COPY

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
400 North Street, 5th Floor
Harrisburg, PA 17120-0041

May 15, 2006

Mr. Iftikar Ahmad
Viisage Technology
296 Concord Road, 3rd Floor
Billerica, MA 01821

NOTICE TO PROCEED
Date 5-16-06

RE: Contract 359820 Supplement C
"PennDOT Digital Driver Licensing System"

Dear Mr. Ahmad:

Attached is an executed copy of Contract No. 359820 – Supplement C for the subject project. As discussed on the telephone this morning, this letter establishes May 16, 2006 as the effective date for the notice to proceed. Contract 359820 Supplement C extends the contract for an additional 7 years and 5 months with an expiration date for of December 27, 2013. Supplement C provides for an additional $45,047,761.14.

If you have any questions, please call me at 717-787-9677 or email me at dsellers@state.pa.us .

Sincerely,

Darlene Sellers

Darlene Sellers
RFP Administrator
Bureau of Office Services

cc: Linda Conrad, Office of the Comptroller
Dennis Martz, Project Manager

ViiSAGE

March 24, 2006

Ms. Darlene Sellers
Bureau of Office Services
Pennsylvania Department of Transportation
400 North St. 5th Floor
Harrisburg, PA 17101

RE: Contract Supplement No. 359820C
"PennDOT Digital Driver Licensing System"

Dear Ms. Sellers:

Contract No. 359820 "PennDOT Digital Driver Licensing System" provided for $21,460,000.00 to Viisage Technology to be expended over a 60-month period to provide for the preparation and servicing of the Pennsylvania digitized driver licensing system which produces quality Driver Licensing and other identification products. The notice to proceed date was June 21, 2000.

Contract Supplement No. 359820A provided funding to supplement the agreement. The contract value was increased by $364,000.00 increasing the total price of the contract to $21,824,000. The completion date remained unchanged.

Contract Supplement No. 359820B provided an additional $2,561,113.28 to Viisage, bringing the total contract value to $24,385,113.28. The completion date remained unchanged (July 27, 2006 – 60 months from the issuance of the first paid driver's license).

This Contract Supplement No. 359820C renews the contract for an additional 7 years, 5 months which will begin on July 28, 2006 and end on December 27, 2013. The contract value is also increased by $45,047,761.14 increasing the total cost of the contract to $69,432,874.42. This supplement also provides for continuation of work defined under Contract 359820 and will allow implementation of a technology refresh for a new and upgraded system and database cleansing capabilities as outlined in the attached Exhibit A, "Contract Extension Proposal for Digital Driver License and Identification Card System," dated March 13, 2006. The price for database cleansing, outlined on page 28 of this proposal, is $2,300,000.00 (included in Supplement No. 359820C value) and will be invoiced at the completion of each noted milestone. Work as defined under Appendix C, "Proposal and Statement of Work for FaceEXPLORER System Providing Database Cleansing Capabilities" shall begin immediately upon full execution of Contract Supplement No. 359820C by notice to proceed.

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Billerica, MA 01821
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1215 South Clark Street
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Arlington, VA 22202
Tel: +1 703-414-5800
FAX: +1 703-414-5835

Additionally, modifications to the contract will be required to meet current Commonwealth provisions. These are as follows:

- **Section 2, Incorporation by Reference:** Commonwealth Travel Policies, dated December 21, 1999, is hereby replaced with Commonwealth Travel Policies, dated January 6, 2006.

- **Section 27, Notices:** Representative of the PARTIES will be updated as to the Commonwealth: Darlene Sellers or her designee, Pennsylvania Department of Transportation, Bureau of Office Services, 400 North St, 5th Floor, Harrisburg, PA 17120.

- **Section 29, Virus, Malicious, Mischievous or Destructive Programming:** This section will be added with the following paragraphs:

    1. Notwithstanding any other provision in this Contract to the contrary, provided the COMMONWEALTH has fully complied with its software security standards, if the Contractor or any of its employees, subcontractors or consultants introduces a virus or malicious, mischievous or destructive programming into the COMMONWEALTH and has failed to comply with the COMMONWEALTH software security standards and provided further that the COMMONWEALTH can demonstrate that the virus or malicious, mischievous or destructive programming was introduced by the CONTRACTOR or any of its employees, subcontractors or consultants, the CONTRACTOR shall be liable for any damage to any data and/or software owned or licensed by the COMMONWEALTH in the event a computer virus or malicious mischievous or destructive programming is discovered to have originated from the CONTRACTOR, its servants, agents, or employees. In addition, the CONTRACTOR shall be liable for the damages incurred by the COMMONWEALTH including, but not limited to, the expenditure of COMMONWEALTH funds to eliminate or remove a computer virus or malicious mischievous or destructive programming that result from the CONTRACTOR'S failure to take proactive measures to keep virus or malicious, mischievous or destructive programming from originating from the CONTRACTOR, its servants, agents or employees through appropriate firewalls and maintenance of anti-virus software and software security updates (such as operating systems security patches, etc.). In the event of destruction or modification of software, the CONTRACTOR shall eliminate the virus, malicious, mischievous or destructive programming, restore the COMMONWEALTH'S software, and be liable to the COMMONWEALTH for any resulting damages. The CONTRACTOR shall be responsible for reviewing COMMONWEALTH software security standards and complying with those standards.

    2. The COMMONWEALTH may, at any time, audit, by a means deemed appropriate by the COMMONWEALTH, any computing devices being used by representatives of the CONTRACTOR to provide services to the COMMONWEALTH for the sole purpose of determining whether those devices have anti-virus software with current virus signature files and the current

minimum operating system patches or workarounds have been installed. Devices found to be out of compliance will immediately be disconnected and will not be permitted to connect or reconnect to the COMMONWEALTH network until the proper installation have been made.

The CONTRACTOR may use the anti-virus software used by the COMMONWEALTH to protect CONTRACTOR'S computing devices used in the course of providing services to the COMMONWEALTH. It is understood that the CONTRACTOR may not install the software on any computing device not being used to provide services to the COMMONWEALTH, and that all copies of the software will be removed from all devices upon termination of this Contract.

- **Section 30, Information Technology Bulletins (ITB) Index:** This section will be added with the following paragraph:

  Service providers delivering services/systems to agencies under the Governor's jurisdiction are required to comply with the IT standards and policies issued by the Governor's Office of Administration, Office for Information Technology (OA/OIT), for the Commonwealth enterprise. Please see Information Technology Bulletins (ITB) Index (found at http://www.oit.state.pa.us/oaoit). When agency and/or service provider believes there is a need to deviate from standards/policies, they must first receive approval to do so from the OA/OIT's Deputy Secretary.

All other terms and conditions of Contract 359820 and subsequent supplements not modified by this supplement shall remain in full force and effect.

ATTEST:

BY: _____
ELLIOT J. MARK

TITLE: Senior VP & General Counsel

DATE: March 24, 2006

BY: _____
IFTIKHAR A AHMAD

TITLE: Senior Vice President, Global Services

DATE: March 24, 2006

IN WITNESS WHEREOF, the parties have executed this Agreement the date first above written.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BY Darlene Sellers 3-27-06
TITLE DATE

APPROVED AS TO LEGALITY
AND FORM

BY Michael H. Kline 3/28/06
For Chief Counsel 3/27/06 DATE

BY Amy M. Elliott 5/09/06
Deputy Attorney General DATE

BY [signature] 4.18.06
Deputy General Counsel DATE

359820-C
RECORDED NO. 3900006118
CERTIFIED FUNDS AVAILABLE UNDER
SAP NO. 10580-05/06/07/08-454
SAP COST CENTER 7877201000
GL ACCOUNT 6343118
AMOUNT 45,047,761.14

BY Michael C. Zogby II 4/14/06
For Comptroller DATE

Exhibit A

PE

Bureau of Office Services
Commonwealth of Pennsylvania
Department of Transportation
Commonwealth Keystone Building
400 North Street, 5th Floor
Harrisburg, PA 17120-0041

Contract Extension
Proposal for
Digital Driver License and Identification Card System

ORIGINAL COPY

Contract #: 359820

March 13, 2006

ViiSAGE

296 Concord Road, Third Floor
Billerica, MA 01821
Phone: (978) 932-2200
Fax: (978) 932-2225
www.viisage.com

March 13, 2006

Ms. Betty Serian
Deputy Secretary for Safety Administration
Pennsylvania Safety Administration, Department of Transportation
1101 S. Front Street, 4th Floor
Riverfront Office Center
Harrisburg, PA 17104-0000

Subject: Extension to Digital Driver License System Contract 359820.

Dear Betty:

Attached please find Viisage's revised proposal for subject contract amendment to provide technology refresh for the driver license system. Our contract with you, as specified in the RFP 98-20 page 1, Section I-5, is a 5 year contract that can optionally be extended up to 10 more years. Per your guidance, for a 7 year 5 month extension, we are providing **full technology refresh** to meet Requirements A through O and tasks A through H of RFP 98-20, as proposed in our Proposal dated November 18, 1999, contracted in 359820 and its amendment 359820-A and our discussions during the past several months. Additionally, we will provide **database cleansing of images**, it is priced separately on milestone basis.

The technology refresh will incorporate new and better performing hardware and software. The attached proposal documents the new capability, functionality and features required by PennDOT to implement current needs and bring the system in compliance to the latest AAMVA standards and other Commonwealth and Federal requirements which require improving the issuance processes and to lay the foundation for end-to-end identity issuance, credential security and identity validation needs. Duplicate analysis of data will check all 9+ million drivers for duplicates.

Our partnership has been one of the most valuable experience and we are fortunate to have PennDOT as one our most esteemed customer. We are delighted to have the opportunity to serve PennDOT for another seven years and assure you that the commitment and service you expect from us will be further enhanced. Our company has reorganized around the "Trusted Identity" and we define ourselves as the premier provider of end-to-end advanced technology ID solutions. We will bring our collective experience and expertise to the service of PennDOT and enable you to be the thought leader and a reference model in the industry and in America. We look forward to an early decision to enable us to start work on the technology refresh and to meet your schedule. Should you have any questions please call me at 978-932-2230.

Sincerely,

Iftikhar A. Ahmad
Senior Vice President, Global Services

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SECTION 1
INTRODUCTION

Background

In 1999 PennDOT issued RFP 98-20 for the procurement of digital driver system to replace its aging system. In competitive bid where four bidders participated, Viisage submitted its proposal dated November 18, 1999 and was found to be qualified bidder that would provide PennDOT the best value. Contract number 359820 dated June 19, 2000 was issued to Viisage with a base period of five (5) card production years along with an option to extend up to ten (10) additional years incorporating mutually agreed upon technology refresh options. Contract Amendment 359820-A dated August 10, 2001 was later issued which pertained to communication infrastructure for Duplicate Workstations.

