

Balancing Austerity with the Cost of Digitization

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Abstract

This paper presents an overview of the efforts of the Defense Imagery Management Operations Center to fulfill its mission as the Visual Information Records Center to preserve, provide access to and ensure accountability of all visual information records throughout the U.S. Department of Defense.

Background

The Defense Media Activity (DMA) was established in 2008 to join geographically disparate offices of a similar mission within the U.S. Military and Department of Defense (DoD) media and mass communication fields into a central headquarters locality [1 & 2]. These individual offices and organizations had maintained their own collection of broadcast/motion productions, still imagery and other visual information. As part of DMA's relocation effort, the Defense Imagery Management Operations Center (DIMOC) operates the DoD Visual Information Records Center (VIRC) to consolidate the immense volume of visual information records.

The DIMOC's mission to integrate imagery capabilities while centrally managing and archiving current and historical visual information (VI) media from throughout the DoD is governed by U.S. Code Title 44, Code of Federal Regulations Title 36, DoD Instruction 5040.02, and the Office of the Secretary of Defense – Washington Headquarters Services Administrative Instruction 15 [3 & 4]. The DoD VI Records Center in Riverside, California houses more than 1.17 million items of physical media of still imagery, motion and audio recordings. Additionally, the DIMOC maintains an asset management system, internally named the Defense Asset Management System (DAMS), that holds 1.6 million digital assets of both still and motion imagery. (See figures 3-5 for an annual assessment of count added to the DIMOC holdings).

While DIMOC's mandate always included collecting content from offices throughout the DoD, the consolidation implicitly made DMA a priority customer for DIMOC's management of VI content. The adjustment to workload and workflow compelled DIMOC to conduct a mass storage and digitization study of all DoD visual information (VI) content held by these DMA offices and organizations.

Storage & Digitization Study

The purpose of the *DMA 2010 Mass Storage and Content Digitization Study* was to "conduct research to determine the near-term (within 12 months) and long-term (beyond 12 months) content digitization and storage requirements of DMA and [to] provide the DMA Director with appropriate courses of action [sic] along with cost estimates, to support the identified DMA digital archiving requirements using industry best practices and proven system architectures [5]." The study focused on the digitization and storage costs over three to five years, based on a sampling method inventory of content. The study's findings were astounding - specifically the size of the inventory, market research, costs, and

objective analysis of DMA's, and ultimately DIMOC's, management of visual information content thus far.

Figure 1, *Onsite and Online Inventories Grand Totals*, shows the compiled results across all DMA organizations worldwide. While this chart shows an item count, a media item like a DVD may contain more than one image or video asset. Therefore, the contractor applied a sampling method at the asset or record level while still counting the number of items. For example, a Betacam tape, an item, may contain more than one broadcast or asset. This sampling methodology of physical items tallied more than 300k video assets, 700k still imagery assets, 37k film assets, and 40k audio recordings. The survey of digital holdings identified 188.5 terabytes (TB) of file-based assets spread across a variety of still, motion and audio media formats [6]. If DMA elected to digitize all the physical assets, using a JPEG 2000 standard for both still and motion, the storage requirements increased by "10 to 50 fold" or roughly 10 petabytes (PB) over a three to five year period of digitization [7]. It is unlikely that all these physical assets would become permanent records to be sent to the National Archives and Records Administration (NARA). With this understanding, the Digitization and Storage Study assessed another sampling ratio and determined that about 3-5% of these assets, regardless of digital or physical format would be permanent. This equated to a 2 to 3PB minimum storage requirement. Disaster recovery and backup would require a range of 4 to 20PB of storage [8].

The study compared two cost options for physical asset digitization: In-house (DIMOC) manpower and equipment versus outsourced contractor manpower and equipment. Figure 6, *Outsourcing Budget Summary*, further decomposes the estimated costs by distinguishing between digitization conducted onsite within DIMOC's facility at \$14.9M and digitization conducted offsite or at a contractor facility at \$13.6M [9]. Figure 7, *In-House Budget Summary*, includes all government manpower, equipment and facilities at an estimated cost of \$11.8M over the same three to five years as the outsourcing budget summary [10].

