

Creating a Digital Fingerprint Archive for New York State Law Enforcement

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Session GOV03

By Way of Introduction

- 49 years old, married, three children ages 13, 22, 26
- Project Management Professional (PMP) since 2001
- Keane Senior Principal Consultant, 22 years experience
- Managed Network, Systems Integration, Application Development Projects for 13 Years
- Certified Keane and US Army Trainer
- Accomplished Blogger, Writer, and Speaker
- Fourth PMI Congress presentation (2003, 2007, 2008)

Agenda

- Criminal Justice in New York
- Change Catalyst
- Project Opportunity
- Risk Assessment and Anticipated Benefits
- Project Management Challenges
- Lessons Learned and Results

Criminal Justice in New York

New York State Layers of Public Protection

- NYS Integrated Justice (IJ):
 - Office of Homeland Security (OHS)
 - Division of Criminal Justice Services (DCJS)
 - New York State Police
 - Department of Correctional Services (DOCS)
 - Division of Parole
- County Sheriffs and other Local Law Enforcement
- District Attorneys & District Courts

Division of Criminal Justice (DCJS) Mission

- **Enhance Public Safety and Improve Criminal Justice through Core functions:**
 - criminal history checks and fingerprint operations
 - providing timely information, public safety, law enforcement training
 - breathalyzer and speed enforcement equipment repair
 - accreditation of police departments and forensic laboratories
 - coordination of grant funds, Uniform Crime Reporting, research, hosting criminal justice boards and commissions

DCJS Mission (continued)

- **Additional Priorities:**
 - **Sex Offender Management** – public outreach and education, community participation
 - **Sentencing Commission** –top-to-bottom review of New York’s sentencing statutes
 - **Reduce Violent and Firearm Crime**
 - **Reduce Recidivism through Re-entry**
 - **Increase DNA Collection and Compliance**
 - **Information Systems and Performance Management**
 - **Human Trafficking**

Change Catalyst

- Move of Central Files (Fingerprint Archives)
- Archive collocated with leased Warehouse space
- Lease ending, with no renewal after numerous extensions
- Storage and retrieval requirements for Archives would add complexity, site re-engineering, scope, and significant cost to new Warehouse lease

Project Opportunity

- NYS Fingerprint & Criminal History archive:
 - 20.929 million paper fingerprint cards
 - 1.790 million other documents
 - 2,150 filing cabinets and storage bins
 - 17,500 square feet of storage
 - Net +700,000 new cards added per year
 - Manual manipulation: 300 cards requested daily for court proceedings & other identification processing

Risk Assessment (As-Is)

- Unique and critical value law enforcement records
- Risks due to fire, water or other damage are significant
- Loss of these records would jeopardize public safety
- High cost of maintenance and manipulation
- Low integration with electronic systems and records

Benefits of a Digital Archive

- Risk mitigation:
 - Greatly reduce the risk of irretrievable loss of records
- Cost avoidance:
 - Maintenance costs significantly reduced
- Efficiencies and other opportunities:
 - Greater processing efficiencies with increased integration with other DCJS systems and data
 - Increase in quality through the use of digital image vs. paper, due to the effects on paper and ink over time

Benefits of a Digital Archive (*cont.*)

- Significant cost savings:
 - Eventual elimination of printed (higher cost) card stock
 - Reduce requisite support and management costs
 - Reduction of maintenance personnel by 11 full time equivalents (FTE), for a net \$310,000 savings.
 - Elimination of ~85% of activities dedicated to management and maintenance of documents
 - Achieve space savings (taxes, heat, A/C and electric) of over \$235,000 annually
 - Achieve decades of continued savings adding up to many millions of dollars -- hardcopy fingerprint records are often retained for 100 years

Benefits of a Digital Archive (cont.)

- Processing efficiencies:
 - Eliminate the need to print cards from files, merely to maintain these records in paper form
 - Over 90 percent of the fingerprint cards received are in an electronic message format (NIST)
 - Yet, after 90 days the electronic images were destroyed
 - Creating a digital archive would allow DCJS to reverse the then current practice of “*keeping the paper and tossing the digital version*”

Electronic Content Management (ECM)

- DCJS lacked the ability to store a large number of images away from the main processing platform
- DCJS needed to construct an archive platform large enough to hold 20 million cards (up to 1 MB per card)
- DCJS sought an enterprise solution for archiving, versus a targeted solution for just fingerprints
- Enterprise content management (ECM) allows DCJS to store vast quantities of documents in multiple formats
- ECM also provides sophisticated search, open architecture, and easier interface to other systems and processes

Alignment with DCJS Strategy

- Enterprise content management (ECM) achieved two DCJS Executive Priorities:
 - Improving Information Systems and Performance Management by eliminating the practice of printing cards, and implementing the archiving of electronically submitted fingerprint cards; and
 - Supporting the conversion to [the new DCJS] State-wide Automated Biometric Identification System (SABIS) by standardizing the current data stores for loading into the new databases

Project Risks

- Judicial Scrutiny and Image Quality
- Imposed Deadlines and Ebbing Sponsorship
- Bigger Scope
- Resource Contention
- Data Security & Sensitivity
- Procurement Cycle and Delays

Risk: Judicial Scrutiny

- During project initiation, project sponsors and stakeholders raised serious concerns:
 - Federal and State legal requirements
 - DCJS fingerprint examiners routinely testify about the basis for identifications and processes used to acquire, compare, verify identifications
 - Would DCJS incur judicial challenges about chain of custody or validity of identifications?