After the development of the system and its installation in 2000-2001 Viisage has been providing service to PennDOT meeting, and where possible, exceeding the requirements of the contract. The base contract ends on July 27, 2006. PennDOT and Viisage have been working together to define the technology refresh requirements as well as additional capabilities that PennDOT seeks to implement to meet the changing business conditions and compliance requirements.

To meet the future needs, PennDOT has decided to exercise a seven (7) year and five (5) months extension of the contract which will enable Viisage to serve PennDOT till the year December 27, 2013 at which time PennDOT may choose to conduct another selective technology refresh for the final two years and seven months option years remaining in the contract. Additionally, the work to be done for **database cleansing** of mages is included (please see the Proposal/Statement of Work **Appendix C**).

Proposal Summary

This document is Viisage's proposal that lists the technology refresh components for the new and upgraded system for PennDOT. It provides incorporation of new and better performing hardware and software along with new capability, functionality and features required by PennDOT which enables meeting current needs and bringing the system in compliance to the latest AAMVA standards available at the time of system design and laying the foundation for other Commonwealth and Federal requirements. It further improves the driver license issuance processes to enable securing the end-to-end identity issuance process, credential security and validation needs. In accord with

PennDOT guidance and our contractual obligations this extension proposal contains full technology refresh to meet the Requirements A through O and tasks A through H of RFP 98-20, as proposed in our proposal dated November 18, 1999, our current contract 359820 along with its amendment 359820-A.

The functional capabilities of the current system are not reproduced in this proposal. These functional capabilities will remain similar to the current system. Enhancements will be made to utilize the new and better performing hardware and software. During the system design phase PennDOT and Viisage will work in good faith to document the system requirements, functional capability and design. Additionally, during the enhancement and the system design phase, Viisage will make ongoing best efforts to work cooperatively with the PennDOT Legacy Replacement project team in the development of the new PennDOT computer system.

The following documents are hereby made part of this extension proposal:

1. Contract 359820 and Amendment 359820-A
2. RFP 98-20 for Digital Driver License System
3. Viisage Proposal dated November 18, 1999

A contract amendment will be issued by PennDOT to incorporate the changes identified herein. A summary of items is given below:

Full technology refresh includes:

- New 153 Photo Workstation with 310 printers
- New 56 Duplicate Workstation with 56 printers
- New Central Image Servers (Primary and Backup)
- New Central Printing System to support the current volume of centrally printed cards and add the central printing of cards for new/first-time applicants
- Motor Voter System and Voting data submitted electronically to the counties via the Dept of State's Statewide Uniform Registry of Electors (SURE) system Valid Without Photo Capability in accord with PennDOT mailing requirements
- Image Retrieval/Administrative/Test Systems and Capabilities
- Web Server to Replace Fax-On-Demand System
- Secure Inventory Management System (SIMS)
- Image Retrieval Access to JNET with six (6) concurrent user licenses
- New and Upgraded Network replacing ISDN lines to DSL lines

New and Additional Capabilities, over the current contract include:

- Serialized Card Tracking
- Backup CIS to be moved to Viisage Head Office with secure communication
- SIMS Enhancement to meet PennDOT needs

- Central Printing and Mailing of first-time Applicants and Automated Image Comparison prior to Central Card Printing.[1] Postage will be billed monthly as a separate line item to PennDOT
- Image Suppression
- Card Security Features (new features inserted every 2 years, website to track features, AAMVA compliance excluding incorporation of AAMVA UID OVD)

Future Considerations:

The following changes may be considered in the future :

1. Impact to card volume due renewal cycle changing from 4 years to 5 years. At the time of change PennDOT will specify the yearly renewal volume reduction. Viisage will provide the new card price based on volume of cards for the remainder of the contract period. As an estimate the pricing section includes price change for 500,000 reduction in card volume.
2. Viisage provided state-wide network may be brought in-house by PennDOT (impact on yearly basis from 2009 onwards). PennDOT may provide the entire network.
3. Uploading a copy of images to PennDOT mainframe.
4. Incorporation of AAMVA UID OVD feature when it is made available. Price for implementing the AAMVA OVD will be provided separately.
5. Incorporation of Real ID Act requirements and other federal and commonwealth compliance requirements as these requirements are quantified. The associated cost to meet this requirements will be provided separately.
6. Card volume basis is estimated on total 3,500,000 cards/year which includes 500,000 additional temporary cards made per year for first time applicants. It also includes 10,000 test cards/year at no additional costs (test cards will be tracked and reported on the monthly card report).
7. PennDOT and Viisage will work together to identify a quality control process that will ensure cards are meeting defined quality standards and tolerances.
8. Travel policies in the original contract and as amended in Supplement A will reflect changes to current PennDOT travel policies.

[1] Automated image comparison is an option to be included if/when legacy duplicate image comparison project is implemented.

SECTION 2
TECHNOLOGY REFRESH

This section summaries high level detail of the system components. Functional requirements will be incorporated in the Function Design Documents prepared during the joint sessions held in first 3 – 4 months after contract extension. Copies of the documents will be provided to PennDOT for feedback and approval prior to making system changes. These documents will include the latest PC's and Servers that are available with the cost estimates prepared by Viisage.

Digital Workstations and Duplicate Configuration

- Pentium IV, 512 MB, (2) 40GB HD
- Two (2) flat panel monitors (1 monitor for Duplicate Workstation)
- Windows XP Professional
- Digital Camera with flash (excluded in Duplicate Workstation)
- New Paper Signature Capture Device (Excluded from Duplicate Workstation)
- Promise RAID card
- New Bar code Reader, new Customer Keypad (Excluded from Duplicate WS)
- New UPS
- New Receipt Printer (Excluded from Duplicate Workstation)
- New DL/ID Card Printer
- Duplicate Workstations at existing sites (same functionality as today)
- One (1) Valid-without-photo (VWP) workstation (same functionality as today)

Photo Imaging Application

- Windows XP Pro Application Logon
- USB Secure ID key logon
- New Barcode Reader Software
- Digital Photo Capture
- Electronic signature capture from paper slip
- Electronic Voter Registration
- Serial Card Tracking and Card Preview
- Paper Receipt
- Card Issuance and reprints
- Audit log
- Reports
- User Management Functions
- Improved Data Transmission

- Improved Secure Inventory Management System

DL/ID Card Solution

- Single-side lamination 1 mil with OVD and UV plus additional security features
- 85/15 PVC/PET composite
- Magnetic Stripe
- Layered security features; AAMVA Level I, II, and III security features (see below)
- Serialized card stock (serial number encoded in magnetic stripe and printed 1-D plus card serial number
- Serial number on security laminate roll

DL/ID card Security Features

- Front security lamination; equivalent or better then current overlay
- Level 1 and 2 card security features:
  - OVD Top Laminate (security overlay)
  - Ghost Image
  - Overlapping data
  - Deliberate Errors/Know flaws
  - Non-standard type fonts
  - UV Ink
  - Microprint
  - Guilloche background pattern
  - Digital Laid Lines
  - Laser Retrievable Image or equivalent
  - Security Font
  - Variable Hue Lines
  - Serialized Card Stock
- One (1) Level 3 security features, such as special IR tagant

All the security features listed above are available to PennDOT to select from. Viisage will work with PennDOT to select the best layered combination. A description of each security feature is provided in Appendix B.

DL/ID Card Printer

A dye sublimation printer that prints a card in about 1 minute, desired characteristics include:

- 300 dots per inch resolution
- Two side card printing (front color/back black)
- Security laminate on the front of the card
- Capability for dual side lamination
- One-step process requiring no operator intervention
- Prints several security features (i.e. guilloche background, ghost image, etc.)
- Produce a 2-D bar code on card back
- Reads card serial number, encodes and verifies magnetic strip on card back
- Security features to prevent unauthorized use
- Alerts the Operator when supplies require replenishment
- Supplies are replaced in a few minutes
- Easy laminate & cleaning tape loading cassettes
- Printer size compatible to current printer
- Replace printer carts if the selected printer does not fit the existing carts

Notes:

1. Printed card, colors and print area may not exactly match the current card. Final color selection and card design layout will be approved by PennDOT
2. During design phase Viisage will conduct a benchmark test of the two top printers (most likely one from Zebra and one from Datacard) and share the results with PennDOT. A card durability test by an independent lab will be conducted on the printer/card solution selected before final decision.
3. PennDOT and Viisage will mutually agree on the card layout, security and design features.

Central Image Server

- Two (2) Dell PowerEdge Dual-Xeon Server
- RAID5 with hot spare, with increased capacity to store legacy images as well as those collected during the extension period (additioanl storage to be added in increments, as needed)
- Windows 2003 Server
- Oracle 10g
- LTO or SDLT Tape Library
- Gigabit Ethernet adapters and switch
- Synchronize backup CIS over the internet using Oracle encryption. Provide network connectivity between primary and backup
- Provide automatic switch over if primary down (power or other reasons)

- Provide production statistics and other reports

Web Based Retrieval

- Two (2) Dell PowerEdge Dual-Xeon Server
- RAID 1 (mirrored drives)
- Gigabit Ethernet adapter
- Windows 2003
- Backup web server matching primary
- Increased client licenses
- Expanded application functionality enabling web access instead of Eax-On-Demand

Central Printing – Duplicate and Renewal

- Dell Dimension systems for server and workstation with higher processor, more memory, hard disk and gigabit Ethernet
- Windows XP or 2003
- Both systems will be configured as backups for each other so that the entire system can run off of one machine should the other one fail.
- Ability to handle 500 cards/day for Mail-in Duplicates/Renewals
- Security system at Central Site

Network Upgrade

- Replace ISDN routers with DSL Routers
- All DSL Lines
- New main router
- JNET to continue to provide their router at Flank Drive
- Mainframe connectivity and router to be continued to be provided by PennDOT along with analog line to trouble shoot network
- Redundant backup CIS site located at Viisage site with secure high speed network link

Secure Inventory Management System

- Manages card material and consumables inventory
- Real time tracking of inventory levels, orders, shipment, consumption, returns, transfers, etc.
- Inventory reporting and auditing
- Automated inventory replenishment

A detailed design meeting will be held with PennDOT to finlize the SIMS upgrade details to meet the above requirements.

