benefits to DoD Contracting Organizations* (Sherman & Freeman, 2007)

In their MBA professional report, Sherman and Freeman (2007) highlight policies for paperless contracting, establishing the year 2000 as the cutoff for the conversion. The authors present data in the form of problem areas, survey responses, and a proposed solution for a paperless conversion. In this section, the investigator highlights the key findings of this research.

a. The Problem with Paper Contract Files

Sherman and Freeman (2007) identify the following problem with paper contract files:

> First, there is no standardization among different organizations; therefore, when new personnel come from a different organization, they have to re-learn a new filing system. Secondly, this creates a huge dependency on those personnel that have been around the organization the longest and who can decode the system. (p. 10)

This problem creates an inefficient use of time. The authors identify that the tenured personnel are utilized for administrative tasks, rather than emergent contract actions.

The authors state that paper contract files are prone to wear and tear and loss: "As a result of such handling of these files, pages can become missing, signed original

documents can become worn, misfiled, and in some instances the files may get completely lost" (p. 10). This problem produces an incomplete or missing contract file. This is a critical fail because the FAR mandates retaining contract files, sometimes for greater than six years. This length of time increases the chance for wear and tear.

The authors identify paper contract files as a waste of space: "Paper contracting files must be stored in filing cabinets and again, depending on the size of the contracting organization and the number of files to be stored, this could result in a waste of valuable office space" (p. 10). This problem produces inefficiency. Space is not only valuable, but it is also costly.

b. The Problem with a Paperless Solution

Sherman & Freeman (2007) identify paperless contract files as a challenge due to change. In the project, the authors conducted a survey. One of the questions asked the respondents to describe the limiting factors to converting to paperless contract files. Responses included the following:

- Too much of a change to the existing administrative functions/structure.
- The way audits are currently conducted, *requires* a paper based system.
- Current IT systems, such as SPS/PD2, lack the ability to retain all digital documentation of the contract file.
- Reluctance to depend on the organization's network to retrieve and store contract information.
- Such a change would require too much time, effort, and money to incorporate. (pp. 18–19)

This problem creates reluctance to change. Change is daunting and always challenges agencies. It is interesting to note that this survey was given over 10 years ago, but the barriers identified then have also been identified in the results of the current survey.

c. Proposed Solution

Sherman and Freeman (2007) identify Adobe Acrobat as a potential solution for digitizing contract files with two challenges to overcome. The first challenge is in regards

to electronic signatures. The authors identify Adobe Acrobat Professional as a solution to this issue because Adobe Acrobat Professional contains an electronic signature feature. In addition, the authors identify that multiple signatures within an electronic contract file may be an issue:

> In a paper contract file there are many signatures on different documents. Therefore, when contracting personnel convert these documents, sign them electronically, and insert these electronically-signed documents into the PDF contract file, this method will not work. It cannot work because the Adobe program does not allow for signatures signed in other PDF files to be inserted to another PDF file that is already signed. In a PDF file one can have multiple signatures on one file. However, in the case of a contract file, there are essentially many signatures on many different files within the main contract file. (pp. 28–29)

Here, the authors are discussing the conversion of all the documents in a contract file into a single PDF. A solution to this issue, which was not proposed by Sherman and Freeman (2007), is to keep all the documents in the contract file as separate PDFs, each identified under a folder structure similar to that of a "tabbed" contract file.

After careful consideration of the issues, the authors find that "even with the above-stated technical difficulties, the Adobe Acrobat product is a viable off-the-shelf software product that has the ability to help the Air Force and Navy transform from a paper-based contract filing process to a paperless filing process" (p. 29). Based on the research provided and the ubiquitous nature of Adobe Acrobat Professional products, this proposed solution merits consideration by agencies.

2. *Paperless Contract Folder's DoD 5015.2 Certification* (Flynn, Grasso, & Boorom, 2010)

In *Paperless Contract Folder's DoD 5015.2 Certification,* Flynn, Grasso, and Boorom (2010) detail a web-based application utilized at the Army Contracting Command to achieve paperless contract files. The system is called the Paperless Contract Files Records Management Application, which was scheduled to be fielded at all Army Contracting Command Contracting Centers. The authors present the features and benefits of this system. In this section, the investigator highlights the key findings.

Regarding the Paperless Contract Files (PCF) software, the authors find the following:

> This application not only stores and creates versions of contracting documents, but also routes them for review and approval... Through a series of questions, the "File Wizard" will construct folders for each document required by a particular acquisition. Interactive help features are available throughout the application, putting the necessary help text at the fingertips of the Contract Specialists/Contracting Officers. (p. 25)

The PCF solution includes a routing function, folder generation, and help text during construction of the file. These features present value added benefits that will save time for contracting professionals.

Flynn et al. (2010) note the importance of data backup and availability. The authors identify that a backup of records is performed regularly and on an interim basis to an offsite facility. The application data is also stored at an offsite facility that can bring applications back up in the event of a network or application failure (Flynn et al., 2010). This feature addresses a commonly identified issue with electronic contract files: namely, system crashes. Based on the ability to switch the network to a backup facility and access data, Communications Electronics Command Contracting Center employees have access to contract files in the event of system crashes and network failure.

Flynn et al. (2010) identify that a search functionality improvement is under way:

> Current plans project the incorporation of a Google Search Appliance within PCF in FY10. This will provide the ability to crawl through all files and return data related to a very specific set of search criteria, such as a National Stock Number (NSN). (p. 11)

A search function is something that a paper-based contract file simply cannot provide. This feature would generate time savings.

Flynn et al. (2010) identify a document-routing feature and a version control feature in the system: "The review/approval functionality provides anyone at any site reviewing a document, or the entire file, access to the required information in a secure, Common Access Card (CAC)/Single Sign-On (SSO) environment" (p. 11). A routing feature promotes time savings as the application can eliminate meetings for signatures. In

addition, the system provides version control of the documents by assigning a number based on a draft or signed copy (Flynn et al., 2010). Version control eliminates the need to keep draft copies of documents and constantly update and track them.

Flynn et al. (2010) identify the ability to route funding documents within the system: "PCF has the ability to automatically route funding documents (Purchase Requests [PRs]) to individual teams. Contracting Officers can manage their teams and adjust individual workload through the PCF tool" (p. 12). This feature allows the team to work the documents in a secure environment without waiting for them to be printed.

Lastly, the authors identify a file disposal feature. This feature uses business logic to align with FAR retention mandates.

> In this way, records are stored, handled, and disposed of in a timely manner and controlled in much the same way as paper records currently are. In supplementing the paper world, the electronic environment has automated processes while adhering to federally mandated rules. (p. 11)

This automated feature is an improvement over a manual PDF electronic contract file. A manual PDF electronic contract file would need a form of record-keeping to ensure that file disposal is handled in accordance with regulation.

Based on the list of features, the PCF application solution appears viable. However, one must consider the potential drawbacks. For one, the cost of the system or the cost of system administration is not detailed. Interested agencies should perform a cost-benefit analysis to determine financial viability. Lastly, documents are not always available digitally. Some have wet signatures or were generated on paper only. There does not appear to be an efficient process for converting pre-existing contracts. Documents would need to be scanned into the system, and the authors find that this function monopolizes bandwidth and generates a picture of the document. Therefore, the search function, ability to sign, and convenience of editing the document are not guaranteed (Flynn et al., 2010). Based on its limited functionality with existing contract files, it appears that this solution is best geared toward use with future contract files.

B. DOD POLICIES AND GUIDANCE

A search of the internet for DoD policies regarding contract files produced several direct hits. In this section, existing DoD policies and guidance on the regulation of contract files are presented in detail.

1. *Management Reform Memorandum #2—Moving to a Paper-Free Contracting Process by January 1, 2000* (Hamre, 1997)

On May 21, 1997, and in a subsequent addendum on July 29, 1997, the under secretary of defense issued a memorandum in response to the secretary of defense (SECDEF) titled *Management Reform Memorandum #2—Moving to a Paper-Free Contracting Process by January 1, 2000*. The SECDEF cited "a need to simplify and modernize our acquisition process" (para. 1). The SECDEF requested a blueprint in order "to move to a totally paper-free contract writing, administration, finance, and auditing process" (para. 2). The memorandum and subsequent addendum can be found in Appendix A.

Based on this memorandum, policy for paper-free contract writing and auditing has existed for over 20 years. The survey responses in this joint applied project indicate that approximately 43% of contracting activities utilize paper-based contract filing systems. Clearly, improvements need to be made in order to meet the policy put forth in the memorandum from the SECDEF in 1997.

2. *Blue Print for Paper-Free Contracting Process* (Secretary of the Navy, 1997)

In response to the SECDEF's request summarized in Chapter II, Section B(1), the *Blue Print for Paper-free Contracting Process* was generated by the DoD. It details a paper-free contracting process plan. The blueprint highlighted the current state of systems, plans for integrating new systems, the benefits of a paper-free process, the costs involved to move to a paper-free process, and the challenges expected in this endeavor (Secretary of the Navy, 1997):

> This blueprint envisions a shared information environment that builds upon ongoing electronic information initiatives (TAB A) and emerging

> technologies to ensure the integrity of information as it is developed, managed, and utilized throughout the contracting life cycle. When executed and managed, this electronic environment will allow global, secure access to procurement and payment related information for all functional areas of the DOD acquisition community. The envisioned paper-free contracting environment will comply with the Global Combat Support System (GCSS) Common Operating Environment (COE), the DOD Technical Architecture Framework for Information Technology, and meet statutory and DOD requirements for information protection. (p. 1)

The "blueprint" identifies digitizing and sharing all documentation of the contract file beginning in the pre-award phase and continuing throughout contract administration and closeout—"throughout the contracting life cycle"—as the goal. In the document, the Standard Procurement System (SPS) is identified as the procurement system to help achieve this goal and move away from paper-based contracts. SPS has indeed been utilized by DoD agencies for many years; however, in the survey responses, the investigator finds that agencies using SPS retain paper contract files.

The report suggests that conversion to an entirely paper-free process has many benefits:

> Full implementation of the paper-free contracting environment will increase electronic commerce and improve contract and buyer efficiencies. A decrease in procurement administrative lead time (PALT), interest on late contract payments, and unmatched disbursements (UMD) should result when the paper-free environment is implemented. (p. 5)

PALT is commonly discussed in acquisition. PALT is the time, in days, between receipt of a purchase request by the contracting activity and award of a contract to meet the requirement. According to the Secretary of the Navy (1997), conversion to an entirely paper-free contract process can reduce PALT. If PALT will decrease by moving to paper-free contracting throughout the contract life cycle, conversion to an entirely paper-free process is a worthy effort.

The Secretary of the Navy (1997) identified challenges for further study. The list of challenges included resource availability and infrastructure, outsourcing availability, and federal requirements to keep records in paper format. Since the time of the report, the federal requirement for paper is no longer in place. Several contracting activities have

successfully moved to a paper-free process. Regarding the challenges, the report states, "There are no known technical barriers to implementing a paper-free process" (p. 18). This is a positive outlook, from over 20 years ago, on how the DoD can eliminate paper contract files.