This research also required two different requests for information (RFI) from industry. The first RFI was for industry standards for mass volume digitization and the second for the estimated costs of both the digitization and storage. These costs ranged from \$13.6M to \$14.9M for digitization and a mean estimate of \$38.6M for storage over a five-year period [11]. Proprietary information within these RFIs prohibits a detailed examination of findings. However, industry consensus estimated the government's cost burden at roughly \$50 million over five years for both the digitization and storage.

Defense Media Activity Mass Storage and Content Digitization Study Onsite and Online Inventories Grand Totals		
Media Type	Format	Total Number of Assets
Video	1/2"	5
	1"	540
	2"	6
	Betacam	12292
	BetacamSP	116323
	BetacamSX	5312
	Betamax	2961
	D2	99
	DigiBeta	2608
	DVCam	5243
	DVCPPro	8226
	HDV	511
	Hi8	1702
	IMX	10
	MiniDV	6693
	Umatic	2643
	VHS/SVHS	81337
XDCAM HD Professional Disc	221	
XDCAM Professional Disc	1083	
DVD	56881	
VCD	100	
Graphics	CD-Data	210173
	DDS Cartridge	16
	DVD-Data	195
	Floppy Disk	11
	Graphics 8"x10"	901
	Graphics 8"x10"-16"x20"	595
	Graphics >16"x20"	14689
	Magazine	52243
	Multimedia	132
	Negative-35mm	301378
	Negative-4"x5"	125
	Negative-5"x7"	20
	Negative-Medium Format	540
	Newsletter	
	Photographic Print <8"x10"	7305
	Photographic Print 8"x10"	53803
	Photographic Print 8"x10"-16"x20"	486
Photographic Print >16"x20"	214	
Slide	66373	
Textual Document		
Zip Disk	66	
Film	70mm	3
	35mm B&W Negative	2180
	35mm Color Negative	1185
	35mm Color Positive	2417
	35mm Negative w/Audio	70
	35mm Positive w/Audio	1906
	35mm Magnetic Audio Element	537
	35mm Optical Audio Element	2461
	16mm B&W Negative	648
	16mm B&W Positive	871
	16mm Color Negative	4250
	16mm Negative w/Audio	4289
	16mm Positive w/Audio	5314
	16mm Magnetic Audio Element	1415
	16mm Optical Audio Element	1731
	32/35mm Negative	8
	32/35mm Optical Audio Element	18
	1/4" Open Reel Audio Element	341
	8mm	1
16mm Unidentified Negatives and Work Prints	5645	
16mm Unidentified Projection Prints	290	
Unidentified Magnetic and Open Reel Audio Elements	2413	
Audio	LP	27113
	Audiocassette	4961
	1/4" Open Reel Audio	5
	CD-Audio	8314
	CD-Data	160

Figure 1, Onsite and Online Inventory Grand Totals

Lack of Resources & A New Model

Executive Order 13589 and a 2011 Presidential Memorandum put emphasis on the DIMOC mission to make these records reachable by both the DoD and the general public by requiring improvements to the management and accessibility of government records including visual information [12 & 13]. Also in 2011, DMA completed its relocation, and most of the physical content from worldwide DMA operations had arrived at the VIRC in Riverside, California. The pressure to resolve the lack of access to these records was increasing.

The *National Defense Authorization Act* applied additional pressure in 2012. House Resolution 4310 (HR 4310) called out DMA's Storage and Digitization Study and stated wrongly that "DMA eliminated the [sic] requirement" to digitize its "entire inventory of records, along with the capability to store, process, and disseminate these records electronically" [14]. This HR 4310 section titled "Digitization of Defense Media Activity Material" continued:

"The committee believes that this digitization effort has the potential to reduce operating costs and increase the efficiency for DMA in the long run. The committee urges the Secretary of Defense to reevaluate the priority for this initiative and provide adequate funding for completion [15]."