Program Management

We will continue to provide program management services. Our plan includes:

- Program Manager at Viisage
- Full-time in-state Program Manager for the PA Digital Driver License program

The designated Program Manager and In-state Program Manager will be approved by PennDOT.

Installation

- Re-conduct site surveys for optimum configuration
- Prepare installation plan with PennDOT
- The responsibilities of Viisage and the Department will remain the same as before
- De-install and dispose old equipment; install new systems
- Flawless transition to new system

Training

- To be provided at 12 regional PennDOT sites. A training plan and training schedule will be a provided to PennDOT for approval.
- New operational manuals will be developed
- One new operational manual per site, and one duplicate workstation manual per site that has an OTC duplicate workstation will be distributed
- 4-hour refresher "day after installation" training to be supplied for 1st day of operation
- Maximum use of current GUI to enable lower learning curve

Operations and Service

- Continued support structure meeting perfomance times
- Conduct an analysis with PennDOT to further improve service delivery
- Help Desk Plan
  - Live help desk during PennDOT "open" hours
  - Addition of staff to handle PennDOT calls
- Extended motor voter database support on election days
  - Electronic VRAs will include Driver License/ID card number of the applicant
  - Electronic VRAs will be transmitted to the Counties via the SURE system within 24 hours of a Voter Registration deadline.
- Field Service
  - Continued responsive customer service with available staff of 12 field

service technicians (outsourced as current)
  - Flexibility in supporting office moves and relocations
  - Continued reports provided to PennDOT auditors as required
  - Continued maintenance and support for network
  - Continued weekly meetings with in-state program manager
- Improved service tracking by migration from Applix to Oracle
- Define and document a defective card process working jointly with PennDOT

SECTION 3
NEW CAPABILITIES & FUNCTIONALITIES

This section identifies the system capabilities over and above the current system. These capability and changes have been incorporated in the per card price. Detailed description and specification will be developed in the function design phase during the first 3 – 4 months after contract extension.

The technology refresh will be conducted in accord with the schedule provided in Section 7, however, the database cleansing project will however be initiated at time of execution of the extension contract.

SIMS

- Identify and track items gone missing
  - Classify missing items through comments field, record type of missing occurrence
  - Generate report to account for materials not consumed
- Unique User ID for each License Technician (allow each usage record to be linked to specific person) with report generation capability that adds information by site and by user
- Share inventory between multiple working groups at a single location without having to provide each group its own site designation
- Provide report with 30-day history on all serial numbers available and used during a particular period by a site.

Back-up CIS Move to Billerica

- Install communication lines to Harrisburg
- Install network hardware & software
- Allocate space and setup new CIS at Viisage HO
- Enhance application to automatically switch to backup server
- Install software to monitor and generate automated alarms for CIS services not working
- Increase reliability and availability of CIS

Serial Number and Tracking of Cards

- Each card will have unique serial number
  - Serial number pre-encoded in the magnetic stripe
  - Serial number and 1-D barcode will be printed above magnetic stripe PennDOT can choose to eliminate the 1-D barcode as an option at no cost as long as the inventory on hand is used up first. However, the serial number must be printed on the card for physical verification purposes
- Modify SIMS and applications
  - SIMS tracks lots with serial number cards (received/shipped)
  - Printer reads magnetic stripe and passes serial number to application
  - Application logs unique serial number with applicant DL/ID #
  - Data mined to CIS and tracked
  - CIS keeps track of which applicant got which card #
  - SIMS keeps track of card material shipped to each site
  - CIS & SIMS data is reconciled to ascertain any missing cards
  - PennDOT audits/reports and investigation of missing cards.

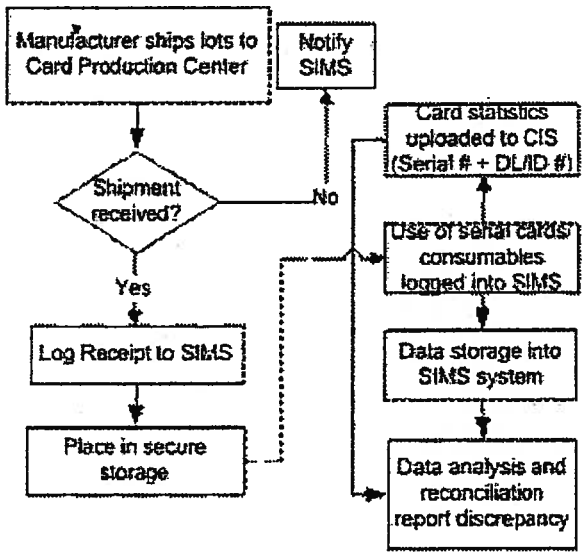


Figure 3: Simplified Flow of Card Tracking

During the requirements analysis phase of the project, Viisage will work with PennDOT in defining and implementing Serial tracking of cards. In summary, SIMS will track the "raw material" and its fulfillment. Once the cards start to be used, i.e., customer specific data is printed on the cards with the first step of the printer reading

the serial number of the card, the association of the card serial number is then married to the applicant specific data printed on the card, this data will finally reside in the Central Image Server (CIS) since the card is now no longer "raw material" and it has transformed to a DL/ID card with applicant specific data. Likewise, functions such as "Void" or "Reject" are also kept in the CIS. The CIS will be programmed to compare the raw material report received from the SIMS system and compare it to card production data it has and produce card tracking reconciliation reports. These reports will identify serial cards not used which can then be compared to physical inventory at site. As stated above, the final system design will provide further details.

First-time Applicant Central Printing

- For all new DL/ID applicants issue temporary plastic DL/ID cards in branch offices. This card with have the same features as the permanent DL/ID card except it will state that it is a "Temporary Card" and provides an expiry date.
- After clearnce given by PennDOT, issue about 500,000 permanent DL/ID cards per year from a contral printing and mailing site.
- Add printing capability to current central printing to enable over 2,000 cards per day to be printed and mailed to applicants.
- Maniframe changes made by PennDOT to provide a flag from Mainframe to indicate that this is first-time applicant and central printing required
- Processing of customers at photo center will done in the same manner as current
- Photo Workstation issues a temporary plastic card (same as the DL/ID card). Design and expiry of card to be determined by PennDOT.
- PennDOT conducts background investigation of each record verifying it on-line and other methods (Automated image comparison is an option to be included if/when legacy duplicate image comparison project is implemented.)
- Once clearance is received from PennDOT cards printed at central site and mailed to customer within two (2) business days
- Production report and card production status provided to PennDOT
- Postal charges provided by PennDOT and billed as a separate line item on the monthly invoice by Viisage
- All returned mail sent to PennDOT

Simplified overview of central printing the process is given below. Details will be finalized during the design phase.

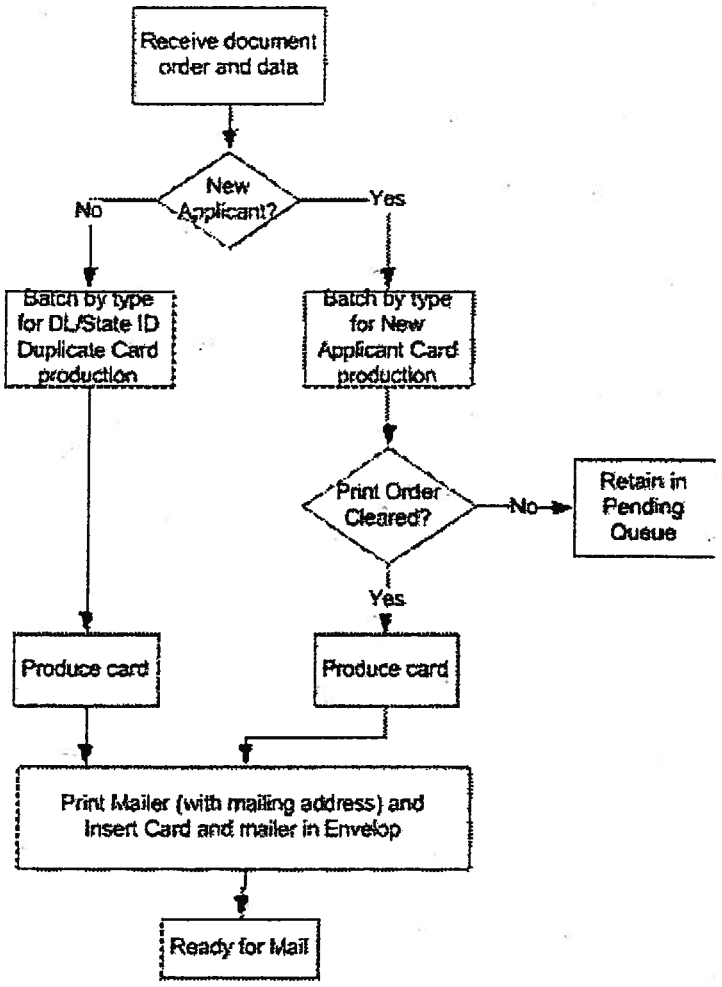
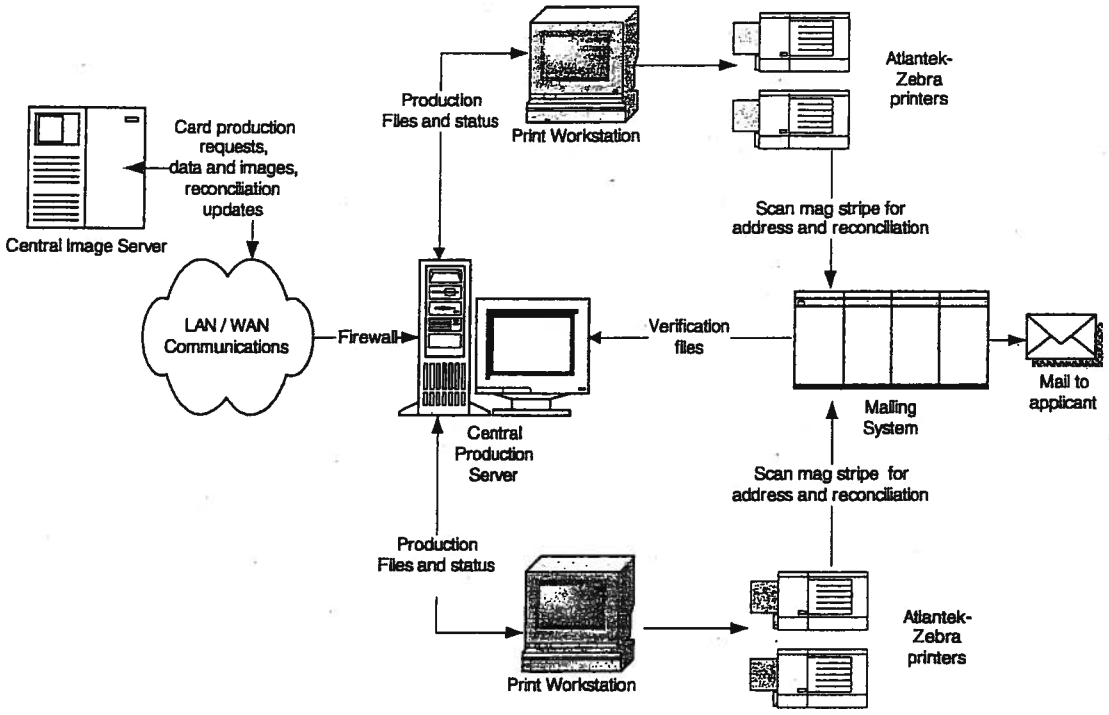


Figure 4: Simplified Flow of Central Card Printing

The following figure illustrates the Central Printing System.