3. National Defense Authorization Act for Fiscal Year 2013 (2012)

In the National Defense Authorization Act for Fiscal Year (FY) 2013, a requirement is identified for electronic contract writing systems:

> (a) UNIFORM STANDARDS AND CONTROLS REQUIRED.—Not later than 180 days after the date of the enactment of this Act, the officials specified in subsection (b) shall—
>
> (1) establish uniform data standards, internal control requirements, independent verification and validation requirements, and business process rules for processing procurement requests, contracts, receipts, and invoices by the Department of Defense or other executive agencies, as applicable;
>
> (2) establish and maintain one or more approved electronic contract writing systems that conform with the standards, requirements, and rules established pursuant to paragraph (1); and
>
> (3) require the use of electronic contract writing systems approved in accordance with paragraph (2) for all contracts entered into by the Department of Defense or other executive agencies, as applicable.
>
> (b) COVERED OFFICIALS.—The officials specified in this subsection are the following:
>
> (1) The Secretary of Defense, with respect to the Department of Defense and the military departments. (p. 228)

This is interesting because legislation exists related to contract files. However, this regulation only applies to the contract writing system. The contract writing system in and of itself may not capture the entire life cycle of contracting which was identified in the SECDEF memorandum (Hamre, 1997).The contract writing system may only capture the contract in electronic format. This omits the pre-award and the post-award contract documentation required for the contract file, which is gathered throughout the contract life cycle.

The National Defense Authorization Act for FY 2013 (2012) takes into account the conversion time necessary for this initiative:

> The officials specified in subsection (b) may phase in the implementation of the requirement to use approved electronic contract writing systems in accordance with subsection (a)(3) over a period of up to five years beginning with the date of the enactment of this Act. (p. 228)

Based on the date of enactment, all DoD and executive agencies should have phased in electronic contract writing systems. Perhaps the next piece of legislation will require electronic contract files while including a similar phase-in period.

4. *Implementation Directive for Better Buying Power 3.0—Achieving Dominant Capabilities through Technical Excellence and Innovation* (Kendall, 2015)

Prior to analysis of the *Implementation Directive for Better Buying Power 3.0—Achieving Dominant Capabilities through Technical Excellence and Innovation* memorandum, the investigator provides a summary of Better Buying Power (BBP). The purpose of BBP is to deliver better value to the taxpayer and warfighter by "obtaining greater efficiency and productivity in Defense spending" (Carter, 2010, para. 1). However, policy reform is challenging and often varies, or is scrapped, from administration to administration. Over six years, BBP differs from previous attempts at reform through emphasis and iteration, and it has survived many changes.

In 2010, the BBP initiative (known as BBP 1.0) launched. BBP evolved in 2012 (known as BBP 2.0) and in 2015 (known as BBP 3.0). The emphasis of BBP 1.0 is cost consciousness, efficiency, and productivity (Center for Strategic & International Studies, 2014). The emphasis of BBP 2.0 is to train the acquisition workforce to obtain best value (Center for Strategic & International Studies, 2014). The emphasis of BBP 3.0 is to sustain technological superiority (Center for Strategic & International Studies, 2014). These iterations do not discount prior versions. They change the focus and emphasis and build on what worked in prior versions.

In the memorandum, the focus is on BBP 3.0 (Kendall, 2015). Some of the tenets of BBP 3.0 are to streamline documentation requirements and reduce cycle time:

“Options to condense the staffing process, reduce document content, or completely eliminate a document are available” (Kendall, 2015, p. 20). This quotation is directed at program managers and a report suggesting that time is spent on administrative work at the expense of program execution. However, as evidenced in the literature review presented in Chapter II, Section A, Sherman and Freeman (2007) and Flynn et al. (2010) have proposed solutions to eliminate documentation completely and reduce PALT. Therefore, conversion to electronic contract files would serve a tenet of BBP 3.0, as well.

III. DESCRIPTION OF THE INTERVIEW PROCESS

The purpose of this chapter is to describe the process of conducting the survey for this project. The chapter contains an analysis of how survey interviews were conducted. The chapter concludes with an analysis of the questions posed in the interviews.

A. METHODOLOGY AND THE INTERVIEW PROCESS

The investigator's interview methodology was developed with the NPS Institutional Review Board (IRB). The NPS IRB mandates that a training and application process is completed by the investigator prior to conducting interviews. This process is rigorous in order to prevent and mitigate risks related to interviewing human research subjects. The methodology proposed by the investigator was vetted by the NPS IRB and the application was approved. Based on the approved application, subjects for inclusion in the survey are federal employees that work with government contract files. The exclusion criterion was anyone outside this domain.

The subjects were recruited by email, by phone, or in-person, from November 27, 2017, to February 21, 2018, by the investigator. The potential subjects' contact information was obtained through the NPS cohort. Research study participation was solicited as optional. Participants were provided an emailed survey in the form of a Microsoft Word document. The level of effort estimated for response to the email survey was less than 30 minutes. The investigator minimized coercion because (1) there was no compensation for participation, (2) senior leaders did not perform recruitment, and (3) participation was optional.

The only risk associated with the research was a potential breach of confidentiality. This was due to the collection of the names and email addresses during the recruitment process. Breach of confidentiality was mitigated by collecting only the name and email address and nothing further. After receiving the survey responses, the investigator removed the subjects' email addresses and names from their responses. Only their responses are published in this thesis. Also, the survey is centered on the functions each contracting activity performs, rather than on the opinions of the participants.

B. THE INTERVIEW QUESTIONS

Appendix B contains the interview questions that were provided to the participants based on their contracting activity. The survey responses provided the major source of data considered in this project. The questions were structured to promote narrative feedback in order to capture maximum information, but they were targeted based on the contracting activity. Some of the interview questions were derived from Sherman and Freeman (2007). For the full list of questions, see appendix B. While it was anticipated that efficiencies would be identified with electronic contract files, the challenge was to uncover the issues with converting to electronic contract files. Therefore, the interview questions were crafted in order to avoid bias toward any single methodology. The intent of this approach is to allow the investigator to uncover issues, provide lessons learned, and identify efficiencies found with various contracting activities.

IV. RESULTS AND FINDINGS OF THE INTERVIEWS

The purpose of this chapter is to describe the results of the survey conducted for this project. The chapter begins with an analysis of the responses to the survey. The chapter concludes with an identification of the findings within the survey.

A. INTERVIEW RESULTS

The survey was conducted from November 27, 2017, to February 21, 2018. Thirty-one surveys were sent to the NPS cohort. This cohort is comprised of all of the US military branches, the Defense Logistics Agency (DLA), and the Department of Defense Education Activity (DoDEA). One survey was sent to a civilian agency with the intent to identify any differences between the DoD and the civilian agency. Another objective for this research was to secure survey responses from the DoD and DON policy offices, the DPAP and the ASN RDA, respectively. The participation rate was high, as shown in Table 1.

Table 1. Response Rate by Agency

Agency	Interviews Submitted	Interviews Received	% Response Rate
Navy	14	6	43%
Air Force	5	4	80%
Marines	4	1	25%
Army	4	1	25%
DLA	2	0	0%
Civilian	2	1	50%
DoDEA	1	1	100%
DPAP	1	1	100%
ASN RDA	1	1	100%
TOTALS	34	16	47%

Based on Table 1, for those agencies that submitted more than two surveys, the Air Force had the highest participation rate at 80%. The overall response rate was 47%. Additionally, every survey contained answers to every question; none of the questions

were omitted. To research the validity of the surveys, an internet search for average response rates was conducted. Fryrear (2015) states, "Internal surveys will generally receive a 30–40% response rate (or more) on average." Based on the survey response rate and the receipt of all answers, it is speculated that the survey did not possess excluding language and the results are valid. The surveys are available for review in a categorized appendix. Appendix C contains responses regarding paper-based contract files. Appendix D contains responses regarding electronic contract files. Appendix E contains the responses from DPAP and ASN RDA.

B. INTERVIEW FINDINGS

The survey's intent was to discover any trends among the contracting activities. Selecting a wide range of contracting activities permitted further analysis. The investigator has assessed the contract file methodology by contracting activity and provided a synopsis of the responses.

1. Paper-Based or Electronic Contract Files?

Survey participants involved in various contracting activities were asked how they store contract files in the survey. The sample size of 14 is too small for a valid comparative analysis by agency, therefore the analysis is provided to identify contract file methodology among the respondents. Of the 14 responses, 6 respondents identified that they utilize paper-based contract files and 8 respondents identified that they utilize electronic contract files. Based on this, 43% of the respondents utilize paper-based contract files, and 57% of the respondents utilize electronic contract files.

2. Synopsis of Contracting Activity Responses

In the survey, contracting activities were asked about the benefits, disadvantages, barriers, and initiatives concerning contract files. A synopsis of the findings is presented in this section.

a. Benefits of Paper-Based Contract Files

The most common response among all surveys contained the benefit of comfort. Contracting activities that are using paper contract files have been doing so for many years. The choice to remain with the paper-based system allows the status quo, which avoids conversion risk. The documents in paper format reside in a single location, which allows ease of use among the workforce. A quote from the surveys that represents the benefit of paper-based contract files is, "I don't have one other than 'comfort.' I've worked here 10.5 years and many have been here 3x longer, so it is all many people know."

The next benefit identified most in the survey responses for paper files can be best described as "prevention of technology issues." Most of the respondents are concerned that the electronic file will be lost, corrupted, or unavailable due to system crashes, which will prevent access to the files. The availability of a hard copy file is seen as an advantage, and there is no concern about changes in technology for accessing the documents.

Lastly, education or tech savvy was mentioned regarding contract files. The survey responses indicated that training and computer proficiency is not mandatory for paper-based contract files. A paper file does not require software or technology in order to maintain the files. The survey respondents for contracting activities that retain paper avoid the inconvenience of converting to electronic files. The survey respondents for contracting activities that retain paper do not need to train the workforce on a new, potentially complicated system.

b. Benefits of Electronic Contract Files

The most common response from the survey regarding the benefits of electronic contract files was their accessibility. One of the participants summed up this benefit, explaining that

> electronic files work much better in today's distributed workforce environment. As telework and mobile-work increases, the ability to remotely access files is key to an organization's success. Electronic files

> also make audits and/or other third party reviews much cheaper and easier to organize as they can occur remotely, thus reducing travel.

This participant identified a reduction in travel and cost. This savings is realized by performing audits and reviews remotely.

Other responses for the benefits of electronic contract files can be grouped into a resource savings category. First, electronic contract files do not require warehouse, office, or National Archives and Records Administration storage. Second, there is a positive environmental impact. Paper is no longer filling a warehouse. Third, electronic contract files do not require as much time to create and organize as paper-based files, which require printing and organizing. Fourth, monetary savings are achieved by removing the need for supplies. Lastly, because the documents are electronic, there is no concern regarding copies fading over time, and the documents can be searched to find data quickly.

c. Disadvantages of Paper-Based Contract Files

The most common response among all surveys indicated that storage space and its related costs are the major disadvantage to paper-based contract files. Responses indicated that storage space is not available, will not be available, or is too expensive. The survey responses also indicated that the costs to print, manage, maintain, access, and destroy paper-based contract files are high.