Digital Public Records

- Conversion of public records from paper to other media began in the 1930's
- Accelerated after World War II with many types of records converted to microfiche
- Efforts to protect records, reduce storage, and facilitate the distribution of information
- In the 1980s, microfiche/film converted to digital media to increase speed of processing & retrieval
(*Cohasset Associates, 2009*)

Mitigation: Avoidance

- By formal legal opinion, court finding, and explicitly in Federal and State statutes:
 - Digital records have a legal standing equivalent to any paper version of the same records (with demonstrable process and established practice)
 - Digital image copies have been validated as a “writing” under Federal rules of evidence
 - Just as paper records, digital image copies are admissible as evidence, provided such records can successfully pass long established evidentiary hurdles (*Cohasset Associates, 2009*)

Risk: Image Quality

- Serious operational concerns over image quality:
 - Documents used in court require strict adherence to evidentiary requirements, chain of custody, and verification of procedures used to yield identifications
 - Records from the archives constitute the evidentiary repository to support formal identifications
 - Public safety depends on accuracy identification
 - Identification system depends on quality target database
 - Image quality loss thus negatively affects public safety

Mitigation: Testing & Quality Assurance

- DCJS and scanning vendor performed extensive testing of scan and print configurations
- Confirmed computer, application, and printer that allowed for mass scanning with the highest quality image
- Used commercially available hardware and software:
 - Computer, server, and printer items from existing inventory
 - Very modest expenditure on graphics software
- Scan & index audit checks to identify image quality loss
- DCJS implemented quality assurance (QA) with visual check on 2% of all scanned images

Risk: Imposed Deadlines

- Central Files facility due to close by February 28, 2009 due to expiration of lease
- Preparation of files ready for SABIS Conversion needed to be completed by March 31, 2009
- Imposed a fixed completion for Scanning and final storage of fingerprint records

Mitigation: Contingency Plans

- Scanning resources could not be hired in quantities necessary to recoup schedule delays
- Multiple contingency plans were developed:
 - Secure alternate work locations for preparation, scanning, quality assurance (QA), and storage
 - Prepare extensive movement and logistics plans attendant to work allocation and distribution
 - Move operations to existing DCJS facilities, to engage the scanning vendor in post-project, additional scope scanning and knowledge transfer to in-house personnel

Risk: Ebbing Sponsorship

- Slip in management and user sponsorship:
 - Perceptions that scanning process would be intrusive and disruptive to ongoing operations
 - Challenge of managing close to 14,000 boxes of fingerprint cards and other records
 - Risk that the project team would not be able to accurately track and report project progress for good decision-making on contingency plans.

Mitigation: Dashboard

- Implemented comprehensive system to track boxes of fingerprint cards in prep, scanning, QA, and records retention
- Dashboard showed boxes in progress for each process & cumulative work completed
- Facilitated a weekly Status Review, presenting results, issues, & progress

Mitigation: Status & Forecasting

- Regular update of progress and re-forecast of Phase and activity deliverables
- Contingency plans relating to changes in scope and reassignment of resources were prepared to accommodate schedule delays
- Environmental changes, external project delays, and executed contingency plans successfully mitigated risks

Risk: Bigger Scope

- DCJS used various sampling and estimating techniques to determine the total number of records to be scanned, and the time required to prepare and scan fingerprint cards
- DCJS anticipated the risk of cost escalation due to miscalculation of the number of cards, or difficulties with cards. Some of the records were 50 years old or older.

Mitigation: Batch (Boxes)

- With an estimated 20 million cards, DCJS tracked work progress by boxes of approximately 1,600 records each
- Unique box identifiers and NYS Identification (NYSID) numbers allowed for easier card retrieval of records still inside preparation and scanning processes
- Continued to refine estimates using multiple, diverse sampling techniques
- Monitored on-going scanning progress
- Compared actual versus forecast/estimates
- Regularly developed revised forecasts for management

Risk: Resource Contention

- Need for Enterprise development and testing resources for coding and systems integration
- Need to coordinate ECM implementation:
 - facilities, network, infrastructure, storage area network (SAN), and database
- Vendor personnel already on staff at DCJS:
 - High value in assisting ECM implementation
 - Involvement could pose a risk to vital maintenance of essential existing DCJS operations

Mitigation: Added Procurement

- Augment internal technical resources with ECM and Imaging subject matter experts
- Expenditures anticipated and included in Business Case and Project Scope documents
- Assignment of vendor personnel carefully controlled to limit involvement to staff not currently engaged in critical activities