Four print workstations will be provided to handle 2,000 cards/day. Each POD will have 2 printers.

Figure 5: Print Farm Architecture

Central Printing Front-end (Photo Workstation) Impact

- Minimal impact on current process
  - Data to include flag for central printing (PennDOT will make the required mainframe modifications needed)
  - Photo Application reads 2-D barcode on photo card and after photo and signature capture automatically sends print request to the card printer print a plastic temporary card

Central Printing Back-end Impact

- Significantly higher card volume
  - Capacity to produce 2,000 cards/day to meet 500,000 cards/year
- New and enhanced central production server
  - Printing cards only after PennDOT releases record and optional duplicate image verification check
- New and enhanced print farm printing workstations
- New high speed card printers

- Automated card mailing system with mag. stripe or 2D barcode reading capability, automatic adhesion of card to card carrier, printing mailing address and insertion of card to envelop
- Card production reports
- Modifications to central mailing facility
  - Upgrade/construct room to handle new mailing system and additional systems to support higher card volume
- Exception handling procedures and processes
- Mailing reconciliation and other reports

The following figure shows an image of the mailing system.

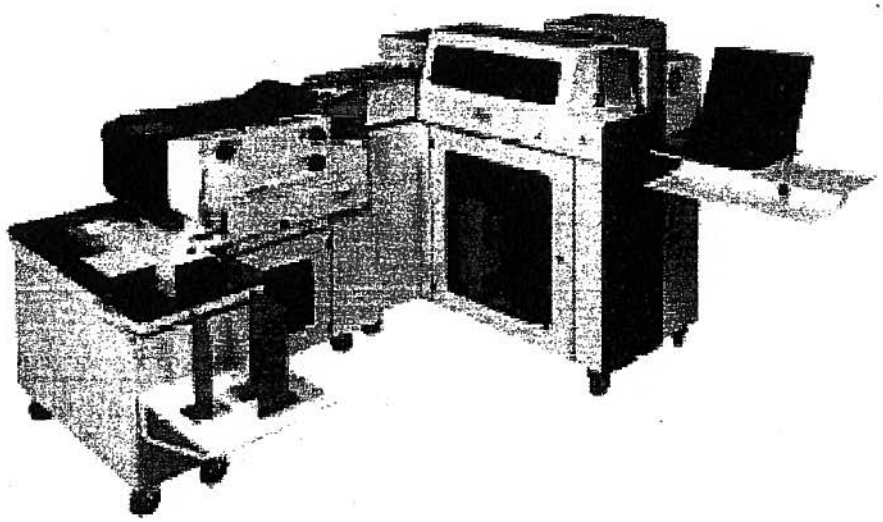


Figure 6: Mailing System

Image Suppression

- Provide a web based application
- Functionality:
  - Authorized PennDOT staff log's in to application
  - Application allows setting a flag to suppress/release image
  - A flag is set on CIS to suppress image and send a "Valid without Photo" message when retrieval request received
  - Tracking of images suppressed and operator
- Enables PennDOT full control of image suppression process and retains the integrity and confidentiality of data

Card Security Features Enhancements

- Time released security features and tracking
  - New card Security upgrade plan every 2 Years (replace with equivalent feature)
  - Develop a secure website hosting for security features listing of all versions of card issued by Viisage systems
- Four (4) Card Types added during contract extension period
- Redesign of card to latest AAMVA spec available during system design phase
  - Excluding unified OVD, pink color and other elements not desired
  - Magnetic stripe and barcode to comply with latest AAMVA spec

Viisage will setup and host a secure website on the Department's network. Web page layout and data content will be discussed during requirements analysis phase and then implemented by Viisage. The design of the site will take into considerations security, concurrent users/login, administration of the site and users/login, etc. Ongoing changes and user account management will be performed by PennDOT designated personnel.

Database Cleansing and Duplicate Analysis of Images

Pennsylvania, like almost all other government credential issuing agencies, is attempting to stem the flow of fraudulently issued IDs and Driver's Licenses. The problem is universal and growing at an alarming rate. **The federal government through the Real ID Act is mandating the improvement and hardening of the identity proofing and validation process.** This project is intended to:

1) Provide a database cleansing solution to assist in the identification of individuals attempting to receive fraudulent DL/ID credentials.
2) Continue the support of and expand on the current IntraID PennDOT implementation of FaceEXPLORER through the additional implementation of Duplicate Analysis search capabilities.
3) Provide a real-time investigative tool for fraud investigation.
4) Provide capability to utilize FaceEXPLORER as a tool to identify instances of fraudulent credential issuance through the daily batch processing of Duplicate Analysis and IntraID verification.
5) FR enable the entire 25 million legacy images with Viisage FaceEXPLORER templates.
6) Create templates for all new images captured at the workstations for the term of the contract.
7) Check for multiple identities of nearly 9 million registered drivers.

Project details for this task are given in **Appendix C**.

SECTION 4
PILOT SYSTEMS

Auto Head Find

Viisage will incorporate the auto-head feature in the DL application for pilot testing. PennDOT can test the auto-head feature during the acceptance test and pilot production phase of the project. this capability has been vastly improved and successfully installed in nearly 700 photo workstations in several states. It enhances the overall photo capture process by making it more consistent with nearly same size images that are properly centered thus improving the quality of the document. Viisage will disable the auto-head find feature if the performance does not meet the requirement of the State.

Biometric Login

Viisage will incorporate the operator biometric finger print log-in functionality in the DL application for pilot testing. PennDOT can test the biometric log-in feature during the acceptance test phase of the project. Viisage will remove the biometric log-in feature if the performance does not meet the requirement of the State. If PennDOT decides to use this feature then Viisage will implement this functionality on all photo and OTC duplicate workstations. The cost for this option is provided in the Pricing section.

SECTION 5
EXTENSION BASIS

Contract Extension Period and Card Volume

Contract Extension Period:

- Card Production Years; July 28, 2006 to December 27, 2013

Estimated Yearly Card Volume:

- New yearly card volume of 3,500,000 cards
- Includes 500,000 temporary plastic cards/year
- Includes 10,000 test cards/year

SECTION 6
SERB PLAN

In accord with the contract Viisage will continue to meet the current contract requirements of three percent (3%) of contract value for SERB participation.

With PennDOT's approval and assistance and Department of General Services (DGS) approval the current SERB, LWN Enterprise, has been terminated as of June 30, 2005. While our contract with this SERB did not stipulate any severance package, however, following the DGS instructions we have agreed to provide a $40,000 severance package to LWN.

Viisage has been negotiating with DATAMAR a qualified SERB in Pennsylvania. DATAMAR has taken over the day-today operations required of the PennDOT contract that were performed by LWN. This transition has been made completely smooth without any interruption to PennDOT. Viisage is currently finalizing the long-term contract with DATAMAR and intends to use this SERB for the extension.

Rosemary McAvoy of DATAMAR has substantial experience working for the Commonwealth of Pennsylvania and due to our strained business relationship with LWN we have conducted substantial due diligence to ensure that we have a good working relationship with the SERB that can meet PennDOT needs. We are in final phase of concluding our long term negotiation and contract with DATAMAR.

SECTION 7
HIGH LEVEL SCHEDULE & KEY DATES

Provided below is a tentative schedule following PennDOT's guidance to do the state-wide roll-out of the new system in 2007, while implementing back-end processes in 2006, after four (4) months of planning in the beginning 2006. The 3 month rollout period will include all deliverables under this project and the implementation dates will be included in the detailed project schedule

TECHNOLOGY REFRESH PLAN

Action	Date
Updated Proposal Submission	March 13, 2006
Amended contract completed/signed	April 10, 2006
Technology Refresh Project Kick-off	April 10, 2006
Planning and Design	April – May 2006
Develop Backend System (CIS, etc.)	May 2005 – July 2006
Test Implement Backend Systems:	August – November 2006
Develop Front-End System (DL, Dup WS)	August 2006 – January 2007
Training / Acceptance Testing	February - March 2007
Photo, Duplicate, VWP WS State-wide Rollout	March - July 2007

DATABASE CLEANSING PLAN AND MILESTONES

Project starts at time of execution/signing of the extension contract.

Phase I

Milestone I – FaceEXPLORER System Server Hardware Acquisition

Scheduled/Tentative Completion Date: 04/20/06

Milestone II – FaceEXPLORER System Configuration with Legacy Data Port

Scheduled/Tentative Completion Date: 05/15/06

Milestone III – Legacy Template Creation

Scheduled/Tentaive Completion Date: 06/15/06

Milestone IV – Training and Commencement of On-going Operations

Scheduled/Tentative Completion Date: 06/26/06

Milestone V – Initial Review and Integration into Business Process

Scheduled Completion Date: 09/29/06

Phase 2

Milestone VI through Milestone XIV – FaceEXPLORER Duplicate Analysis Processing

Scheduled Performance Period: 10/02/06 through 09/30/07

The major tasks of this milestone are the following:

- FaceEXPLORER Duplicate Analysis FR legacy processing in operational use
- Installation of additional hardware for remainder of contract term
- Configuration of software and licensing for remainder of contract term
- Daily FR processing of new images through the Duplicate Analysis and IntraID Analysis begins

SECTION 8
PRICING FOR TECHNOLOGY REFRESH

Pricing Proposal – A

Estimated Production Issuance Per year	Description	Price per Card
3,500,000	Base Card Technology Refresh	$1.626
3,500,000	2-D Barcode	$0.000
3,500,000	Card Serialization	$0.000
3,500,000	SIMS Modifications for Unique User ID, etc.	$0.000
3,500,000	Move Backup CIS to Viisage	$0.000
3,500,000	New Security Upgrade every two years and Web site hosting of Security Features	$0.000
3,500,000	Central Printing of First-Time Applicants	$0.000
3,500,000	Image Suppression	$0.000
3,500,000	Automated Photo Comparison and Duplicate Analysis from August 2006 through to Dec 2013.	$0.000
3,500,000	**Total**	**$1.626**

Pilot Options[2]:

1. Auto Head Finder	$0.000/card
2. Fingerprint Logon	$0.0085/card

[2] Prices for options assumes that the option is selected prior to state-wide rolled and included in final system acceptance.