The next issue identified in most surveys was the potential of damage to paper contract files. The paper-based files have issues with missing paperwork and wear damage based on frequency of use. One respondent noted that paper-based contract files have the "potential for external damage to include environmental and vermin." Another respondent reported, "They can be damaged. We had two floods in one year that ruined a number of our files."

Lastly, survey responses identified timeliness as an issue with paper contract files. Specifically, time is wasted in locating information in documents and in traveling to secondary locations to retrieve files.

d. Disadvantages of Electronic Contract Files

The survey responses indicate that the major disadvantage with electronic contract files centers around security. Among the respondents, security concerns range from a lack of availability, a lack of compliance, and the potential for unauthorized access. The first concern relates to system availability. When the network is unavailable, this eliminates the ability to access the electronic contract files. The second concern relates to compliance. There is a question of whether the correct files are uploaded to the system and concern that files may be accidentally deleted. The final security concern is related to access. The system may be vulnerable to unauthorized or malicious access.

The next disadvantage with electronic contract files identified in most surveys was lack of resources. Resources identified in the survey include storage space and manpower. The electronic contract files take a lot of space on the servers, which requires resources. Also, the time involved to scan files and administer the system is significant.

Another disadvantage with electronic contract files that the surveys identified is in regard to audit and oversight. One of the participants summed up this issue:

> I would say that although I stated above that PCF allows for better oversight though [*sic*] audits, this can also be a negative if implemented improperly. An audit conducted virtually can allow the auditor(s) to review the files without collaborating or communicating with the activity being audited. This can create an "us versus them" attitude that doesn't result in optimal results. If virtual audits are conducted, the auditors must still maintain open communications with the reviewees.

This concern is notable because it potentially undercuts a commonly found benefit of electronic contract files. Several respondents identified virtual audit as a benefit. In this case, the respondent identifies that communication and protocol will be critical so that this benefit does not turn into a disadvantage.

The final disadvantage with electronic contract files identified in the surveys is in regard to reviewing contract files. Some individuals prefer to review files in paper format.

e. Describe the Paper-Based Contract File System Used

The primary paper-based contract file system used was a hard copy file placed in a coded folder. Based on the action, the folders are stored in a file cabinet and designated storage space.

One of the responses indicated that a duplicative system was used:

> We are using ieFACMAN and Procurement Desktop Defense which creates our purchase requests, solicitations, contracts and modifications. We maintain electronic files on our shared server, but we also print a hardcopy of the entire electronic file to keep as a backup in case the electronic file becomes corrupt.

As stated, this duplicative method mitigates technology risk.

f. Describe the Electronic Contract File System Used

All eight survey responses provide information on their electronic contract file system. The systems described are presented individually as follows.

The first respondent stated, "We use a system called WebXtender (WebX), which is a CAC enabled program to control documents."

The second respondent stated, "We received a version of the US Army's PCF."

The third respondent stated,

> We currently use Microsoft within Windows with file folders on a share drive based on fiscal years and types (A, C, D, P) of contracts. Our agency is currently exploring a professional system for electronic contract filing, but that is in the market research phase.

The fourth respondent stated,

> The system utilized in that office was maintained by a procurement clerk who was designated the official file gatekeeper. Only she was authorized to scan all official contract file documents. The buyers and PCOs had read access only to those files and only she had admin rights. In this way integrity was kept for all files. None could be added or deleted except through her.

The fifth respondent stated,

> We are currently utilizing our offices share drive to store all the e-files. These files all have an index like you would with a paper file. Folders are then used for each tab (Tab A pre Award, Tab B Solicitation, etc). Those folders then have subfolders for each section in the tab (A-1 – Requirements Package, A-2 PWS, Etc). We work the files inside the respective folders and convert the files to PDF once a document is finalized. The only exception to this is spreadsheets. Those are kept in Excel format.

The sixth respondent stated,

> I have attached our squadron paperless Operating Instruction. Basically, our official files are stored on the ERM drive but we cannot use the ERM as a "working" drive. We use our squadron shared drives as a working drive and transfer each individual document to the ERM as it becomes "final." Under these rules each individual document is considered final when it's completed and signed. Each document is transferred to the ERM as soon as it's considered final instead of transferring the entire file at one time once it has been awarded.

The seventh respondent stated,

> We utilize a shared drive on our network to store our electronic contract files. Access is limited to only those within our Division. Files are backed up nightly. We have a universal naming system for individual contract files, as well as a standard for indexing documents within each file. It is very orderly and organized.

The eighth respondent stated, "We use the Army Virtual Contract Enterprise (VCE) Paperless Contract File (PCF)."

g. Barriers to Converting to Electronic Contract Files

Two major barriers were identified equally in the survey responses: a lack of trust in the current technology and a concern for executing auditing requirements. Respondents indicated that technology availability, access, security, and standardization are preventing conversion to electronic contract files. The respondents state that technology simply cannot be trusted to perform these functions adequately. Regarding audit, responses indicated that the audit team requires paper contract files and, "the Financial Mgmt Regulations require copies of specific items in a contract file with wet signatures."

The third barrier to converting to electronic contract files identified in several survey responses was a lack of virtual storage. Respondents stated that virtual storage is not available. Furthermore, the equipment and resources required to convert paper-based contract files to virtual storage is lacking.

The fourth barrier identified was resistance to change. Many employees have been working with their paper-based files for many years. Moving from a paper-based system to an electronic system would require overcoming the fear of change and dealing with the learning curve of implementing a new system.

h. Initiatives to Converting to Electronic Contract Files

There were three initiatives discussed in the survey responses. Each presents dialogue, which suggests change is on the horizon. In one response, leadership is interested in reviewing the pros and cons of conversion. This conversion will be reviewed based on systems that other commands may use. This initiative is anticipated to start this calendar year.

In another response, the initiative discussed is centered on training. This training is anticipated to kick-start the conversion to electronic contract files. The respondent said, "We are currently going through mandatory Electronic Contract Management System (ECMS) training. Of which I believe is an initiative to start our process toward paperless contracting."

Lastly, one of the responses highlighted an initiative to conversion, but issues with workload are anticipated. The success for the conversion to electronic contract files is left in question. The respondent stated,

> Various offices within our command (Air Force Life Cycle Management Center (AFLCMC)/PK) are currently taking initiatives to implement a paperless file system. However, it takes a designated official file person(s) to manage those records. There are literally thousands of contract files in our division (we include both operational and specialized contracting offices-approximately 184 contracting professionals) alone which means a single person cannot handle that workload.

3. Synopsis of the Responses from DPAP and ASN RDA

DPAP's survey response indicates that existing regulation allows the use of electronic contract files and does not anticipate an addition or amendment to DFARS. DPAP's survey response goes further to identify challenges to implementation of electronic files:

> Contract files are governed by the Regulations of the National Archives and Records Administration (NARA) requirements, specifically electronic files as further defined in DoDi5015. Any system with electronic files needs to meet the requirements of NARA and the DoD instruction around creating, managing, and retaining records.

DPAP also identifies DFARS language regarding Electronic Document Access to support electronic contract files:

> DFARS 204.802 identifies that the electronic documents in the Electronic Document Access (EDA) system are part of the contract file.
>
> DFARS 204.802 (a) Any document posted to the Electronic Document Access (EDA) system is part of the contract file and is accessible by multiple parties, including contractors. Exclusions for inclusion in EDA include contract documents that are classified or too sensitive for widespread distribution (e.g., personally identifiable information and Privacy Act and Health Insurance Portability and Accountability Act) and attachments that cannot be practicably converted to electronic format (e.g., samples, drawings, and models). Inclusion of any document in EDA other than contracts, modifications, and orders is optional.
>
> Within EDA, we are implementing an Enterprise Contract File format which is a single uniform structure that will support a standard process for long term storage and records management of contract files, reducing the cost of maintaining records on component and enterprise systems.

The response indicates that the Enterprise Contract File format may be an option for electronic files and identifies that its use will provide the benefit of cost reduction.

ASN RDA's response indicates that regulation regarding contract files exists in the Navy Marine Corps Acquisition Regulation Supplement, and further policy is not expected in the near term. The response states that DON policy requires a contract to be posted electronically to the EDA system. Regarding whether the entirety of the contract file will be available in EDA, the respondent says,

> NMCARS policy states "…all parts of an instrument that would have been provided to a recipient in paper shall be made available electronically". (NMCARS 5204.201(3)(i)) You may make of this phrase '…would have been provided to a recipient in paper…' what you will but in short, it supplies a 'less than the entire contract file' standard by any interpretation.

The respondent is asserting that EDA, in this form, is not a solution to storing an entire electronic contract file.

ASN RDA's response identifies a system, which is in source selection and could support electronic contract files:

> There are new contract writing system programs coming online in the DOD (the Electronic Procurement System, ePS, for the Navy) and these new contract writing systems possess documented requirements inclusive of the paperless filing system concept, and, contracts as data. Therefore, when ePS is implemented the Navy will be on a path to digitalization, either via attrition or via proaction, based on a strategy of how best to handle paper files, and at what cost. Today the ePS governance board has ruled once on the Issue of contract migration and defined a set of migration criteria in support of ePS program planning. However, in practical terms, and in my experience, things evolve and change quite a lot with programs of this size.

The response indicates that ePS will be an option for electronic contract files and identifies that cost will need to be assessed for the conversion of paper files.

ASN RDA's response also provides additional factors for consideration regarding a paperless filing system:

> First, keeping contractors out of government only sections. There have been many cases in other DOD and DoN business systems where contractors are hired to provide support services, they sign NDAs of course, but then because of the way the computer system roles are designed, those NDA's notwithstanding, the contractors get to see budget lines or they get to see contract awards or bids they're not supposed to. In this contract filing system the risk of exposure is very high if the safeguards are not made.
>
> Also, in light of this sort of problem, I have been advocating for a new career path in the DOD/DoN for eBusiness. It would be GS-1102e. The idea is there are contracting officials today, and there will be in the future, who are the system administrators of our contracting system business environment and set the policy for these areas. They should have the

> proper training and experience commiserate with these roles and have billets coded appropriately. For instance, in a paperless filing system, I would want an 1102e to be the official with the power to determine if a record could be officially altered or deleted and justify as to why, as opposed to a ‘normal’ 1102 who’s career is based on contract negotiation and award. This area of computer system oversight for business data and analytics is in dire need of more care and support.

In the first paragraph of the quote, a security issue is identified. Support service contractors may have access to data, which creates a risk of data exposure. In the second paragraph of the quote, an intriguing resolution is identified to counter the risk of data exposure. A new career path with properly trained employees in eBusiness would provide oversight for the electronic contract files.

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V. SUMMARY

In this chapter, the investigator analyzes the results of the survey to provide recommendations. The chapter begins with an analysis of the survey responses. Next, the conclusions and recommendations derived from the analysis are detailed. The chapter concludes with a recommended area for further research.