Risk: Data Security & Sensitivity

- NYS DCJS must adhere to Federal Bureau of Investigation (FBI) fingerprint image quality specifications, security and access standards and procedures
- To implement contingency moves of fingerprint records to alternate sites for preparation, scanning, and QA, needed to thoroughly vet contingency plans

Mitigation: Enhanced Security

- 24 by 7, direct visual observation, door locks and access systems were implemented
- Post-scanning retention of fingerprint cards adhered to guidelines established by the NY State Archives and Records Administration (SARA), and implemented as documents were placed in storage in SRC facilities

Risk: Procurement Cycle

- Project start-up especially challenging
- Rigid site security screening process
 - Designed for hiring permanent long term staff
 - Processes not very responsive to the urgency of getting the scanning operation underway
 - Hardware acquisitions, and site set up completed well in advance of staff start-up
 - Significantly delayed full project ramp-up

Special Procurement

- NY State provides for special procurements through Industries for the Disabled (IFTD)
- IFTD facilitates procurements for services provided for people with disabilities
- Potential staff may suffer from mental health or former substance abuse
- Security screenings could prove challenging
- Any criminal history could preclude access to sensitive law enforcement records

Mitigation: Change Requests

- Additional resources procured to prepare records properly for high speed scanning
- Changed requirements to allow scanned records to be stored prior to online QA
- Added costs offset by reductions due to extraneous paper and records purged prior to scanning, reducing amount of scanning
- Project completion delayed, but within costs

Risk: Implementation Delays

- Testing led DCJS to adopt an image resolution higher than originally specified
- Doubled the average size of scanned images
- Needed to procure an additional 40 terabytes (Tb) for a total of 80 Tb of disk
- Delayed production load of scanned images to the new Oracle Universal Content Management (UCM) ECM system.

Mitigation: Acceptance & Contingency

- Continued to aggressively work back with technical groups to expedite implementation
- Developed temporary retrieval mechanism for Operational access to scanned images
- Managed Stakeholder expectations
- Scheduled demonstrations and training on temporary & permanent retrieval processes

What Worked Well

- Progress Tracking and Reporting
 - Progress communicated in boxes of fingerprint cards
 - Metrics updated weekly based on actual counts
 - 13,000 boxes with 19.5 million records scanned
- Weekly Project Status Meeting
 - Review of Status Report with key stakeholders
 - Metrics Dashboard allowed senior management, stakeholders, and the project team to track progress and compare achieved results against forecasts
 - Regular re-forecasting allowed stakeholders to plan for contingencies and execute contingency plans

Work Worked Well (*cont.*)

- Subject Matter Expertise
 - DCJS assigned a Central Files manager with senior level experience with fingerprint archive operations to oversee and manage preparation of records for scanning
 - Manager selected and trained staff, gathered work metrics, responded to frequent changes and issues, enforced record preparation standards, and served as go-between for project and Operations
 - Very dedicated, accomplished excellent results while managing normal Central Files operations

Work Worked Well (*cont.*)

- Experienced Vendor
 - DCJS engaged scanning vendor with large scale scanning experience within NYS Government
 - Scanning resources engaged through IFTD were enthusiastic, dedicated and professional
 - Vendor demonstrated exceptional flexibility, responsiveness, and quality, at a very competitive cost
 - Vendor maintained an indexing accuracy of 99.996%, compared to a requirement of 99.95%
 - An extra “sigma” of accuracy for these vital records

Work Worked Well (*cont.*)

- Project Sponsor
 - NYS Government, high volume, scanning expertise
 - Facilitated problem resolution with senior management
 - Terrific support for Senior Management, stakeholders, PM, and project team
- Detailed Requirements
 - Thoroughly defined as part of separate SAFIS upgrade
 - Facilitated identification of work breakdown structure (WBS) and appropriate assignment of resources

Work Worked Well (*cont.*)

- Adequate Budget
 - Full and accurate estimation of project costs based on a comprehensive set of requirements
- Over-estimation of Scope
 - Conservative estimate of 22 million records
 - Actual records scanned ended up at just over 19.5 million, over 10% lower than estimated
 - Allowed project to accommodate increased hardware costs of additional storage, and still yield a total cost lower than estimated

Work Worked Well (*cont.*)

- Senior Management Buy-In
 - Committed to the project from inception
 - Decision-makers maintained situational awareness
 - Greatly facilitated prompt problem resolution
- Contingency Planning
 - Alerted stakeholders to need for contingency planning as soon as forecasts showed potential schedule slippage beyond lease end date
 - Allowed two successive moves of the entire storage, preparation, scanning and QA operations for the project
 - Critical stakeholders were drawn in to planning, and kept involved through execution of plans
 - Guaranteed a smoother project execution

Conclusion

With the creation of the SAFIS digital fingerprint archive, New York becomes the first state to convert their fingerprint records to a digital archive

Questions?

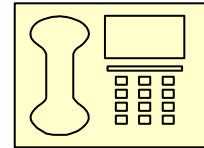


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