A Presidential Directive in 2012 followed the aforementioned Federal requirements, none of which came with additional funding [16]. DIMOC's operational budget in fiscal year (FY) 2010 was \$12 million with a programmed \$2.1 million for digitization expenses [17]. DIMOC's total staff is 39 government civilians, 12 military, and 26 contractors spread across three locations. DIMOC acknowledged the need to increase the accessibility while being efficient. However, during this period of budgetary and political battles within Congress, and perhaps because this draft section never made it into the final NDAA, DIMOC's \$2.1M outlay for digitization was decremented to \$500k as a result of budget cuts [18].

Necessity bred resourcefulness in the fall of 2012 as DIMOC was presented with a digitization model used by the National Archives: *Strategy for Digitizing Archival Materials for Public Access, 2007-2016* [19]. The National Archives used this model most recently to digitize the 1940 Census, released in April 2012. In this example, NARA partnered with Archives.com's parent company to digitize the census at no cost to NARA and the government. Archives.com received the exclusive right to charge an access fee to users via their website as a return on their investment for a period of five years. After this period, the census would be made free for public access to all users. Sacrificing the limited access for a period of five years, while still fulfilling their mission (and that of the Census Bureau by having the census available at no charge to all by visiting a NARA facility even during the exclusive period), NARA had acquired mass digitization and will receive the digital files far more quickly than their capabilities and budget permit.

DIMOC immediately presented this no-cost model to digitize the physical VI holdings to the DMA General Counsel who began researching the legal precedent.

Legal Precedent

In 1928, the Federal Trade Commission (FTC) entered into a no-cost contract with a stenography company, Sidney C. Ormsby Company. The General Accountability Office (GAO) Comptroller General favorably ruled that the FTC had not violated the 'voluntary services' prohibition of the Anti-Deficiency Act [20]. This section prohibits the Government from accepting free services or goods. The Comptroller General came to this conclusion:

"[The FTC] promises to give the contractor the exclusive rights to do such [stenographic] reporting together with the exclusive right to sell copies of transcripts to private individuals (general public) constitutes mutual promises sufficient to support a binding contract [21]." The decision held with the understanding and interpretation of the voluntary services as "not necessarily synonymous with gratuitous service, but contemplates service[s] furnished" by each party [22]. The decision in effect stated that because each party was receiving a good or service there is 1) a binding contract, and 2) the Government was giving something in exchange for something else not necessarily monetary – nothing was acquired by the Government for free that would violate voluntary services and change appropriations.

In a more recent no-cost contract, General Services Administration (GSA) awarded four real estate brokers with "exclusive rights to represent the United States with respect to all GSA real property leases" in exchange for the brokers' lease acquisition services [23].

"Reflecting industry practices," the real estate brokers would stipulate in the contract that they "had no expectation of payment from the government and GSA had no financial liability to the brokers...nor would any other party pay the brokers on the government's behalf...consistent with industry norms, the brokers would receive commissions from land lords with whom they did business [24]."

GAO concluded that "accepting services without payment pursuant to a valid, binding no-cost contract does *not* [sic] augment any agency's appropriation nor does it violate the voluntary services prohibition [25]." Within a footnote to the decision, GAO commented for additional clarity that "no-cost contract" is a "misnomer, since there would be no valid contract without mutual consideration [26]." The comment then cites the 1928 FTC decision, "services rendered under a formal contract free of cost to the United States do not cause the contract to be void for lack of consideration when the contract also contains mutual promises of the contracting parties by which each...party obtains a substantial benefit" [27].

With legal precedent established, DIMOC began collaboration with DMA's contracting office.

Compromise & Solicitation

DIMOC expeditiously wrote and solicited a request for proposals (RFP) for a no-cost solution to the mass digitization and storage of its physical holdings. The objective was to "obtain a solution that provides for digitization of various formats of still and motion media...and a system that is capable of receiving, storing, and delivering digital media transmitted...worldwide" [28].