A. ANALYSIS OF FINDINGS

In this section, the investigator presents an analysis of the survey responses and the literature review. Based on the survey results, the primary and secondary research questions can be answered.

1. Why are agencies hesitant to adopt paperless contract files?

Based on the survey responses and literature review, the investigator finds that agencies are hesitant to adopt paperless contract files due to the perceived threats of security, system availability, and change. The respondents state that technology simply cannot be trusted to prevent malicious attacks and prevent system crashes adequately. Regarding change, the respondents state that training on a new system is needed to adopt a paperless contract file system. The respondents state that the time and resources needed to accommodate this change are not available.

Security and system availability threats are corroborated by agencies that have adopted paperless contract files. This corroboration demonstrates that agencies that have adopted paperless contract files need to address security risk. In the absence of legislation mandating the use of electronic rather than paper-based contract files, these threats need to be mitigated before all agencies will adopt paperless contract files.

2. What can be learned about contract files from various contracting activities?

The first lesson learned is based on the responses identified in Chapter V, Section A(1). In this section, threats to adopting paperless contract files are identified. Significant

barriers exist which prevent agencies from adopting paperless contract files. The lesson learned is that mandating the use of paperless contract files prior to mitigating these risks is not prudent because the risks will limit the success of paperless contract files.

The investigator finds that 43% of the survey respondents utilize paper-based contract files, and three respondents specifically state that initiatives are not in place to adopt paperless contract files. The lesson learned is that agencies will continue to utilize paper-based contract files.

The investigator finds that 57% of the survey respondents utilize paperless contract files. The lesson learned is that electronic contract files have been successfully adopted by agencies.

The respondents to the survey that have adopted paperless contract files identify the benefits of improved collaboration, added availability of physical space, environmental benefits, and cost savings. The lesson learned is that electronic contract files can provide efficiencies to an agency.

The investigator finds that 57% of the survey respondents have adopted paperless contract files and two respondents specifically identify virtual audit and PMR as a benefit to electronic contract files. The lesson learned is that audit and PMR is possible without paper-based contract files.

The respondent from the civilian agency utilizes a paperless contract file that is stored on a share drive in a format, which is similar to a paper-based contract file. In the survey, two DoD respondents state that their contracting activity is also successfully utilizing a variation of this electronic contract file solution. The lesson learned is that this civilian agency's process is in line with DoD agencies and is valid for comparison.

3. Has the Department of Defense (DOD) provided guidance regarding contract file methodologies, and do they plan to provide guidance regarding contract file methodologies going forward?

DPAP's survey response indicates that existing regulation allows the use of electronic contract files, and that it does not anticipate an addition or amendment to

DFARS. DPAP's survey response also identifies challenges to implementing electronic files.

ASN RDA's response indicates that regulation regarding contract files exists in the Navy Marine Corps Acquisition Regulation Supplement, and further policy is not expected in the near term. ASN RDA's response also identifies some challenges and benefits associated with implementing electronic files.

In summary, additional regulation is not planned. Agencies are expected to determine and implement contract file policy at the agency level.

B. CONCLUSIONS AND RECOMMENDATIONS

Data were collected from the DoD, DPAP, ASN RDA, and a civilian agency via survey. In addition, a literature review of contract files was conducted via an analysis of NPS theses and a review of regulation and policy regarding contract files. The data and findings indicate that agencies that have adopted electronic contract files have realized efficiencies. The data and findings also indicate that agencies that retain paper contract files have concerns regarding conversion to electronic contract files.

The results of the survey and the literature review provided the investigator data about the benefits, disadvantages, issues, and barriers, related to converting from paper-based to electronic contract files. Based on the data received, the investigator completed a strengths, weaknesses, opportunities, and threats (SWOT) analysis. SWOT analysis allows the investigator to draw conclusions in each of these areas regarding conversion to electronic contract files.

From the SWOT analysis, the investigator identifies that the primary strengths of utilizing electronic contract files are accessibility, resource savings, and value-added features. Electronic contract files can be accessed virtually, which allows collaboration among contract teams. Electronic contract files reduce the need for storage space and paper. Electronic contract files systems can provide version control and system help features to aid ease of use.

Also from the SWOT analysis, the investigator identifies that the primary weaknesses of utilizing electronic contract files are server space, training, and local audit requirements. Electronic contract files require server space in order to store volumes of data. Electronic contract files require training on a new system when converting from a paper-based contract file. Electronic contract files may be prohibited by the local audit process.

In addition, from the SWOT analysis, the investigator identifies that the primary opportunities of utilizing electronic contract files are improved collaboration, added availability of physical space, environmental benefits, and cost savings. Electronic contract files allow increased use of telework and audit from remote locations, which reduces travel. Electronic contract files remove warehouse and office storage of files. Electronic contract files reduce the impact on the environment. Electronic contract files allow monetary savings by removing the need for supplies.

The investigator also identifies from the SWOT analysis that the primary threats of utilizing electronic contract files are lack of security, system unavailability, and resistance to change. Electronic contract files are stored on network drives and web-based applications. Therefore, the data are susceptible to malicious attacks and system outages. Electronic contract files conversion also requires overcoming resistance to change and working through the learning curve required to implement a new system.

The complete results of the electronic contract file SWOT analysis are shown in Figure 1.

Strengths	Weaknesses	Opportunities	Threats
Virtual access	Audit requirements	Telework	Cyber intrusion
No physical file	Server space	3rd party review	System crashes
Reduced storage space	Training required on the new system	Travel and cost savings	Resistance to change
Files will not fade	Some activities supplement electronic files with paper	Physical space available	Some audits mandate the use of paper
Less reliant on printers, paper, and toner	Documents with a wet signature	Positive environmental impact	Accidental deletion of a document
No need to locate a file outside of the workstation	Technical Drawing packages	Time savings	Conversion of existing contracts
Version control	Lack of enterprise compatibility	No need to create or locate a paper file	Cost of the new system
System help features		Cost savings	Regulation is not planned to mandate the use of electronic contract files
		Search feature within the contract	
		Time available to work on emergent tasks rather than filing	
		Decrease PALT	

Figure 1. Electronic Contract File SWOT Analysis

Regulation and policy exist which enable agencies to utilize electronic contract files. Fifty-seven percent of the respondents to the survey indicate that they utilize electronic contract files and enjoy the strengths and opportunities identified in the SWOT analysis. However, the SWOT analysis also identifies several weaknesses and threats in converting to electronic contract files. The investigator concludes that DPAP cannot mandate conversion to electronic contract files before the issues identified are addressed. In the interim, it is recommended that individual agencies determine the best path forward until the issues have been addressed, and the threats have been mitigated.

For agencies considering conversion to electronic contract files, the investigator has considered the survey responses and literature review to provide a recommendation. Two electronic contract file solutions are currently utilized by more than one agency. Flynn et al. (2010) detail a web-based application utilized at the Army Contracting Command to achieve paperless contract files. The system is called the PCF Records Management Application. In the survey conducted, two respondents stated that their contracting activity is also successfully utilizing this electronic contract file solution. The publication and the survey respondents identify the benefits of routing, review, virtual accessibility, and cost savings with this system. In the publication, one issue identified is the amount of resources required in order to convert existing contracts into the PCF system. Responses indicate that contracting activities do not have additional resources to assign to a scanning task. Therefore, based on its limited functionality with existing contract files, the investigator recommends that agencies consider implementing PCF for future contract files.

The second electronic contract file solution utilized by more than one agency is document storage on a share drive. Sherman and Freeman (2007) identify Adobe Acrobat as a potential solution for digitizing contract files. The contract files are stored on a share drive and can be labeled similarly to a paper-based "tabbed" contract file. In the survey conducted, three respondents stated that their contracting activity is also successfully utilizing a variation of this electronic contract file solution. The publication and the survey respondents identify the benefits of review, virtual accessibility, and cost savings with this system. If file server space is available at an agency to store files electronically, the investigator recommends that agencies consider this solution for implementation.

The investigator has considered the survey responses to provide a recommendation regarding the issue of change. Six survey respondents indicated that they utilize paper-based contract files. Of the six respondents, a majority indicated that comfort with using the current system is a major benefit. Respondents indicated that they have utilized paper contract files for many years. The length of time spent on paper contract files creates a norm, or culture, within the contracting activity for maintaining paper contract files. When a cultural change to policy is proposed, resistance to change is

likely to follow. In *Basic Strategies for Avoiding and Overcoming Resistance*, a launch of Lean Six Sigma is analyzed. George (n.d.) states,

> Provide mechanisms to continually engage the broader population in the change. The two most powerful weapons in the leadership team's arsenal of culture change are 1) involving people directly in the new initiative and 2) creating a cadre of converts able to share their experiences with peers. As a company plans its initiative, therefore, it should build in mechanisms that will expose people to either or both of these weapons. (para. 15)

The investigator recommends that agencies planning to convert to electronic contract files engage employees as suggested by George (n.d.), rather than placing a suspense date on the conversion. This approach will attempt to lower the resistance to change. The investigator recommends that collaboration with agencies that have recently converted to electronic contract files is essential. To achieve a successful level of collaboration and engagement, it is recommended that a team of employees visit an agency that has converted to electronic contract files and walk through the conversion process. The team would be responsible for learning and documenting the conversion. This analysis, documentation, and experience would allow the team to engage their own agency as agents of change for conversion to electronic contract files (George, n.d.).

C. FURTHER RESEARCH

The investigator recommends further research to resolve the major technical threat identified with conversion to electronic contract files. During the research for this joint applied project, lack of security was identified as a major threat that poses a barrier to conversion to electronic contract files. In this section, the investigator highlights the security threat and recommends a path for further research.

Eight survey respondents indicate that they utilize electronic contract file systems. However, do these proposed systems mitigate the security issues identified? The security issues identified are lack of availability, lack of compliance, and the potential for unauthorized access. The investigator recommends more rigorous security analysis be conducted on each of the proposed electronic contract file solutions. If the security issues are mitigated in these solutions, DoD agencies may no longer be hesitant to adopt electronic contract files.

Cybersecurity is an ever-growing concern. The ASN RDA survey response highlights data exposure as an issue with electronic contract files. Furthermore, during the investigator's research, Douglas Brinkley provided insight on the cybersecurity issue (personal communication, March 22, 2018). Brinkley teaches a course on the Strategic Management of Information Technology at the Naval Postgraduate School. One of the key concepts taught is that information technology is expanding rapidly in many areas that are not ready for it. He cites many data breaches, including ones at Equifax, Home Depot, Target, and even information giants such as Amazon, as examples of organizations that failed to incorporate enough safeguards to protect the data for which they were responsible. Brinkley posits that if individual commands with their limited software design expertise continue to roll out their own versions of paperless contracting, it is extremely likely some of them will be vulnerable to cyber-attacks because of inadequate safeguards and testing.