Price Proposal – B

Cost for processing Voter Registration Application Hard Copy. Not Applicable. If this function is required then current price of $0.44/hard copy will be honored.

Price Proposal – C

Production Issuance Per year	No. of Years Contract Period	Description	Price per VRA	Total Estimated Cost for Contract Period
300,000	7	Electronic VRA Processing	**$0.07**	$147,000.00

Price Proposal – D

Cost for Adding (1) Standard Image Workstation During Contract Year						
1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	6th Yr.	7th Yr.
$0.001	$0.001	$0.002	$0.002	$0.003	$0.005	$0.010

Cost for Subtracting (1) Standard Image Workstation During Contract Year						
1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	6th Yr.	7th Yr.
$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000

Price Proposal – E

Cost for Adding (1) Duplicate Image Workstation During Contract Year						
1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	6th Yr.	7th Yr.
$0.001	$0.001	$0.001	$0.001	$0.002	$0.003	$0.005

Cost for Subtracting (1) Duplicate Image Workstation During Contract Year						
1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	6th Yr.	7th Yr.
$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000

Price Proposal – F

Price for adding IView: $0.00. Included in the base card price.

Price Proposal – G

Cost for Renew-by-Mail Process: $0.00. Included in base card price.

Price Proposal – H

Cost for Reinstalling or Relocating of Standard Image Workstation				
	1 Workstation	2 Workstation	3 Workstation	4 Workstation
Reinstall	$1,400.00	$2,100.00	$2,500.00	$3,000.00
Relocate	$1,400.00	$2,100.00	$2,500.00	$3,000.00

Assumes re-installation/relocation during normal business hours M-F, 8 – 5 PM and all work is completed in one trip.

Price Proposal – I

Cost of Reinstallation or Relocation of Duplicate Workstation	
	1 Workstation
Reinstall	$1,125.00
Relocate	$1,125.00

Assumes re-installation/relocation during normal business hours M-F, 8 – 5 PM and all work is completed in one trip.

Price Proposal – J

Description	Cost
Cost to Add a card design change	$0.00 up to ten (10) changes
Cost to Subtract card design change	$0.00 up to ten (10) changes
Cost per hour for software changes	$165.00
Test Cards beyond 10,000 per year	$0.733 per card

APPENDIX A

Workstation Quantity and Location Details

Location	Standard Issue Office			Duplicate Issue Office			Furniture		
		Total #	Total #		Total #	Total #	Single	Double	Sliding
	No.	Systems	Printers	No.	Systems	Printers	Prt Cart	Prt Cart	Shelf
Allentown	1	2	4	—	--	--		2	
Allison Park	2	2	4	1	1	1	2		2
Altoona	3	2	4	2	1	1	1	1	1
Bedford	4	1	2	—	--	--		1	
Belle Vernon	5	1	2	—	1	1		1	
Bensalem	6	2	4	3	1	1		2	
Berwick	7	2	4	—	--	--		2	
Bortondale	8	2	4	4	1	1		2	
Bradford	9	1	2	5	1	1	1		1
Bridgeville	10	3	6	6	1	1		3	
Bustleton Ave.	11	2	4	—	--	--		2	
Butler	12	2	4	7	1	1		2	
Carlisle	13	2	4	8	1	1		2	
Center City - Philadelphia	14	4	8	9	1	1		4	
Central Duplicating	—	0	4	—	--	--			
Chambersburg	15	1	2	10	1	1		1	
Clarion	16	1	2	—	--	--		1	
Clearfield	17	1	2	11	1	1		1	
Columbus Blvd.	18	2	4	12	1	1		2	
Coudersport	19	1	2	—	--	--	1		1
Danville	20	1	2	—	--	--		1	
Dublin	21	2	4	13	1	1		2	
DuBois	22	1	2	—	--	--		1	
Duncannon	23	1	2	—	--	--		1	
Dunmore	24	2	4	14	1	1		2	
East Liberty	25	1	2	—	--	--		1	
East Rochester	26	2	4	15	1	1		2	
Easton	27	1	2	—	--	--		1	
Elizabethville	28	1	2	—	--	--	1		1
Emporium CLOSED	29	0	0	—	--	--			
Erie	30	3	6	16	1	1		3	
Fairless Hills	31	2	4	—	--	--		2	
Frazer/Malvern	32	3	6	17	1	1		3	
Gettysburg	33	1	2	—	1	1		1	
Greensburg	34	2	4	18	1	1		2	
Harleysville	35	1	2	—	--	--		1	

Location	Standard Issue Office			Duplicate Issue Office			Furniture		
		Total #	Total #		Total #	Total #	Single	Double	Sliding
	No.	Systems	Printers	No.	Systems	Printers	Prt Cart	Prt Cart	Shelf
Harrisburg - 1st Floor ROC	36	4	8	19	1	1		4	
Harrisburg - 3rd Floor P.T. Area	—			20	1	1			
Harrisburg - 4th Floor Messenger	—			21	1	1			
Harrisburg - Keystone Bldg.	—			22	1	1			
Hazleton	37	1	2	23	1	1		1	
Hecktown	38	1	2	—	--	--		1	
Honesdale	39	2	4	—	--	--		2	
Huntingdon	40	1	2	—	--	--		1	
Huntington Valley	41	2	4	24	1	1		2	
Indiana	42	1	2	25	1	1	1		1
Island Ave.	43	2	4	26	1	1	1	1	1
Johnstown	44	1	2	27	1	1		1	
Lancaster - REGENCY SQ	45	2	4	28	1	1		1	
Laporte	46	1	2	—	--	--		1	
Lawndale	47	0	0	29	1	1		0	
RENUIT NOW (Lawndale PC)		3	6		0	0		3	
Lebanon	48	1	2	30	1	1		1	
Lehigh Valley	49	2	4	31	1	1		2	
Lehighton	50	2	4	—	--	--	1	1	1
Lewisburg	51	1	2	—	--	--		1	
Lewistown	52	1	2	—	1	1		1	
Mayfair	53	2	4	32	1	1		2	
McConnellsburg	54	1	2	—	--	--	1	1	1
Meadville	55	1	2	33	1	1		1	
Mercer	56	1	2	34	1	1		1	
Mifflintown CLOSED	57	0	0	—	--	--		0	
Milford	58	1	2	—	--	--		1	
Mill Hall	59	1	2	—	--	--		1	
Monroeton	60	1	2	35	1	1		1	
Monroeville	61	2	4	—	--	--	1	1	1
Montrose	62	1	2	—	--	--		1	
New Castle	63	1	2	—	1	1		1	
New Kensington	64	1	2	36	1	1		1	
Norristown	65	2	4	37	1	1		2	
North Versailles CLOSED	66	2	4	38	0	0		0	

Location	Standard Issue Office			Duplicate Issue Office			Furniture		
		Total #	Total #		Total #	Total #	Single	Double	Sliding
	No.	Systems	Printers	No.	Systems	Printers	Prt Cart	Prt Cart	Shelf
Oxford	67	1	2	—	--	--		1	
Brimmers - Lancaster	68	2	4	—	--	--		2	
Penn Hills	69	2	4	39	1	1		2	
Penn Mobile	—	1	2	—	--	--			
Pottstown	70	1	2	—	--	--	1		1
Punxsutawney	71	1	2	—	--	--		1	
Reading	72	3	6	40	1	1		3	
Rockview	73	1	2	41	1	1		1	
Rosemont	74	2	4	—	--	--		3	
Saint Marys	75	1	2	42	1	1	1		1
Schuylkill Haven	76	1	2	43	1	1		1	
Selinsgrove	77	1	2	44	1	1		1	
Seneca	78	1	2	—	--	--		1	
Shamokin	79	1	2	—	--	--		1	
Snydersville	80	2	4	45	1	1		2	
Somerset	81	1	2	46	1	1		1	
South Waverly	82	1	2	—	--	--		1	
State Office Bldg. - Pittsburgh	83	2	4	47	1	1		2	
Stewartstown	84	1	2	—	--	--	1		1
Tionesta	85	1	2	—	--	--		1	
Tunkhannock	86	1	2	—	--	--	1		1
Uniontown	87	1	2	48	1	1		1	
Upper Chichester	88	2	4	—	--	--		2	
Upper Darby	89	2	4	—	--	--		2	
Valid w/o Photo [3rd Floor ROC]	90	1	2	—	--	--			
Warren	91	1	2	—	--	--		1	
Washington	92	2	4	49	1	1		2	
Waynesburg	93	1	2	—	--	--		1	
Wellsboro	94	1	2	—	--	--	1		1
West Kittanning	95	1	2	—	--	--		1	
West Oak Lane	96	2	4		1	1			
Wilkes-Barre	97	2	4	50	1	1		2	
Williamsport	98	2	4	51	1	1		2	
York - RUNKLES	99	2	4	—	--	--		2	
York - Queen Street	100	2	4	52	1	1		2	
TOTAL		153	310		56	56	16	132	16
PRINTER SUBTOTAL			310			56			
PRINTER TOTAL		366							

Notes:

Printer carts will be refurbished where needed.

All spare printers will be provided to field staff.

APPENDIX B

Description of Security Features

The produced DL/ID cards will be secure, durable and tamper resistant, and will contain the following security features.

Printing

- Deliberate Errors/Known Flaws
- Fine line background (Guilloche pattern)
- Ghost Image
- Microprinting
- Non standard type fonts
- Rainbow printing

Ink

- Ultraviolet fluorescence

Optically Variable Devices OVD

- Optically Variable Device (OVD)

Additional Security Features

- Laminates (security)
- Machine readable technology (MRT)
- Overlapping data
- Redundant data
- Digital Laid Lines
- Laser Retrievable Image
- Serialized Card Stock
- Level 3 (CONFIDENTIAL) Security Feature

The provided cards will contain overt (Level 1), covert (Level 2) and forensic (Level 3) security feature(s) to protect the cards from alteration, cannibalization, counterfeiting, simulation, and photo, signature and data substitution, or other forms of fraud, as summarized in the following table. All characteristic, materials, and security features implemented by Viisage will be properly and uniformly applied to all licenses and ID cards produced.