Over 20 companies attended an industry day to gauge interest in a no-cost contract model. Feedback was immediate and clear: Industry was stunned that DIMOC had so much content and that we were asking a company to risk investing so much (government estimate at \$50M) over a period of five years without any profit prediction. Industry wanted the government to share some of the startup costs as a sign of good faith and viability for the contract's success — a cost-share variant of the NARA no-cost model. Further validating this in-person feedback, DIMOC received only four responses to the RFP, three of which asserted that a cost-share contract was required. The silver lining was that all the RFPs validated the Digitization and Storage Study's findings and market research, further confirming the legitimacy of DIMOC's requirements for mass digitization and storage [29].

After planning for digitization, acquiring a real inventory, studying the market research, receiving Executive Branch and DoD requirements, and taking a reduction in its planned digitization and storage budget, DIMOC was left with no other justifiable option than a cost-share contract valued at \$7.5 million over a 10-year period [30].

The baseline foundation for the Statement of Objectives (SOO) for the digitization and storage effort was boiled down to three key aspects of the original study: digitization, storage and retrieval. The DIMOC staff built specific requirements for each of these key points.

The digitization requirement was non-discriminatory with regard to physical formats. As seen in Figure 1, DIMOC had legacy formats ranging from unique 70mm film to abundant 35mm slides and Betacam. The contextual metadata of the motion media was more descriptive than that of the still collection; largely due to poor data entry processes and an antiquated database system. It was far easier to record the titles of motion asset cases and canisters in DIMOC's physical holdings catalog than it was to annotate sheets of 35mm slides with geographic locations like "Iraq," or military exercise names like "RIMPAC," or capture dates and photographer's names. Realizing that they had often been the DoD dumping ground for VI from field offices no longer capable or willing to organize content prior to submission, DIMOC had to prescribe the digitization requirement with little understanding of its own physical still image collection.

DIMOC's rationale for soliciting the digitization of all of its physical holdings came with the understanding that not everything needed to be digitized; not everything that required digitization would become a permanent record for accessioning to the National Archives. With this in mind, and given the heavy investment on necessary equipment and space, the solicitation included an option for the contractor to exclude the film assets. Another option for the contractor was the acquisition of DIMOC's current digital holdings, at the time estimated at 1.2 million images. DIMOC also included a 60-day inventory period for the vendor to appease some of the concerns over the still image collection missing descriptive metadata. Additionally, DIMOC required a mutually agreed upon prioritization schedule which set the order for physical media digitization based on a 60-day inventory and negotiations with potential subcontractors.

DIMOC's unique mission within the DMA as the collector of content as opposed to content creator has implications for the agency as a whole. The storage of visual information records

caused an unforeseen change in DMA's future. The requirement to collect, store and preserve VI records for the DoD required DMA to support DIMOC's comprehensive objectives. Therefore, DIMOC's second characteristic of the digitization contract compelled DMA to think beyond its immediate five-year planning process for storage and migration. This solicitation required DIMOC to procure storage that takes copies of the digitized digital assets during budget out-years 5 through 10. The volume projected in the 2010 Study anticipated about 10PB of content, well over DMA's storage availability even today. With assistance from the DMA Chief Technology Officer (CTO), DIMOC wrote the following requirement into the SOO for storage requirements:

"DIMOC will establish a schedule with the contractor to receive digital *copies* of the content from the contractor. The Government is amicable to a scalable storage system with the overall minimum requirement of a redundant/back-up storage and server configuration" [31]. By not dictating discrete storage specifications, DIMOC expected industry to provide a future solution to its storage growth and requirements.