To say that mitigating cybersecurity risk is a daunting task is an understatement. The contract file may contain classified documents, and the contract file certainly contains sensitive documents. In accordance with FAR 4.802(e), "contractor bid or proposal information or source selection information as defined in 2.101 must be protected from disclosure to unauthorized persons." Armerding (2018) explains that

> CSO compiled a list of 17 of the biggest or most significant breaches of the 21st century. This list is based not necessarily on the number of records compromised, but on how much risk or damage the breach caused for companies, insurers and users or account holders. (para. 1-2)

Armerding (2018) finds that the United States Office of Personnel Management data breach of 2012–2014 was tenth on the list of significant breaches. This is significant because it shows that the federal government is not exempt from the threat of cyberattack. The FAR mandates that sensitive documents must be protected from unauthorized access, and cyber intrusions have become more prevalent. Cyber intrusions pose a threat to the FAR mandate for the protection of data. The investigator recommends further research by cyber experts on the ability to protect electronic contract files from intrusion. This research will allow DPAP or other policy-makers to give guidance on how to uniformly and safely adopt digital contracting.

APPENDIX A. MANAGEMENT REFORM MEMORANDUM #2—MOVING TO A PAPER-FREE CONTRACTING PROCESS BY JANUARY 1, 2000

UNDER SECRETARY OF DEFENSE
1100 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-1100

May 21, 1997

MEMORANDUM FOR UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Management Reform Memorandum #2—Moving to a Paper-free Contracting Process by January 1, 2000

The Secretary of Defense has directed that we undertake a revolution in business practices in conjunction with the Quadrennial Defense Review. He has specifically cited the need to simplify and modernize our acquisition process in the area of contract writing, administration, finance, and auditing.

In order to determine the feasibility of sweeping changes in this area, I am requesting the Under Secretary of Defense (A&T) to develop, by July 1, the blueprint of a plan to move to a totally paper-free contract writing, administration, finance, and auditing process. This plan should be coordinated with all of the organizations that participate in the integrated process. The Plan should incorporate the Department's ongoing initiatives for use of purchase cards, electronic catalogues, electronic commerce and imaging.

I request your full cooperation in developing this blueprint.

In approximately two weeks from the date of this memorandum, I will have my secretary arrange for a meeting with the USD(A&T) to obtain a status on how this effort is proceeding.

\\S\\

John J. Hamre

UNDER SECRETARY OF DEFENSE
1100 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-l100

29 Jul 1997

MEMORANDUM FOR UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

INFO COPY: SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF

SUBJECT: Addendum to Management Reform Memorandum #2--Moving to a Paperfree Contracting Process by January 1, 2000

Management Reform Memorandum #2 cited the need to simplify and modernize our acquisition process in the area of contract writing, administration, finance and auditing.

After further review, it has been determined that in order to achieve successful implementation in this area, the logistics community needs to be included in this effort. Therefore, through this addendum, I am now asking that a plan be developed to move to a totally paper-free acquisition process.

The paper-free acquisition process coincides with the Department's corporate goal of digital operations for acquisition management and life cycle integrated information. The paper-free plan will define a process whereby electronic information can be managed, accessed, and shared by all users.

\\S\\

John J. Hamre

APPENDIX B. THE INTERVIEW QUESTIONS

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?[1]
2. Please briefly describe the paper contract file system you use.
3. What are the benefits of using paper contract files?
4. What are the disadvantages of paper contract files?
5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?
6. What are the barriers to transforming your system to a paperless filing system?

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?
2. Please briefly describe the paperless contract file system you use.
3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.
4. What are the benefits of using paperless contract files?
5. What are the disadvantages of paperless contract files?

C. Questions for DOD Contracts Director:

[1] Questions A1, A5, and B1 in the survey were extracted from Sherman, B. J., & Freeman, E. (2007). Paperless policy: Digital filing system benefits to DOD contracting organizations [MBA professional report]. Retrieved from https://calhoun.nps.edu/bitstream/handle/10945/10172/07Dec%255FSherman%255FMBA.pdf?sequence=1&isAllowed=y

1. Are you aware of any current DOD or service initiatives to convert from paper to paperless contract filing system?

2. Does your office currently have, or plan to issue, policy throughout DOD regarding paperless contract files?

3. If your office plans to issue a paperless policy, what are the benefits of the system proposed?

4. If considering paperless filing systems, what potential challenges to implementation and utilization exist?

5. If your office does not plan to issue policy, what are the challenges with the absence of policy, and any potential benefits of retaining paper?

6. What other considerations or factors should be considered in examining a paperless filing system for DOD contracting?

APPENDIX C. SURVEY RESPONSES FOR PAPER-BASED CONTRACT FILES

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?[2]

> We just haven't gotten there, yet. Also, we need some good examples of Government locations similar to us who have gone paperless.

2. Please briefly describe the paper contract file system you use.

> Specific folders for specific actions (color coded) and labeled by year, etc. We have a scanning system (BITs-C) which is partially implemented.

3. What are the benefits of using paper contract files?

> Easier review of all documents in one location and looking back and forth between sections.

4. What are the disadvantages of paper contract files?

> Storage (someday), records management, lost files, missing paperwork, closeouts, and shipments to retention center.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

> Not at this time. More thought than anything.

6. What are the barriers to transforming your system to a paperless filing system?

> See #2. We have to follow certain procedures for audit and closeout purposes.

[2] Questions A1, and A5 in the survey were extracted from Sherman, B. J., & Freeman, E. (2007). Paperless policy: Digital filing system benefits to DOD contracting organizations [MBA professional report]. Retrieved from https://calhoun.nps.edu/bitstream/handle/10945/10172/07Dec%255FSherman%255FMBA.pdf?sequence=1&isAllowed=y

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?

> Not sure (w/ the exception of Seaport which is truly meant to be paperless). Leadership wants to look into the pros/cons and what systems other commands may use, so I expect over the next FY it to get some legs.
>
> In my opinion one of the things hurting the movement is the continued QA issues with the hard copy folders, as well as the issues with information not being uploaded to the SeaPort-e Portal.

2. Please briefly describe the paper contract file system you use.

> Traditional two-hole punch system that follows a file checklist based on the type of action.

3. What are the benefits of using paper contract files?

> I don't have one other than "comfort". I've worked here 10.5 years and many have been here 3x longer, so it is all many people know.

4. What are the disadvantages of paper contract files?

> Physical space, logistics of locating them, damage to them based on frequency of use, cost of paper, difficulty in finding a specific thing within a document.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

> A team will be set up in CY18 to investigate.

6. What are the barriers to transforming your system to a paperless filing system?

> See Answer #1.

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?

> I have asked multiple individual within the command about why we aren't fully electronic and the common answer is that there is no faith the electronic system. For example, they don't feel that the electronic system properly documents and supports our functions. "What would we do if the system goes down? How will we get a contract awarded without hard copies?"

2. Please briefly describe the paper contract file system you use.

> We are using ieFACMAN and Procurement Desktop Defense which creates our purchase requests, solicitations, contracts and modifications. We maintain electronic files on our shared server, but we also print a hardcopy of the entire electronic file to keep as a backup in case the electronic file becomes corrupt.

3. What are the benefits of using paper contract files?

> Throughout our activity the benefit is believed to be in the fact that if the electronic file is lost or becomes corrupt, we have a hard copy file to refer to.

4. What are the disadvantages of paper contract files?

> The disadvantage of paper contract files is the amount of space required and the time required to dedicate to maintaining these files. For example, one of my MILCON (current value $244M) projects is still in receipt of hard copy certified payrolls on a weekly basis. This particular project has on average more than 100 personnel working on the site. The prime contractor is required to submit certified payrolls for each person on site. Our office maintains a file for each subcontractor and their certified payrolls. The certified payrolls is just one small part of the paper contract filing. This contract is also in receipt of contract submittals, daily reports, quality assurance reports, etc. A double wide trailer is dedicated to the files associated with this project, paper files that will need to be archived and stored for 6 years after contract completion.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

> We are currently going through mandatory Electronic Contract Management System (ECMS) training. Of which I believe is an initiative to start our process toward paperless contracting.

6. What are the barriers to transforming your system to a paperless filing system?

I believe the biggest hurdle is going to be TRUST in the electronic contract management system. Our agency has made some recent upgrades/changes with one of our contracting systems last summer and the upgraded system has not functioned properly since. It is now creating more re-work and incomplete work than prior to the upgrade. The work around has been to manually do what the upgrade was supposed to do for us, which creates a great deal more data inputting than before adding time and effort to the already long PALT.

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?

USMC policy does not allow it. Requires paper tracking (MAPP).

2. Please briefly describe the paper contract file system you use.

Cradle to grave, keep files for 10 years after close-out. Files for the last two FY are maintain in file cabinets in the office. Other Fys are maintained in a different warehouse in the same building.

3. What are the benefits of using paper contract files?

Somewhat better assurance and less risk of corruption of the contract file. Some personnel are more tactile with paper and less IT savvy. Generally more reliable method of storage.

4. What are the disadvantages of paper contract files?

Files may get lost or if kept in a secondary location it may take more time to retrieve. The footprint is much larger. Potential for external damage to include environmental and vermin.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

No. There is no current initiative to convert, though there are initiative to update the current contracting software.

6. What are the barriers to transforming your system to a paperless filing system?

Standardization across the USMC, and approval. Better reliability of the current system. Existing equipment/resources required to digitize all contract documents. Virtual space required is not yet available.

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?

I have worked for organizations that have tried to move toward paperless files. Currently the organization I work for uses paper contract files for some contracts, "paperless" for others, or a combination, based on the writing system used for the contract. Even the "paperless" contracts, still have requirements for some of the documents to be included in a paper file. Since none of our contracts are completely paperless, I chose to answer the "A" questions, but include some of the problems we experience as we move to "paperless" contracting.

There are challenges with developing a paperless filing system that provides adequate security, access, and standardization.

Specific examples include, at a previous command I worked for, we had started paperless files and transferred the documents to a media storage device that was included with the hard copy file. When we later tried to retrieve the electronic files, technology had progressed so that the media storage vehicle used was not compatible with the current hardware.

Another example, for our Seaport-e contracts, there is a web based portal that we are required to use as the "official contract file". Once a period of time has elapsed from the POP completion date, the contracts are moved to an "archived" file that the contract specialist no longer has access to, unless they request special access. Since most of the contracts are cost type, they take years to close out and it is difficult to get access to them. Additionally, the system is going to be sun-setted in the next couple of years and replaced with a follow-on vehicle. I am concerned we will have difficulty accessing these archived contracts.

In all cases where I have worked in organization that use paperless, there is a tendency to still retain hard copies of all documents so it is duplicative.

When auditors come in, they expect to be able to see a hard copy of the file to review.

2. Please briefly describe the paper contract file system you use.

We have a contract file index, one for large and on for simplified acquisitions. The index identifies all documents required to be contained in the file and hard copies of each document are filed under the appropriate tabs. The file folders are stored in a locked cage, and are accessed on an as needed basis.

3. What are the benefits of using paper contract files?

You do not need to worry about changes in technology for accessing the documents.

They are readily available for auditors.

4. What are the disadvantages of paper contract files?

It is costly. There are cost associated with printing, managing, storing, archiving, accessing, and destroying them.