DL/ID Card Security Features	LEVEL 1				LEVEL 2			
	First Line of Inspection (without tools)				Second Line of Inspection (with tools)			
	1	2	3*	4	1	2	3*	4
Threat Type	Counterfeit	Alteration	Photo Sub.	Duplication	Counterfeit	Alteration	Photo Sub.	Duplication
Printing								
Deliberate Errors/Known Flaws					X			
Fine line Background (Guilloche pattern)	X	X	X	X	X	X	X	X
Ghost Image		X	X	X	X			X
Layered Printing (on lamination)	X	X	X					
Microprinting					X			X
Non Standard Type Fonts	X	X			X	X		
Rainbow Printing	X							
Inks								
Ultraviolet Fluorescence					X	X	X	X
Optically Variable Devices (OVD)								
OVD	X	X	X	X				
Additional Features								
Laminates (security)	X	X	X	X				
Machine Readable Technology (MRT)					X	X	X	X
Overlapping Data		X	X	X	X	X	X	X
Redundant Data		X						

Description on the proposed security features are provided in the few pages (AAMVA descriptions have been used when ever appropriate).

Printing

Deliberate Errors/Known Flaws

A feature is purposely made with an intentional mistake known only to the manufacturer or inspection officials.

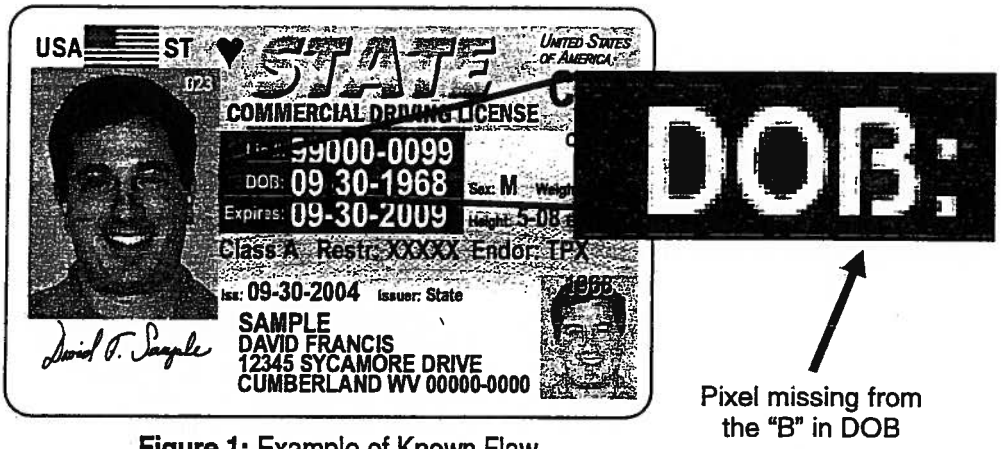


Figure 1: Example of Known Flaw

Fine line background (Guilloche pattern)

A pattern of continuously fine lines constructed by using two or more lines in overlapping bands that repeat a lacy, web-like curve.

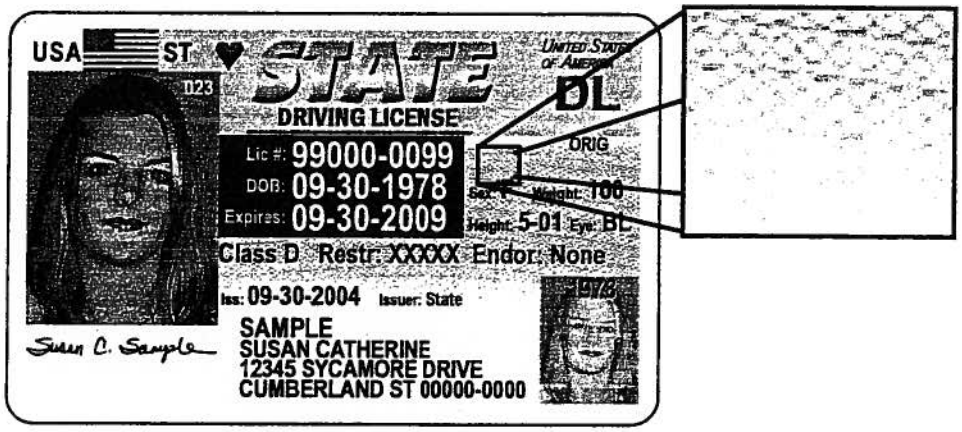


Figure 2: Example of Guilloche Pattern

Ghost Image

Half tone reproduction of the original image that is typically printed in the same area as, and behind, personal data.

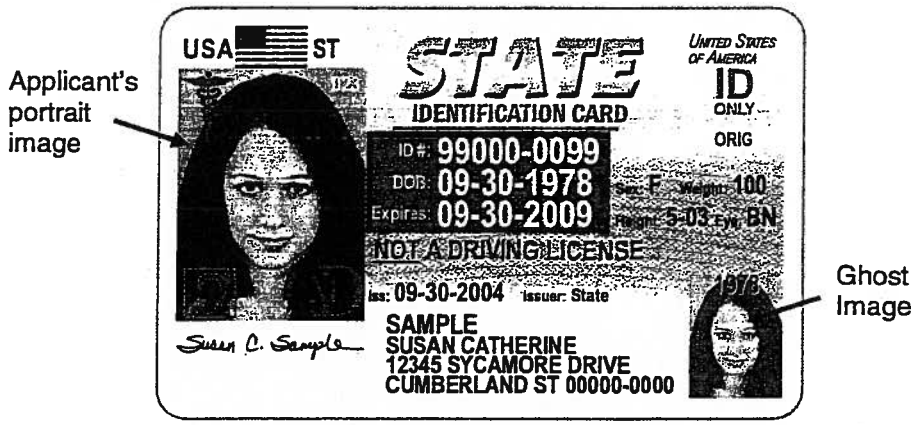


Figure 3: Example of Ghost Image

Microprinting

Miniature lettering which is discernible under magnification. Incorporated into fine line backgrounds or placed to appear as bold lines. Continues to decrease in size as technology improves. Difficult to duplicate.

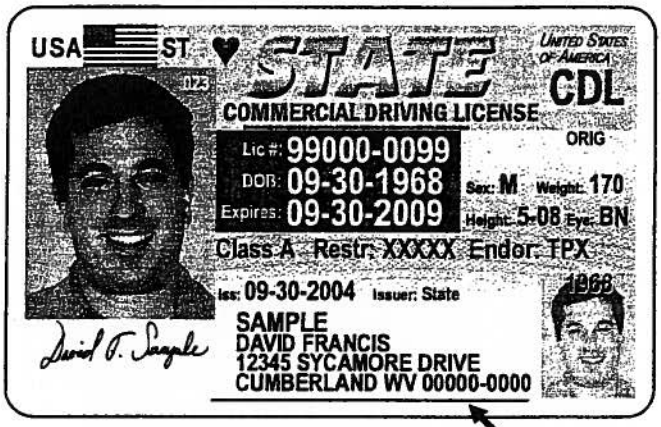


Figure 4: Example of Microprint

Non standard type fonts

Special type that is not available on the commercial market and is reserved for security card use only.

Figure 5: Example of Security Font

Rainbow printing

Must demonstrate a controlled exacting color shift subtly in a linear fashion. Accurately designed patterns cannot be easily copied or duplicated via scanning. It is applied using non-commercial method of printing. It is often used with a fine line or medallion pattern continuous in the background of a card.

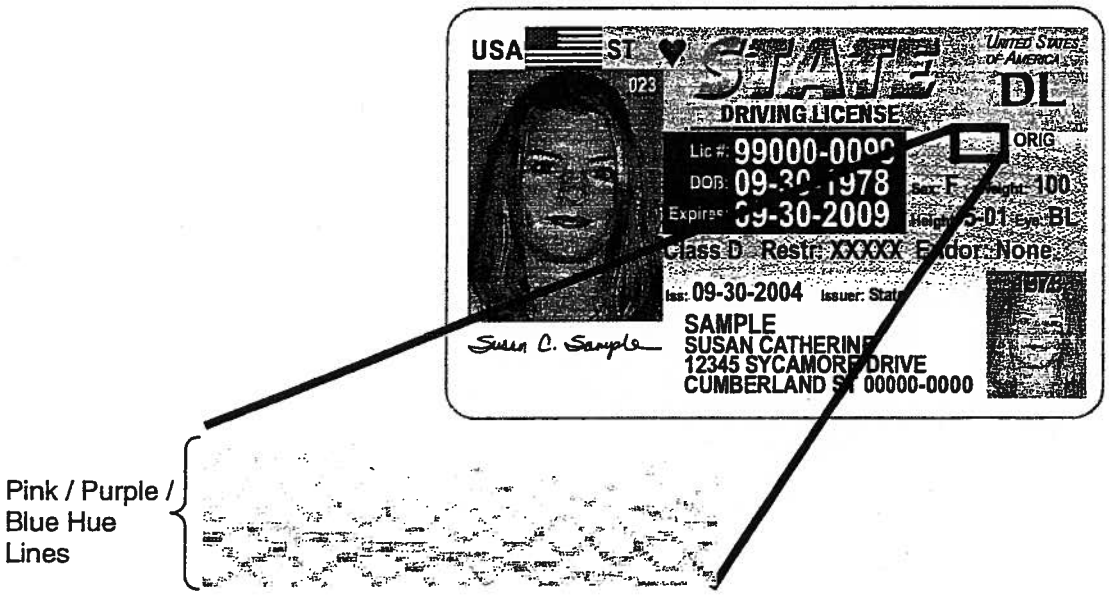


Figure 6: Example of Variable Hue Lines on DL Card

Ink

Ultraviolet fluorescence

Invisible inks that emit visible color under exposure to ultraviolet light. Colors can be formulated that are not commercially available, making resistance to counterfeiting higher.

Optically Variable Devices OVD

The provided security laminate for the front of the card will contain a customized hologram. The hologram is an optically variable device (OVD) consisting of a microscopically fine diffraction structure by which two-dimensional or three-dimensional images are generated. The intrinsic security of the hologram results from a moveable image when viewed from different angles. It is not receptive to photography, photocopying, or scanning, and it requires highly specialized equipment to replicate designs.