The last characteristic, retrieval, was likely the most intriguing for industry to consider. DIMOC offered an exclusivity period beginning with digitization in year one *and concluding* 10 years from the end of the contract. During this period, much like the NARA model, the vendor could charge an access fee for non-DoD customers. All DoD customers would receive free access and use as DoD clientele, the primary customers for DIMOC. Requirements for retrieval included a federated search using DIMOC's asset management system, high to low resolution download and streaming options, and authentication of DoD clients to waive the access fee and exclusivity [32].

The use of a statement of objectives (SOO) was ideal. It permitted DIMOC to describe the requirements within three characteristics of digitization, storage and retrieval without requiring finite details. The incentive to provide an approach and solution was equal to the return on investment for a vendor. The quicker they could digitize, the more assets available to charge a convenience fee in exchange for access and therefore the quicker a return on investment. Moreover, the SOO generated vendor proposals that became the performance work statement for the contract. The SOO's scope of effort read:

"This cost-share solution is defined as the contractor providing a service of digitization, storage and retrieval of records on an exclusive basis for a pre-determined period [10 years], in advance and in exchange for charging the public a fee for access to those records [33]."

Normally the price of the contract is not part of the solicitation, but this type of risk and need for up-front costs required the solicitation to include the value so that vendors could scale their approaches. The contract was awarded based on best value to the Government within the \$7.5M over a 10-year period of performance. An award within best value permits consideration of the benefits; for example, how much is digitized or stored can be considered for a best business judgment [32]. Offers proposing additional benefits to the government could also be considered. In essence, the biggest bang for the buck to the government wins.

Roadblock & Restructuring

Acting as the approval authority for contracts greater than \$5M and without explanation, the Defense Logistics Agency denied the following justification for a \$7.5M contract over 10 years:

"The genesis of this contract is that the Government holds under its control a vast archive of visual media...that has monetary value in content (artistically, editorially and historically) *if* immediate accessibility to the public and commercial enterprise can be provided. The Government does not have the resources, and will not for the foreseeable future, to provide digitization and storage of VI records for the Department and the public as required by law, Presidential directive and policy...The Government is prepared to provide limited funds up to \$1M [sic] per year for the first five years during the initial mass digitization effort...[t]he last five-year period will cost the Government \$500k per year. These out years will...provide the Government a period to plan and purchase storage separately...for the digitized copies produced. This is favored in place of purchasing storage at the same time as purchasing the digitization of a mass volume of content" [34].

As a result of the Defense Logistics Agency decision, DIMOC modified the solicitation to a five-year, \$4.995M contract for digitization, storage and retrieval. This kept the contract within DMA's internal contracting authority to maintain interest and viability for vendors. DIMOC sustained the exclusivity provision, which covered the five-year period of performance and ten years post-contract. Preserving the entire period of exclusivity offered a potential return on investment despite the decreased value [35]. To mitigate perceived risks to industry, DMA contracting justified a bilateral termination agreement. This arrangement permitted either party to end the contract if there was no benefit. If the vendor was not able to achieve a return on their investment or was not able to recoup their costs in sales, they could terminate the contract without penalty, unlike traditional government contracts that may only be terminated at the discretion of the government. As DIMOC completed the contract restructuring, their FY 2013 and 2014 budgets were reduced to \$7.4M and \$6.1M respectively. With a budget shortfall of \$1.3M - nearly a 50% budget reduction since 2010 - DIMOC considered this high-risk solicitation their last-ditch effort. [36].

Award

The *Source Selection Decision Document* weighted four factors higher than cost: Technical approach/management plan, experience, past performance and subcontracting plan. Declaring these factors "significantly more important than price" favors a best value, firm-fixed price model and ensures that whichever proposal provides the government with the most benefit in meeting the overall objective to digitize, store and provide retrieval shall be awarded the contract [37].

The technical approach/management plan factor requested a comprehensive program management plan, including workflow for digitization, storage, and delivery of content to government and public customers. Specifically, DIMOC desired the vendor to deliver a minimum 20 percent of digitized media back to the government per year, a back-up solution incorporating disaster recovery, safeguarding provisions including a public firewall to protect sensitive or non-released content, and a security

accountability plan for physical media during digitization. The quality assurance plan allowed a one percent error rate for metadata, file formats and playback/delivery [38].