They can be damaged. We had two floods in one year that ruined a number of our files.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

Both of our contract writing systems are being replaced. I believe there will be paperless features in both of the new writing systems.

6. What are the barriers to transforming your system to a paperless filing system?

We need ALL people to reach an agreement that if the contract file is paperless we do not also need to have a hard copy file. Also, there should be only one place where each electronic document needs to be stored. Currently, with Seaport, all documents are required to be in the portal; however, some documents also have to be stored in the CORT tool or in a hard copy. It is very inefficient to have documents stored in more than one place.

A. Questions for contracting activities that utilize paper contract files:

1. Why don't you use a paperless contract filing system?

> Various offices within our command (Air Force Life Cycle Management Center (AFLCMC)/PK) are currently taking initiatives to implement a paperless file system. However, it takes a designated official file person(s) to manage those records. There are literally thousands of contract files in our division (we include both operational and specialized contracting offices-approximately 184 contracting professionals) alone which means a single person cannot handle that workload. Before implementation, personnel need to be designated the official file OPR, receive the appropriate training to be officially designated and then set up a system within each of the sections and branches of the division. Those designated personnel need to train existing (and constantly train new contracting) personnel on the proper documentation to include in the e-files AND adequate disk storage must be available in order to accomplish this monumental task. The storage space is also a major problem in our command. Never enough storage space for existing data, working files and correspondence, much less the volumes and volumes that must be kept via efiles.

2. Please briefly describe the paper contract file system you use.

> Each buyer, in my current office, maintains their own contract files at their desk and follows through with the buy from receipt of requirement to closeout.
>
> Other offices I have worked in (major system program offices) have a common office filing system that is maintained by the procurement clerk who is the official designated as the primary person to ensure all information is contained in the file when contract document distribution occurs.

3. What are the benefits of using paper contract files?

> Paper files are, for the most part, advantageous because as personnel leave the office their paper files and hard copies of emails/letters, etc. stay in the office. I have worked in offices where we have had electronic files and people are not always very good about making sure all of the correspondence stays with the contract file. That is a real problem. Key emails may be missing, mandatory file items, even signed copies of PNMs have been missing from efiles. Also, buyers and PCOs ensure that all file documentation are included in the contract file and they are available for immediate use and review. Whereas, efiles, have to be scanned and electronically filed before you have access to the official file documentation.

4. What are the disadvantages of paper contract files?

Answer—Contract files can take up an enormous amount of space. While working in one office we had an Engineering Manufacturing and Development (EMD) contract for a major weapon system that took up 23 4-drawer lektriever-type file cabinets. The basic contract and 668 contract mods was just one of several contracts for this weapon system. We also had a 10-year IDIQ type contract with over 100 delivery orders (DOs) and subsequent mods to those DOs. That took up several cabinets as well. With electronic files, it would significantly remove the need for 100's of file cabinets.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

See answer to 1 above.

6. What are the barriers to transforming your system to a paperless filing system?

See answer to 1 above. Also, the Financial Mgmt Regulations require copies of specific items in a contract file with wet signatures—so even if most of the paper files were converted, there is still a FIAR requirement to maintain wet signature copies of specific contract file items.

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APPENDIX D. SURVEY RESPONSES FOR ELECTRONIC CONTRACT FILES

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?[3]

> SPAWAR HQ feels it is not necessary and uses other ways of maintaining contract files.

2. Please briefly describe the paperless contract file system you use.

> We use a system called WebXtender (WebX), which is a CAC enabled program to control documents.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

> The change and imitation of implementing paperless contract files took place before I was hired at this command. I am unaware of any major hurdles.

4. What are the benefits of using paperless contract files?

> Less clutter and reduces waste of toner and paper. Also reduces foot traffic of Contract Specialists having to print every document vice just printing what is essential in a cubical office environment.

5. What are the disadvantages of paperless contract files?

> Compliance and oversight of Contract Specialists uploading documents to WebEx to the electronic contract file.

[3] Question B1 in the survey was extracted from Sherman, B. J., & Freeman, E. (2007). Paperless policy: Digital filing system benefits to DOD contracting organizations [MBA professional report]. Retrieved from https://calhoun.nps.edu/bitstream/handle/10945/10172/07Dec%255FSherman%255FMBA.pdf?sequence=1&isAllowed=y

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

Moving toward compliance of SECNAVINST 5210.8E.

2. Please briefly describe the paperless contract file system you use.

We received a version of the US Army's PCF (see attached PCF user manual)

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

After years of demonstrations and coordination with the Army, our line in the sand was FY18 implementation. We received the RMA, tested it, developed business rules, developed training, trained employees and implemented. Decisions were made regarding contracts that originated in hard copy pre-FY18 as to whether they would remain hard copy or transition to electronic.

4. What are the benefits of using paperless contract files?

There's an end to the file room we have. See pictures.

Another advantage is we can work towards an entire electronic lifecycle of documents. We should be able to create a draft, route it for review comment, make changes, and sign it (making it a record) and never print a damn thing out. The RMA we have has a work flow and versioning capability to allow for this.

5. What are the disadvantages of paperless contract files?

Old employees not able to get it.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

> Our agency is adhering to the DOD paperwork reduction guidance and therefore have moved to an electronic / paperless contract file system.

2. Please briefly describe the paper contract file system you use.

> We used to use hard copy folders with cardboard type dividers with sections to depict the procurement action and section—A through G and then file the paperwork in the appropriate section.

3. What are the benefits of using paper contract files?

> That the file is there at a glance in one place.

4. What are the disadvantages of paper contract files?

> Question contracting officer's always ask is "is the file organized?" Sometimes the paperwork in the files are not organized and then if the files are large and divided in sections making up 3 folders, the folders may not all stay together. In the past, what would happen is that the pre-solicitation folder and the solicitation folder up to award would be warehoused and then the contract award folder with the invoices would be kept by the specialist doing the administration. Files would get misplaced and then disappear as when the warehouse personnel at one time inadvertently shredded procurement files whose time had not elapsed as yet. Another disadvantage is paper files take up copious amounts of storage space—you need to put them someplace and safe-guard them. Also, making sure all the files are placed in the right folders under their appropriate dividers.

5. Are you aware of any initiatives to transform your paper contract filing system to a paperless filing system?

> In early 2016, this agency moved to a paperless filing system approach.

6. What are the barriers to transforming your system to a paperless filing system?

> Overall, contract personnel who were used to paper files getting used to doing everything electronically. Resistance to change and a learning curve.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

As mentioned in Part 1 Question 1, our agency is in compliance with the DOD paperwork reduction guidance and in calendar year 2016 implemented a paperless method for contract files.

2. Please briefly describe the paperless contract file system you use.

We currently use Microsoft within Windows with file folders on a share drive based on fiscal years and types (A, C, D, P) of contracts. Our agency is currently exploring a professional system for electronic contract filing, but that is in the market research phase.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

All contract personnel had to begin posting their procurement actions on the file folders on the share drive. Further, all had to make sure all the files were in the right folders. It was an adjustment. Major hurdle is that some people are resistant to change.

4. What are the benefits of using paperless contract files?

Can be stored easily and have quick access to the documentation. Doesn't take up as much space and does not require actual warehouse and/or file storage like paper files. Able to send documents quickly with maximum sharing and access capability.

5. What are the disadvantages of paperless contract files?

Making sure all the files are in the electronic folders in their appropriate place. Inconsistency in content on the file drive. If the network or servers go down, can't necessarily access the electronic contract files.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

> One office I worked in, for a time, was the only office in AFLCMC/PK at Wright-Patterson that was authorized to go electronic files? Why? Because the building this office was moved to was housed in facility that was originally designed to support two stories. When the decision was made to move this program office to the Acquisition Management Complex, they decided to stack two more stories on top of the original building (even though it was only designed for two). Because of the weight restrictions on those two added floors, PK decided that the only way a contracting shop could be accommodated was to permit the use of e-files. Permission was granted and the rest of story was history. (Only this could happen in the government right?)

2. Please briefly describe the paperless contract file system you use.

> The system utilized in that office was maintained by a procurement clerk who was designated the official file gatekeeper. Only she was authorized to scan all official contract file documents. The buyers and PCOs had read access only to those files and only she had admin rights. In this way integrity was kept for all files. None could be added or deleted except through her.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

> See answer 1 above. Also, prior to the move, all active contract files had to be scanned and saved into the network. Because of FIAR restrictions, some level of contract files (paper) had to be maintained as wet signatures of specific contract file documents were required to be maintained. These were periodically reviewed as part of IG and/or field inspections.
>
> One office I worked in decided to convert some of the older inactive (but not yet retired) files into efiles. In those offices, procurement clerks were designated to scan all of the old contract files and put them on disk which would be filed in lieu of the paper copies. The file I mentioned earlier (the 23 cabinet file) was one of the contracts selected. It literally cleaned out an entire hallway in the basement of the building where it was housed.

4. What are the benefits of using paperless contract files?

> See answer 3 above. Tremendous savings of office space. Never have to worry about copies fading over time either.

5. What are the disadvantages of paperless contract files?

Have to have adequate disk space to store on a common drive. This is a huge issue where I am located. We barely have enough disk space to house PCO and buyer working files much less official contract files. You also have to have adequate numbers of personnel to adequately manage the efiles and to ensure proper safeguards are put in place so people can't alter the records.

It also takes times to scan files—we had a single records officer in our contracting shop and she was out for an extended period of time on sick leave. While we had a "holding file" (this is where distributed contract documents were placed until they official file could be scanned and placed in the official efile) the amount of contract documents that stacked up in the holding file while she was off was tremendous. This holding file can be altered whereas the official file cannot. Never a good idea for obvious reasons.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

We moved to a paperless contracting system in Dec 2014. We did this for the following reasons:

- Centralized filing location and easier access to contracts. All the contracts are centralized on a share drive and anyone can access them. We do not need to locate the physical folder
- We had heard that the AF was going to mandate an e-contract filing system sometime between FY17 and FY19 so we were trying to get used to the system.
- Reduced waste as paper drafts were no longer printed out for review.
- Reduced spending. We analyzed our spend and we were spending about $4K a year in paper. Doesn't sound like much but with a $15K budget it makes a huge difference.

2. Please briefly describe the paperless contract file system you use.

We are currently utilizing our offices share drive to store all the e-files. These files all have an index like you would with a paper file. Folders are then used for each tab (Tab A pre Award, Tab B Solicitation, etc.). Those folders then have subfolders for each section in the tab (A-1 – Requirements Package, A-2 PWS, etc.). We work the files inside the respective folders and convert the files to PDF once a document is finalized. The only exception to this is spreadsheets. Those are kept in Excel format.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

Since the conversion happened on the services side first the change was pretty easy. We decided to make the change in late November through early December since those are the slow months here. We basically took a couple weeks to scan all the paper documents and place them in their applicable folders. The CA's then reviewed the files to ensure all contract documents were accounted for. In addition, we stored all the paper docs in a filing cabinet to ensure the records were

kept. All service contracts were converted with the exception of contracts that were on their last options. These contracts were kept as paper copies.