Using the hologram, authenticity and integrity of the DL/ID card can be verified without a lengthy detailed examination or special equipment. No special tools or lighting are required to verify authenticity. The hologram will not obscure the image or information on the card.

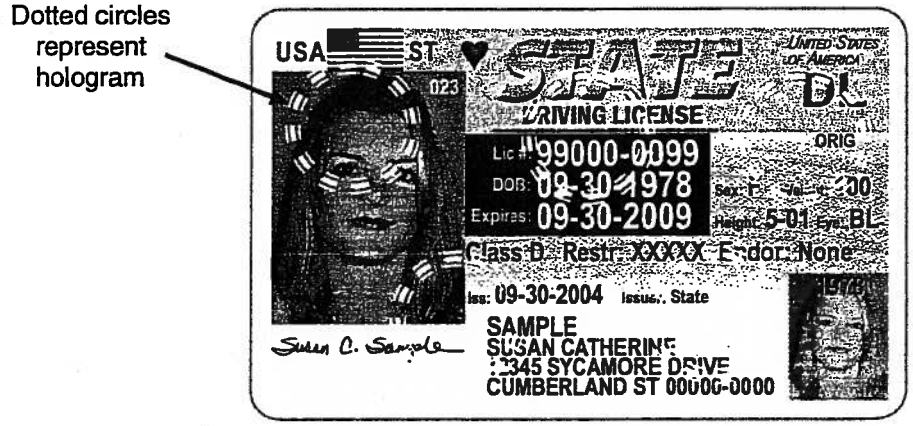


Figure 7: Example of Hologram on DL Card

Additional Security Features

Laminates (security)
Transparent layers or films with an integrated security feature(s) are applied to the card with an adhesive or fused by heat. Available in a number of forms, security laminates are designed to be tamper evident and carry other security features to the card.

Machine readable technology (MRT)
A 2-D barcode and magnetic stripe provided on the back of the card. Verifies the authenticity of the document, the data or the person presenting the card by the use of a reader and comparison of the stored data to other information.

Overlapping data
Variable data, such as digitized signature, seals or text can be placed over another field such as a photo image. Both fields must be altered if a substitution is to take place making it more difficult.

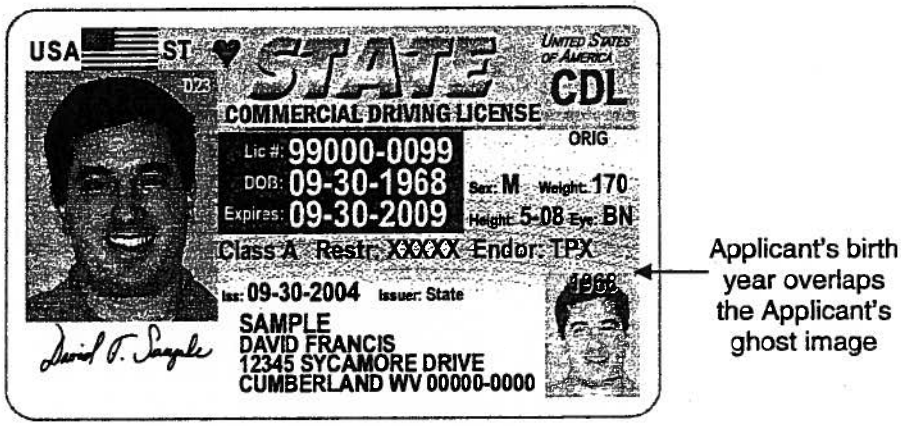


Figure 8: Example of Overlapping Data

Redundant data

Display of data in more than one location on the card. A visual inspection may determine if all of the fields match. Usually, the data is displayed in a variety of colors and fonts to further deter alteration.

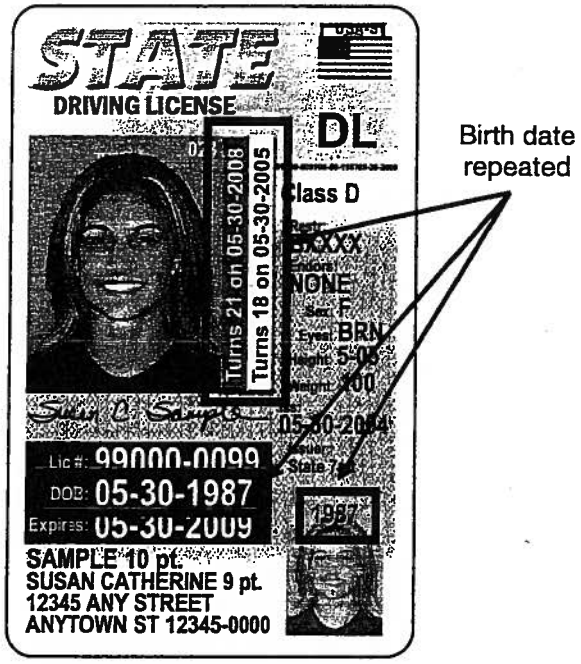


Figure 9: Example of Redundant Data on DL Card

Digital Laid Lines

Digital Laid Lines is a miniature pixel pattern that blends into the background and cannot be easily seen with the naked eye. The line can only be detected by extremely close inspection using a magnifying tool, combined with prior knowledge that the line should be present.

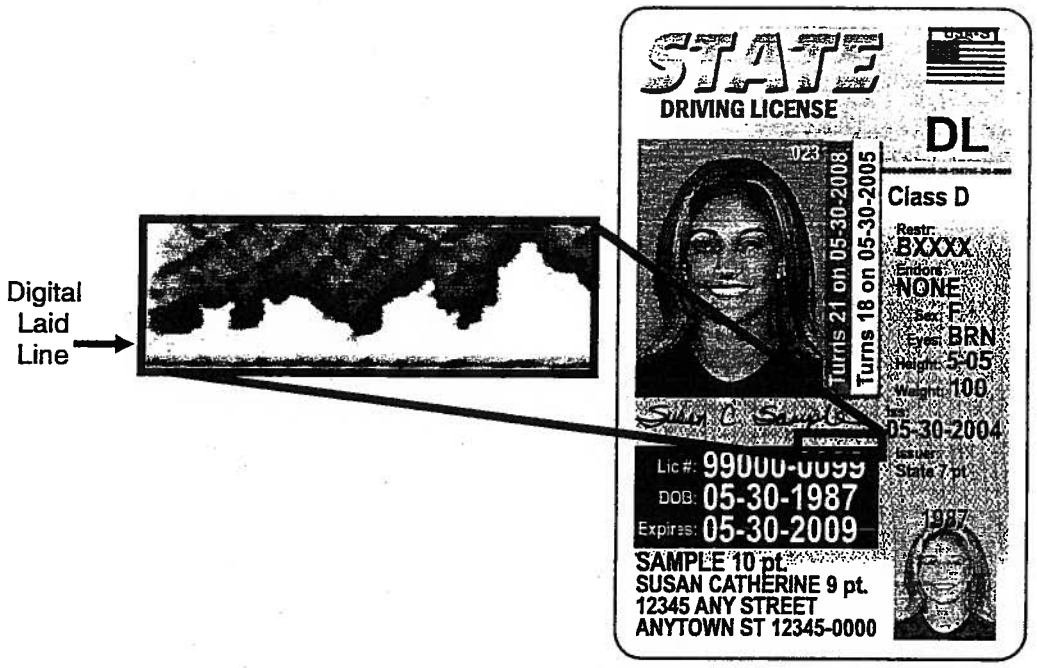


Figure 10: Example of Digital Laid Line

Laser Retrievable Image

During the development of the artwork to create an OVD, specialized software is utilized to optically encode two letters into the OVD structure. The two letters (typically the state's abbreviated name) are not visible until a red laser pen is used to illuminate a specific part of the OVD design. At that point the two letters encoded into the OVD will replay at a 45 degree angle to the red laser light and illuminate the two letters projected onto an adjacent surface.

Serialized Card Stock

A unique serial numbers for each and every card that can be tied to the Customers and the materials inventory system. The card stock will contain unique serial number encoded on magnetic stripe and preprinted with a machine readable 1-D bar code. This bar code will be located along the long edge of the card. This bar code would be approximately .25 inches in height. Following the bar code would be a human readable version of the bar code data.

Level 3 Forensic Security Feature

This feature is much more difficult to access than most other authentication features incorporated into security documents. This feature is:

- Difficult to detect – specific equipment and training required
- Difficult to characterize – highly specific excitation and response
- Difficult to obtain – highly secure handling
- Difficult to fabricate – specific materials and processes
- Durable – Will not decay significantly over the life of the card.

The AAMVA DL/ID Card Design Specifications states:

"Although this annex deals mainly with security features that help officials to detect counterfeiting and fraudulent alteration of cards, there is another class of security features that are covert (secret) features, designed to be authenticated either by forensic examination or by specialist verification equipment. It is evident that knowledge of the precise substance and structure of such features must be restricted to very few people on a "need to know" basis. The purpose of these features is to enable authentication of cards where unequivocal proof of authenticity is a requirement (e.g. in a Court of Law). DL/ID cards shall contain at least one covert level 3 security feature. The feature must have absolute consistency of characteristics, be difficult to discover, be invisible to the human eye, and require special equipment and training not commonly available in order to discover. The issuing jurisdiction must insure that information about the covert feature is not made part of public record. Information about the covert feature should be known to the absolute minimum number of people, but should be shared with law enforcement laboratories that are accredited by the American Society of Crime Laboratory Directors (ASCLD) and/or ISO 9000."

Viisage therefore recommends that the description including location and verification technique for forensic features will be known only to a small number of PENNDOT individuals charged with forensic analysis, typically conducted in a laboratory setting. Specific details will be discussed in a confidential meeting.

APPENDIX C

Proposal
and
Statement of Work
for
FaceEXPLORER System
Providing
Database Cleansing Capabilities

Table of Contents

1.0 Project Description

Overview

Viisage is pleased to provide this Statement of Work to the Pennsylvania Department of Transportation (PennDOT). The goal of this Statement of Work (SOW) is to ensure that project participants are fully aware of all project requirements, deliverables, and obligations. The approved SOW will indicate full acceptance of all included specifications. This SOW will be the basis upon which the project proceeds. The document is organized into five sections defining the project description, scope, deliverables, system components, and project timeline (payment schedule is included in Pricing Section of main proposal).