Proven performance and capability were based upon relevant experience with digitizing similar volumes (minimum 50K media items) of still imagery, motion and sound recordings, while also providing storage and access. Source selection committee members viewed vendor past performance questionnaires and asked additional standard questions of all references [39].

The subcontracting plan required documentation to verify maximum opportunities for small business firms, such as veteran-owned, service-disabled veteran-owned, women-owned, HUB Zone, and small disadvantaged businesses (SDB). [40].

After conducting another successful industry day, responding to more than 30 formal solicitation questions from potential vendors, and sequestering the source selection committee for a week, DMA awarded the contract to T3Media, Inc. in August 2013 [41]. Disclosure agreements prevent a detailed discussion of the proposals; however, T3Media's services include film scanning and digitization, metadata services including curation, development and system integration and cloud storage. From T3Media's *About Us* webpage:

"T3Media...offers cloud-based storage, access and licensing for enterprise-scale video libraries. Its technology Platform and services enable media owners to generate new value from their content while managing cost and complexity. Through [licensing] and [T3Media's] global sales force, the company licenses sports, news, and creative footage to producers in advertising, entertainment, publishing, and emerging media [42]."

Results & Conclusion

DMA and DIMOC will receive exactly what the government requested in the solicitation: digitization, storage and retrieval. T3Media's projections for digitization over the period of performance exceed reasonable expectations. At the time of writing, DIMOC has already seen digitized still and motion assets and jointly conducted metadata normalization. These initial deliverables authoritatively demonstrate T3Media's dedication to fine-tuning workflow, security and accountability of physical assets, and their overall ability to provide immediate results. While only seven months into the first year, many milestones are still ahead, most notably T3Media's web portal becoming available for public access.

The initial results can be searched and viewed at www.t3media.com/DIMOC. To date, projections for the end of year one are 50k assets digitized, with another 1.2 million born-digital assets also available.

DIMOC expects to present additional results and refined technical assessments at next year's IS&T Archiving conference.

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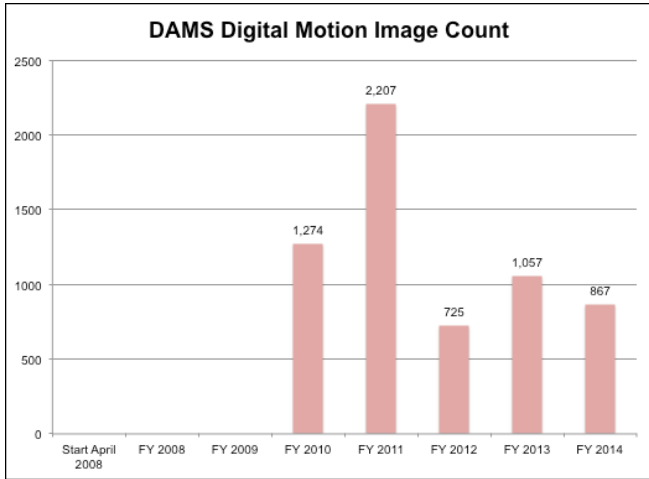