Major hurdles

- Scanners not properly working which resulted in some files needing to be scanned more than once.
- Only having one scanner. This drastically increased the time it took to scan the files.
- Getting buy in that going electronic was better. This was especially true the "old school" people who just like looking at a piece of paper.
- Ensuring that we had adequate storage space. The share drive is shared among all group activities and is quite full. This makes contract storage a crapshoot sometimes.
- Since the drive is a network drive if the base network is down then the files cannot be accessed. This is a big issue if there is a pressing need.

4. What are the benefits of using paperless contract files?

- The contract is easier to access for everyone within the organization. If the DBO wants to view a file they do not need to come grab a physical copy.
- The contract file is searchable now; makes it easier to find mis-filed documents.
- It is "greener"; reduces the waste of paper from draft copies.
- Submitting electronic copies to reviews is much easier since all documents are already electronic.

5. What are the disadvantages of paperless contract files?

The only disadvantage I have come across is that if the network is down the file is not accessible.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

> We were mandated to go paperless. I attached the policy letter to this email for your review.

2. Please briefly describe the paperless contract file system you use.

> I have attached our squadron paperless Operating Instruction. Basically, our official files are stored on the ERM drive but we cannot use the ERM as a "working" drive. We use our squadron shared drives as a working drive and transfer each individual document to the ERM as it becomes "final." Under these rules each individual document is considered final when it's completed and signed. Each document is transferred to the ERM as soon as it's considered final instead of transferring the entire file at one time once it has been awarded.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

> We were given the deadline of 1 Jan 17 to convert all contracts that began on 1 Oct 16 to paperless. Details are in the attached operating instruction (OI). We were given multiple trainings for these new procedures at the command level and within the squadron. The squadron OI was created after multiple meetings between the commander and the designated records custodians in the office.
>
> The biggest hurdle was coming to a consensus on how we would handle files since we do not use the ERM as a working drive and only a certain limited number of individuals were granted access to the ERM drive. This meant that contract administrators wouldn't have access to their final contract files stored on the ERM. Eventually everyone in the office was given access to the ERM.
>
> It was also hard for many people to accept the change and enforcing it was challenging.

4. What are the benefits of using paperless contract files?

> Biggest benefit in my opinion are no more lost files. Other benefits include: saving paper and saving space.

5. What are the disadvantages of paperless contract files?

- As a contracting officer I personally feel that the quality of reviews is not the same when reviewing an electronic file vs. a paper file. I feel like I did a much better job of catching errors when I was reviewing a paper file.
- Storage space on our electronic drive
- Confusing process that requires a separate a working drive since we cannot work out of the ERM where the official contracts are stored.
- Potential for missing documents since we are supposed to transfer individual documents to the ERM one at a time vs. transferring the entire completed contract file after award.
- Potential for accidently deleted files.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

Several years ago we migrated from a paper based contract filing system to an electronic filing system. Advances in technology allowed us to develop an electronic solution to filing, which we determined would be more efficient and effective than using paper files. As far as efficiency, electronic files offered a considerable time savings. Instead of having to print, hole-punch and individually file every document, we could simply save each electronic document to the appropriate file. As far as effectiveness, electronic files allowed us to be more compliant as they are much easier to manage and maintain (i.e., no more piles of paper on each person's desk waiting to be filed). We also saw a cost savings for supplies as we no longer had to order the six-part file folders, separators and tabs. We also used much less paper, which had the added benefit of being good for the environment.

In addition to increased efficiency and effectiveness, electronic files work much better in today's distributed workforce environment. As telework and mobile-work increases, the ability to remotely access files is key to an organization's success. Electronic files also make audits and/or other third party reviews much cheaper and easier to organize as they can occur remotely, thus reducing travel.

Finally, local storage needs as well as final storage at the National Archives and Records Administration (NARA) center have decreased dramatically or have been eliminated completely.

2. Please briefly describe the paperless contract file system you use.

We utilize a shared drive on our network to store our electronic contract files. Access is limited to only those within our Division. Files are backed up nightly. We have a universal naming system for individual contract files, as well as a standard for indexing documents within each file. It is very orderly and organized.

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

Once electronic files became a possibility, we decided on the best platform (i.e., shared network drive) and the universal naming convention. We also adopted the same indexing structure that we used for paper files. We then decided to make the transition occur gradually over time, instead of all at once. The idea of scanning all existing paper files simply to make the file completely electronic was not feasible due to the sheer size of the existing paper files. Thus, we went electronic moving forwards only. For a while, we had contract files that were part paper and

part electronic. Over time, these “hybrid” files disappeared until such time as all files were completely electronic.

One major hurdle was whether any particular documents had to be kept in their original paper form, including original signatures and/or raised seals. When we first migrated to electronic files, there was a small list of documents that we were required to keep in original paper format. These have gradually gone away as well with the advent of electronic signatures.

4. What are the benefits of using paperless contract files?

See Number 1 above.

5. What are the disadvantages of paperless contract files?

The main disadvantages of electronic files all involve security. This includes security in terms of access to data (e.g., system availability), potential loss of data (e.g., non-recoverable system crash), and external malicious threats to data.

B. Questions for contracting activities that utilize paperless contract files:

1. Why don't you use a paper based contract filing system?

> The Corps of Engineers mandated that all contract files be paperless in 2012, I think. Regardless of this, I wouldn't consider working for an organization that still had paper files.

2. Please briefly describe the paperless contract file system you use.

> We use the Army Virtual Contract Enterprise (VCE) Paperless Contract File (PCF)

3. Please briefly describe the process your activity undertook to convert from paper to paperless contract file system. Please discuss the major hurdles your activity had to overcome.

> I was a PCF administrator when we converted from paper to paperless. The process MUST begin with a mandate and high level support in order to be effectively implemented. We conducted a lot of training, created guidance, cheat sheets, and FAQ documents. We also conducted (and continue to conduct) PCF compliance reviews to ensure that contracts are being properly documented in PCF.
>
> There are three major hurdles that I have seen in my experience.
>
> - The first is the problem of external reviewers such as technical, OC, and SB insisting on paper routing of files, documents, etc. By requiring this, other offices create a significant amount of additional work for CT due to the repeated printing and scanning. At a minimum, to implement the process effectively, other offices must at least accept electronic copies of documents for review. However, the preferred method would be to accept them through routing mechanisms built into PCF.
>
> - The second problem was a major issue in my first District in Huntsville, but not in Mobile due to an important process adjustment. Huntsville had a major problem with contract specialists and KOs creating "shells" of contract files, but not actually uploading the files. This was because PCF could generate a report of contracts that didn't have a cabinet in PCF, but

didn't necessarily catch empty or semi-empty shells. Huntsville had to exert a significant amount of oversight and reviews to try to enforce this. The Mobile District circumvented this problem by requiring that a contract specialist route the contract file to the KO through PCF. This required the specialist to have a complete file before the contract could be awarded.

- The third, and less significant issue was documents in PCF are often not named correctly in a way that allows a reviewer to easily identify what the documents were. Requiring a common sense naming convention that everyone adheres to is very important.

4. What are the benefits of using paperless contract files?

The process is much faster. Also, telework, developmental assignments, and audits are all greatly enhanced by the use of paperless contact files. PCF enables employees to telework, or even work as a full-time teleworker. Developmental assignments can be bolstered by paperless contracting because someone can work on actions from any location. Finally, audits such as PMRs can be conducted with less cost and currency/frequency due to being able to access the files remotely.

5. What are the disadvantages of paperless contract files?

Not very many, but I would say that although I stated above that PCF allows for better oversight though audits, this can also be a negative if implemented improperly. An audit conducted virtually can allow the auditor(s) to review the files without collaborating or communicating with the activity being audited. This can create an "us versus them" attitude that doesn't result in optimal results. If virtual audits are conducted, the auditors must still maintain open communications with the reviewees.

APPENDIX E. SURVEY RESPONSE FROM DPAP AND ASN RDA

C. Questions for DOD Contracts Director:

1. Are you aware of any current DOD or service initiatives to convert from paper to paperless contract filing system?

> Several components have developed paperless contract filing systems. These include the Army, with their Virtual Electronic Contract Office (VECO), DCMA with their Integrated Workload Management System (IWMS), and DFAS with their Electronic Document Management System (EDM).

2. Does your office currently have, or plan to issue, policy throughout DOD regarding paperless contract files?

> DFARS 204.802 identifies that the electronic documents in the Electronic Document Access (EDA) system are part of the contract file.
>
> DFARS 204.802 (a) Any document posted to the Electronic Document Access (EDA) system is part of the contract file and is accessible by multiple parties, including contractors. Exclusions for inclusion in EDA include contract documents that are classified or too sensitive for widespread distribution (e.g., personally identifiable information and Privacy Act and Health Insurance Portability and Accountability Act) and attachments that cannot be practicably converted to electronic format (e.g., samples, drawings, and models). Inclusion of any document in EDA other than contracts, modifications, and orders is optional.
>
> Within EDA, we are implementing an Enterprise Contract File format which is a single uniform structure that will support a standard process for long term storage and records management of contract files, reducing the cost of maintaining records on component and enterprise systems.

3. If your office plans to issue a paperless policy, what are the benefits of the system proposed?

> EDA, which is part of the Wide Area Workflow (WAWF) suite of tools, provides access to contract documents to all interested parties, including contractors. Having electronic versions of the contract allows for data to be reutilized in other electronic tools such as the WAWF Invoice Receipt Acceptance and Property Transfer (iRAPT) tool. Sharing data reduces errors in the invoicing and acceptance processes, increasing the accuracy and timeliness of payments and deliveries.

Additionally, the WAWF suite includes the NISP Contracts Classification System which allows for the electronic creation and distribution of the DD254, an attachment to the contract that conveys security requirements and classification guidance and provides handling procedures for classified material received and/or generated on a classified contract. In April 2018, the GFP module will be added to WAWF, allowing for the creation and distribution of government furnished property attachments in an electronic manner. Having these attachments as data in a centralized system allows that data to be reused for downstream applications, such as plant clearance or the reporting of loss of government furnished property.

4. If considering paperless filing systems, what potential challenges to implementation and utilization exist?

Contract files are governed by the Regulations of the National Archives and Records Administration (NARA) requirements, specifically electronic files as further defined in DODi5015. Any system with electronic files needs to meet the requirements of NARA and the DOD instruction around creating, managing, and retaining records.

5. If your office does not plan to issue policy, what are the challenges with the absence of policy, and any potential benefits of retaining paper?

Generally speaking, FAR4.5 Electronic Commerce provides the electronic processes and media that can be used in place of paper for all acquisition processes, provided the requirements of that section are met. At this time, I do not see a need to specifically address electronic contract files in the DFARS or DFARS PGI. I am not aware of specific benefits for retaining paper.

6. What other considerations or factors should be considered in examining a paperless filing system for DOD contracting?

The requirements in FAR4.5 should be considered for electronic commerce and the NARA records retention requirements process should also be considered before establishing any kind of paperless filing system for DOD.

C. Questions for Director, eBusiness Policy:

1. Are you aware of any current DOD or service initiatives to convert from paper to paperless contract filing system?

Initiatives? No. But I take the term initiative to mean government initiated program. There are no funded initiatives with program money I am aware of set aside for the express purpose of converting paper contract files in the Department of the Navy or DOD to paperless ones in a fully functional paperless filing system.

However, there have been projects in the past where DOD has obtained end of year money and ear marked it for the purpose of either closing out old contracts or digitizing paper ones via hiring on of short term contractor support teams specialized in performing that touch labor. The Navy's benefited from such a program within the last 5 years. Also, many more years before that, when Hurricane Katrina struck the Navy's gulf coast facilities, we rushed response teams to flooded areas and worked to scan and digitally preserve contracting files effected by the storm.

Nonetheless, A) there are initiatives to destroy paper contract files which are closed and have served their requisite retention times. Two governance boards in the DOD with Comptroller and Acquisition communities represented debate how long those durations should be and for what reasons they might be reconciled. And B) there are new contract writing system programs coming online in the DOD (the Electronic Procurement System, ePS, for the Navy) and these new contract writing systems possess documented requirements inclusive of the paperless filing system concept, and, contracts as data. Therefore, when ePS is implemented the Navy will be on a path to digitalization, either via attrition or via proaction, based on a strategy of how best to handle paper files, and at what cost. Today the ePS governance board has ruled once on the Issue of contract migration and defined a set of migration criteria in support of ePS program planning. However, in practical terms, and in my experience, things evolve and change quite a lot with programs of this size.

In the meantime, there are different contract writing system capabilities in service at the different Navy and Marine Corps system commands. Some of them are able to take on a more or less paperless contract file in its entirety and others can only handle main contract files and contract modifications. Some commands with capacity for all digital contracts have local instructions that capability will be used but even in some circumstances where our hardware can support a .zip file of an entire contract file, if it's the Standard Procurement System (SPS), the load of carrying all that data degrades performance to the point many commands have ceased with the effort all together. In other cases, like SPAWAR's eFileroom, the

architecture and design is let to only their headquarter's type awards and it has a limited capacity for scaling (as do other such solutions in the DoN).

The ePS program is in source selection right now; most leadership is awaiting its arrival to address this question further.

2. Does your office currently have, or plan to issue, policy throughout DOD regarding paperless contract files?

This question is a bit awkward to apply as the Secretariat doesn't operate at the deck plate level issuing contracts. We set policy for the whole of the Department (or further policy set at the DOD or Federal levels, or we interpret such policy for the DoN). Therefore, I'll take this question to mean 'Does the Secretariat have, or plan to issue, policy regarding contract paperless files?' The Secretariat policy on this question is resolved within the Navy Marine Corps Acquisition Regulation Supplement (NMCARS) http://www.secnav.navy.mil/rda/Pages/NMCARS.aspx

I have to make an assumption here that you mean by the term 'paperless contract file' the complete contract file, in a digital form. This means all components of a contract file exist in a system as data and can be transmitted and received as discrete data or data sets.

This is distinguished from the current term 'electronic' which is a term than can be satisfied if one, for example, takes a digital picture of a contract document with a camera or scans it with Adobe Acrobat as a .pdf file and uploads it into a storage system of some kind. This picture taking activity makes an 'electronic file' but the information in the image is not digital.

I point this out because, if a paper contract file is physically destroyed, made electronic, or made digital – all three acts result in a now paperless situation, however, not all three result in equivalent outcomes.

The DON policy in the NMCARS today requires a contract (contracts, purchase orders, delivery orders, contract modifications) to be posted 'electronically' to the DOD Electronic Document Access (EDA) system (http://eda.ogden.disa.mil). Moreover, the EDA system is now a module of the broader DOD Wide Area Workflow environment. (https://wawf.eb.mil/)
NMCARS policy states "…all parts of an instrument that would have been provided to a recipient in paper shall be made available electronically". (NMCARS 5204.201(3)(i))

You may make of this phrase '…would have been provided to a recipient in paper…' what you will – but in short, it supplies a 'less than the entire contract file' standard by any interpretation.

The DOD level regulation is DFAR 204.270-1 via procedures at PGI 204.207-2(b) (https://www.acq.osd.mil/dpap/dars/dfars/html/current/204_2.htm)

I think it's also good to share with you, historically, contracts were not required by Law to be written within an electronic computer system in the Federal government at all. However, that precedent changed with passage of the 2013 National Defense Authorization Act (NDAA) where Section 862 required that within 5 years the DOD "…require the use of electronic contract writing systems approved".(https://www.congress.gov/bill/112th-congress/house-bill/4310/text).
If contracts were not let in approved contract writing systems, they would be considered in violation of the Anti-Deficiency Act and carry criminal penalty. However, whether an internal control requirement defines an approved system as needing to have the entire contract file as data, or, the lesser sub set of DOD and Navy standards, has never been adjudicated. This being 2018, the law's only coming into effect today.

3. If your office plans to issue a paperless policy, what are the benefits of the system proposed?

This question is quirky because of the term 'system' here: is there an unstated assumption in the question a paperless contracting system exists, but is underutilized or unutilized in the DoN, and therefore, a policy could be issued to leverage it? Isn't it the case if the office was considering a paperless policy that policy may be uncoupled from the existence or capabilities of any system? It's a critical thinking position, but, what if this office was planning a paperless policy that all contracts are to be data in a set of 5 interrelated acquisition systems, the venn-diagram unity of which shall spontaneously render the contract any time a user demands? Or what if the policy is to require all contracts to be in a DOD cloud environment, or, multiple cloud environments? Are nested cloud environments considered systems? I just chuck these out to get the old noodle moving.

In short, I do not expect DASN(AP) to issue any further policy on 'paperless' contracting in the near term, except, as stated above, that when the ePS program is implemented I'm confident the contracting community will come back to the Governance Board again with the new system in service, along with its new capabilities, once promised but now realized, and a renewed business case regarding paperless potential will come forward with an associated policy mandate request; in parallel DOD level authorities with the Data Lake project and other tools, such as the aforementioned WAWF suite, will be hearing similar calls and, between the Army and Air Force capability as well, everyone will settle on new language at an appropriate level of authority and with the right rule making controls. If it's to be a DFAR level adjustment, for instance, it would require a DAR Council case and public comment.

Now, all that said, since this question really tries to get at advantages of a mythic 'system' – I will offer this perspective: I do not think it wise to emphasize system specific capabilities too much but instead focus on standards. For example, we have today a Procurement Data Standard (PDS) and a Procurement Business Intelligence Service (PBIS) at the DOD level. If the DON level service systems can generate contract information as data, conforming with these standards, it can share and replicate that data into the DOD and peer level system environments: why overly focus on converting paper to anything per se? Unless there's a case to be made information in paper only legacy non-closed contract files require capture at some cost…(https://dodprocurementtoolbox.com/site-pages/ebusiness-data-standards)

4. If considering paperless filing systems, what potential challenges to implementation and utilization exist?

As stated, there doesn't seem to be a challenge to implementing a paperless filing system in the DoN, if by paperless filling system the requirements of the ePS program are sufficient to generate a contract file as data (which is what the program's requirements language attempts to capture).

However, it remains to be seen whether or not vendors in the market vying for our business will be able to offer a technology set of solutions capable of meeting DoN's need here, and, there remains to be seen whether, if they do, political will and funds exist in the Department for a DoN wide migration strategy where all paper award files in existence to date become converted to digital format for loading.

My view presently is such money and will is not present in the Department at this time, however, there may be room for compromising going forward, and, there may be conditions in the field where more aggressive local leadership sees fit to 'go ahead' with digitizing their material off hand with organic workforce once ePS is real.

5. If your office does not plan to issue policy, what are the challenges with the absence of policy, and any potential benefits of retaining paper?

This question seems biased towards the 'There ought'a be a Law!' point of view. Policy mandated solutions to problems are never free of consequence.

First: is retention of paper the proper ill to define solving for? If so, why not burn all the contracts made of paper and say, see? The desks are all perfectly clean of paper now – no more paper problems. I suspect it's not the physicality of the paper that's at issue per se but the invisibility of the data trapped inside of them and the inability of that information to be effectively leveraged.

Second: If it is true the data entrapment problem is what's at core, then we have a business case matter. The DoN has a blend of computer systems today generating contracting data, but not complete contract files as data. We have a collection of legacy contract files in paper which are in various states of closeout status or retention status or administration status and represent various levels of complexity from simple fixed price supply awards to multiyear multi option cost plus incentive fee billion dollar ship construction deals. And we have an ongoing program called ePS to recapitalize the contract writing system environment such that an all data contract environment can be produced and sustained. Given this site picture, what would be the cost of labor and technology necessary to bring in the paper file information into the larger DoN system environment today, versus what it might cost tomorrow under ePS (if we could know)? Is that cost justified given the anticipated value of the data to be extracted from the paper files themselves (versus letting them atrophy out and having new awards be de facto created in the new system as data)? How do we measure the latent value of the information stored in the paper files? And if we do finally determine investment in digitizing all the files is worth it, does the Navy have the funding needed to make the investment at all, and if it does, would it be politically willing to do so?

Third: If policy is generated, even in compromise say, which mandates no future contracts can be in the form of paper, does this reduce the amount of paper contracts by 100%? Have you ever seen a nuclear ship repair contract and its ancillary spreadsheets and supporting files? They can routinely go into the hundreds of pages. It is not ordinary for most specialists to rely completely on a set of computer screens to read and draft contractual materials exclusively, and so printing is always done to some degree. Therefore, the only reasonable policy looks like one attempting to micro-manage a person's working level to a point where they're told how much printing of a contract they can or cannot do – and this kind of oversight would be occurring at a time the same official is criticized for working too slowly and not getting enough contracts out on time.

This is not a complete set of thoughts, however, it looks like once our computer systems evolve to a point where they can produce and maintain all digital contract file environments, the extent to which that environment is to be used has already been made 100% mandatory by Law. The stage is set for a natural attrition death of paper contract awards. What's interesting to investigate should be if there's a high probability any trapped historical data exists in the legacy paper files worth going after for DoN use in future negotiation.

6. What other considerations or factors should be considered in examining a paperless filing system for DOD contracting?

First, keeping contractors out of government only sections. There have been many cases in other DOD and DoN business systems where contractors are hired to provide support services, they sign NDAs of course, but then because of the way

the computer system roles are designed, those NDA's notwithstanding, the contractors get to see budget lines or they get to see contract awards or bids they're not supposed to. In this contract filing system the risk of exposure is very high if the safeguards are not made.

Also, in light of this sort of problem, I have been advocating for a new career path in the DOD/DoN for eBusiness. It would be GS-1102e. The idea is there are contracting officials today, and there will be in the future, who are the system administrators of our contracting system business environment and set the policy for these areas. They should have the proper training and experience commiserate with these roles and have billets coded appropriately. For instance, in a paperless filing system, I would want an 1102e to be the official with the power to determine if a record could be officially altered or deleted and justify as to why, as opposed to a 'normal' 1102 who's career is based on contract negotiation and award. This area of computer system oversight for business data and analytics is in dire need of more care and support.

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