Figure 2, DAMS Digital Motion

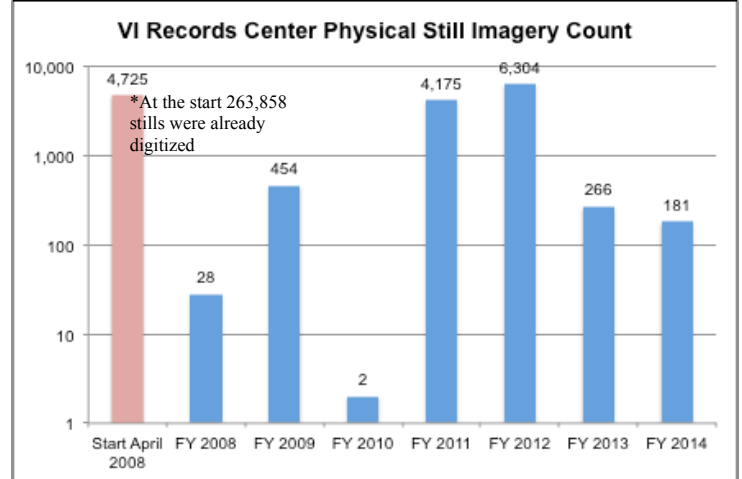


Figure 4, VI Records Center Physical Still Imagery Count

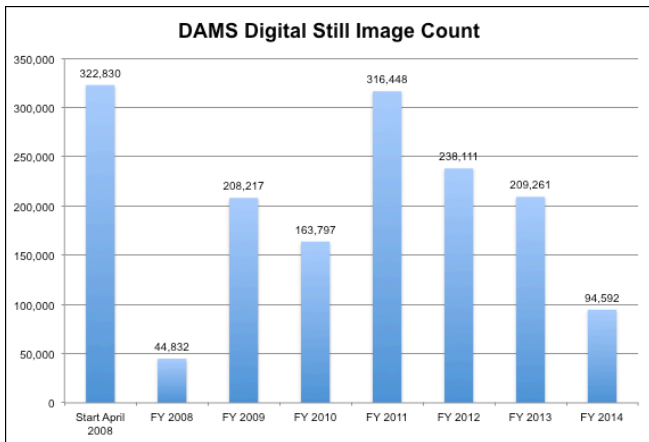


Figure 3, DAMS Digital Still

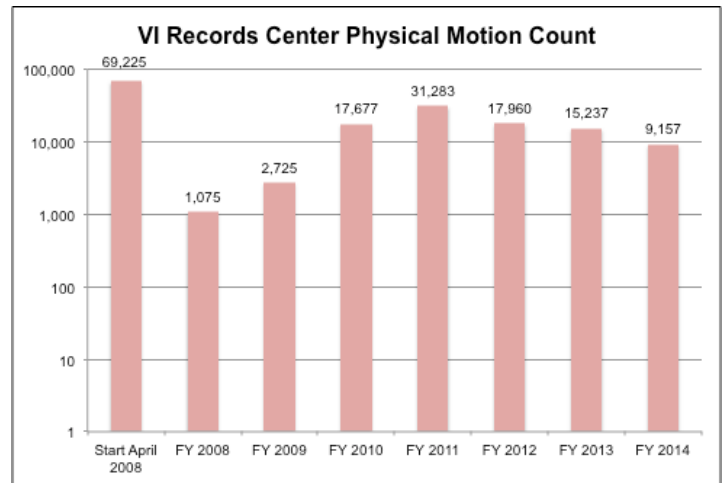


Figure 5, VI Records Center Physical Motion Count

Outsourcing Budget Summary				
Item/Activity	Offsite	Onsite	Reference Tab	Comments
Outsourcing: Stills	\$ 641,088.22	\$ 641,088.22	All Outsourcing	
Outsourcing: Video	\$ 10,581,623.29	\$ 11,569,841.29	All Outsourcing	
Outsourcing: Audio	\$ 1,000.00	\$ 1,000.00	NA	Used number from In-house supplemental outsourcing tab
Staffing: General & Administrative	\$ 638,315.00	\$ 638,315.00	Outsource Staffing	
Staffing: Stills	\$ 542,300.00	\$ 542,300.00	Outsource Staffing	Quality Assurance
Staffing: Video	\$ 271,150.00	\$ 271,150.00	Outsource Staffing	Quality Assurance
Equipment: Stills	\$ 47,375.00	\$ 47,375.00	Outsourcing Equip. Pricing	Includes Maintenance Contracts and Installation
Equipment: Video	\$ 310,125.00	\$ 310,125.00	Outsourcing Equip. Pricing	Includes Maintenance Contracts and Installation
Media Storage: Stills	\$ 8,582.26	\$ -	NA	\$110 per LTO5, used without compression yielding 1.5TB per tape
Media Storage: Video	\$ 333,717.72	\$ -	NA	\$110 per LTO5, used without compression yielding 1.5TB per tape
Facilities: Stills Buildout	\$ -	\$ 150,000.00	NA	1500 square feet at \$100/sf
Facilities: Video Buildout	\$ -	\$ 150,000.00	NA	1500 square feet at \$100/sf
Utilities: Stills	\$ -	\$ 66,307.00	NA	\$1000 per month with 5% increases per year
Utilities: Video	\$ -	\$ 132,615.00	NA	\$2000 per month with 5% increases per year
Real Estate: Stills	\$ -	\$ 199,092.50	NA	\$25 per square foot per year, with 3% increase per year
Real Estate: Video	\$ -	\$ 199,092.50	NA	\$25 per square foot per year, with 3% increase per year
Media Shipping: Stills	\$ 40,000.00	\$ -	NA	Based on cubic inches and FedEx Critical Care, with 50% contingencies for inefficiencies and overages
Media Shipping: Video	\$ 170,000.00	\$ -	NA	Based on cubic inches and FedEx Critical Care, with 50% contingencies for inefficiencies and overages
Equipment Shipping: Stills	\$ 947.50	\$ 947.50	NA	Based on 2% of equipment cost
Equipment Shipping: Video	\$ 6,202.50	\$ 6,202.50	NA	Based on 2% of equipment cost
Stills Subtotal	\$ 1,599,450.49	\$ 1,966,267.72		
Video Subtotal	\$ 11,991,976.01	\$ 12,958,183.79		
TOTAL	\$ 13,592,426.50	\$ 14,925,451.51		

Figure 6, Outsourcing Budget Summary

In-House Budget Summary				
Item/Activity	Onsite	Reference Tab	Comments	
Staffing: General and Administrative	\$ 1,958,445.00	InHouse Staffing		
Staffing: Direct Labor Stills	\$ 976,615.00	InHouse Staffing		
Staffing: Direct Labor Video	\$ 1,041,881.00	InHouse Staffing		
Equipment: Stills	\$ 816,250.00	InHouse Equip. Pricing	Includes Installation and Maintenance Contracts	
Equipment: Video	\$ 3,580,446.00	InHouse Equip. Pricing	Includes Installation and Maintenance Contracts	
Facilities: Stills Buildout	\$ 150,000.00	InHouse SAMMA Pricing	1500 square feet at \$100/sf	
Facilities: Video Buildout	\$ 150,000.00	NA	1500 square feet at \$100/sf	
Utilities: Stills	\$ 66,307.00	NA	\$1000 per month with 5% increases per year	
Utilities: Video	\$ 132,615.00	NA	\$2000 per month with 5% increases per year	
Real Estate: Stills	\$ 199,092.50	NA	\$25 per square foot per year, with 3% increase per year	
Real Estate: Video	\$ 199,092.50	NA	\$25 per square foot per year, with 3% increase per year	
Supplemental Outsourcing: Stills	\$ 22,052.32	NA		
Supplemental Outsourcing: Video	\$ 183,037.09	InHouse Supplement Outsourcing	Includes Labor for QC	
Media Shipping: Stills	\$ 30,000.00	NA	Based on cubic inches and FedEx Critical Care, with 100% contingencies for inefficiencies and overages	
Media Shipping: Video	\$ 30,000.00	NA	Based on cubic inches and FedEx Critical Care, with 100% contingencies for inefficiencies and overages	
Equipment Shipping: Stills	\$ 16,325.00	NA	2% of equipment costs	
Equipment Shipping: Video	\$ 71,608.92	NA	2% of equipment costs	
Stills Subtotal	\$ 3,255,864.32			
Video Subtotal	\$ 6,367,903.01			
TOTAL	\$ 9,623,767.33			

Figure 7, In-House Budget Summary