Background

Pennsylvania, like almost all other government credential issuing agencies, is attempting to stem the flow of fraudulently issued IDs and Driver's Licenses. The problem is universal and growing at an alarming rate. **The federal government through the Real ID Act is mandating the improvement and hardening of the identity proofing and validation process.** The Better Business Bureau estimated that the financial impact of identity theft in the United States in 2003 was $48 billion affecting 27.3 million Americans. According to the Aberdeen Group, the impact of identity theft in the U.S. was projected to cause $221 billion worldwide in losses to consumers, businesses, and government organizations by the end of 2003 and at nearly $2 trillion by the end of 2005.

To help combat this problem and help ensure the identity security of its citizens, PennDOT has contracted Viisage to provide their industry leading facial recognition technology services to the PennDOT credential issuance process. Viisage has been partnered with the PennDOT to provide the Digital Driver's License and State Identification credentials since 1999. Viisage's experience with PennDOT processes and credential issuance solution lends itself well to incorporate facial recognition technology to ensure individuals are not obtaining credentials using stolen or fraudulent breeder documents. In September 2004 Viisage was contracted to implement its FaceEXPLORER solution for back-end one-to-one verification of legacy and on-going DL/ID applicants in the age range of 16 to 40 years old. Viisage successfully completed implementation of its FR solution in December 2004 when it went into operational use by PennDOT staff. The on-going success of this initial FR implementation has demonstrated to PennDOT that the Viisage solution will provide significant ID fraud detection benefits through its expansion.

Therefore, PennDOT is now contracting with Viisage to implement its patented FaceEXPLORER® solution in order to provide both one-to-many identify search and one-to-one identity verification capabilities at the back end to help detect fraudulent records throughout the DL/ID database.

Purpose

This project is intended to:

8) Provide a database cleansing solution to assist in the identification of individuals attempting to receive fraudulent DL/ID credentials.
9) Continue the support of and expand on the current IntraID PennDOT implementation of FaceEXPLORER through the additional implementation of Duplicate Analysis search capabilities.
10) Provide a real-time investigative tool for fraud investigation.
11) Provide capability to utilize FaceEXPLORER as a tool to identify instances of fraudulent credential issuance through the daily batch processing of Duplicate Analysis and IntraID verification.
12) FR enable the entire 25 million legacy images with Viisage FaceEXPLORER templates.
13) Create templates for all new images captured at the workstations for the term of the contract.
14) Check for multiple identities of nearly 9 million registered drivers.

Goals

The goals of the project are as follows:

- Assist PennDOT in the integration of these solutions into their current business processes and as it applies to the REAL ID Act.
- Install a FaceEXPLORER system to perform a database cleansing utilizing the Duplicate Analysis facial biometric ID searches on each of the approximately 9 million individuals stored in the database.
- Continue to provide capability to create biometric FR templates for new images as DL/ID records are created.
- Incorporate the solution with minimal impact on the current issuance process.
- Provide a tool to assist PennDOT fraud investigators in the identification of individuals obtaining fraudulent credentials through the use of the following FaceEXPLORER solution components: Image Query, Investigative Browser, IntraID Verifier and Duplicate Analysis.

- Provide training to PennDOT staff on additional upgraded FaceEXPLORER solution applications.
- Assist PennDOT in the establishment of reasonable parameters to facilitate PennDOT in identifying potential duplicate images in enrolled legacy database.
- Create upgraded biometric FR templates for all 25 million images and check for duplicates for the nearly 9 million registered drivers.

Roles and Responsibilities

Viisage as the "Contractor" shall perform all necessary professional services provided under this agreement. The high level responsibilities shall be defined as

- Viisage will deliver the required server hardware to support the upgraded facial recognition system including FaceEXPLORER IntraID and Duplicate Analysis processes.
- Viisage will provide and configure the necessary software, licensing, and support services to incorporate the FaceEXPLORER solution for the contract term.
- Viisage will create FR templates for all 25 million legacy images.
- Viisage will process all registered drivers license holders (approx 9 million) through the Duplicate Analysis engine. This analysis will occur over a period of one and half years.
- Viisage will additionally perform IntraID & Duplicate Analysis on all new individuals captured through the DL workstations for the contract term. The new image sets will be kept in separate queues to facilitate the adjudication process.
- Provide end-user application training for the Investigative Browser and Duplicate Analysis solution components.
- Provide six (6) additional workstations to utilize the FaceEXPLORER end user applications. One of these systems will be designated for law enforcement/PSP.
- Work with PennDOT to integrate these new services into their business processes.
- Provide an initial application review with PennDOT approximately 1 month after Duplicate Analysis processing begins to modify thresholds, max result counts, and/or queue names to fit into the PennDOT business process.

- Provide monthly progress reports and identify any issues that require immediate attention of PennDOT or designated IT personnel.
- Provide adequate facility space and power for system at the Viisage Harrisburg office.
- Provide existing network infrastructure for communications to designated application web clients from the ROC to Viisage, Harrisburg office.
- Creation of a new "flag" viewable through IVIEW for records that have been processed through the Duplicate Analysis engine.

PennDOT as the "Customer" shall be the recipient of all products, services, and licenses for the contract term. Viisage shall require PennDOT responsibility for the following items

- Responsible for administration of end-user access accounts to client applications.
- Designated personnel shall be made available to Viisage engineers as issues arise during design, installation, and operations.
- Perform manual eye marking on any images failing the automated template generation (optional)
- Allocating IntraID Verification and Duplicate Analysis reviewing personnel
- Determining corrective action processing with identified fraud records
- Provide network cabling from the six (6) new workstations to the Viisage routers in the ROC.

Project Organization

Viisage's approach to project implementation has as its goal the complete satisfaction of the PennDOT in the delivery of high quality products and services. The Viisage approach incorporates the following implementation components and attributes:

- Attentive compilation of customer requirements,
- Establishment of qualified project leadership,
- Highly skilled development team,
- Build on proven best in class base technologies,
- Quality controlled software development practices,
- On time deliveries and installations,

- Comprehensive training and user documentation,
- Responsive service and maintenance.

The following chart identifies the roles and contact information of key leadership personnel for this project.

Leadership Team Role	Name	Phone Number	Email Address
Project Sponsor	Mike Mazzu	978-932-2269	mmazzu@visage.com
Program Manager	Yassir Chaudhry	508-523-4011	yassirc@visage.com
Technical Lead & Solution Architect	Jim McDermott	978-932-2262	jamesm@viisage.com
CIS & DB Team Lead	Senthil Kumar	978-932-2243	senthil@viisage.com
Sales Account Manager	Judy Keator	978-932-2461	jkeator@viisage.com

Figure 1: Viisage Project Leadership

As the contractor, Viisage assumes responsibilities for all aspects of this project as outlined in the Contract agreement and outlined in this SOW. Key Viisage personnel include the following:

Yassir Chaudhry will serve as the Program Manager and will manage and coordinate the implementation effort for this project. Yassir possesses more than 7 years of program management and project engineering experience. Mr. Chaudhry will be the principle point of contact for all tasks, deliverables, system installation and acceptance testing activities as well as other project activities related to the contract. He will work closely with the PennDOT project manager to ensure all needs and requirements are met.

Michael Mazzu, Vice President of Professional Services brings 14 years of technical development and management experience in mission-critical systems. Currently he leads the Professional Services Division of Viisage Technology. Responsibilities include managing teams of program managers, systems architects and software

engineers that are applied to identity credential and facial recognition project implementations as well as input to research and product development. As Systems Engineering Manager at Viisage, Mr. Mazzu managed and contributed to the research, development and implementation of facial recognition technology and its related identity solutions. As a technical founding member, he has been with Viisage for the past 11 years. Such system implementations of facial recognition have involved a broad range of identity applications including access control, surveillance and large scale database mining. He has also lead technical teams in the development and implementation of several domestic and international identification projects. He has over ten years of experience in the fields of image processing, software development, systems integration and biometrics. Mr. Mazzu's knowledge and relationships built over the past several years with digital imaging and identity management customers as well as his familiarity with their requirements are invaluable in the understanding and implementation of this project with PennDOT.

James McDermott is Viisage's overall technical project director for this Facial Recognition project. Mr. McDermott has held management roles with Viisage and Lau Technologies for over 7 years. He is a very experienced project leader who has installed several large and complex Drivers License, Identification and facial recognition systems for the States of Oklahoma, Mississippi, Kentucky, North Carolina and Illinois as well as for the U.S. Department of State and U.S. Immigrations and Naturalizations Service. He also led the implementation efforts in 2002 and 2004 to provide the law enforcement FR system for five major partner counties and the Department of Corrections in the state of Florida. Mr. McDermott will be the FR technical focal point of contact for all work, products, services and issues related to the contract. He will have access to all of the resources necessary to complete the project. Mr. McDermott possesses the needed experience in staffing, planning and resource allocation to ensure the success of the PennDOT.

Senthil Kumar is the Central Image Server Team Leader for this project. Mr. Kumar brings over 14 years of expertise in software development and project management. Mr. Kumar has a team of 8 engineers whose talents range from database management to GUI development to internet/intranet applications. Mr. Kumar and his team have helped design, implement, port and support over 10 large image database systems. This team has undertaken complete end-to-end systems integration projects such as Drivers Licensing and other Digitized ID card systems for several states such as Pennsylvania, Arizona, New Mexico, Illinois, Ohio, Florida, Wisconsin and Massachusetts.

2.0 Project Deliverables

Viisage will provide the following items to PennDOT

- Additional FaceEXPLORER system processing and data storage hardware to support the enrollment, IntraID and Duplicate searching of 25 million legacy images.
- Provide additional FaceEXPLORER system processing and data storage hardware to support the enrollment, IntraID and Duplicate searching of on-going acquired images for the contract period.
- Viisage FaceEXPLORER Facial Recognition Database and System Software License for the enrollment, search and creation of biometric templates to support 25 million legacy images.
- Viisage FaceEXPLORER Facial Recognition Database and System Software License for the enrollment, search and creation of biometric templates to support on-going acquired images for the contract period.
- Capability and license to perform Duplicate Analysis batch processing on legacy images.
- Creation of on-going daily potential match reports from the FaceEXPLORER IntraID Verifier and Duplicate Analysis batch processes. System response times will be sufficient to complete daily match reports such that the reports are available for review by 7 a.m. the following day.
- Ability to perform ad-hoc Duplicate searches against the enrolled database through the use of the FaceEXPLORER Investigative Browser.
- Procurement, installation, and support of six (6) workstations, including one (1) station for Pennsylvania State Police use, for FaceEXPLORER end user application use, including PC, monitor, and printer.
- Configure two (2) current Viisage FR workstations for new applications
- Eight (8) end user client licenses of the Investigative Browser for PennDOT use.
- Site license to end user clients for IntraID Verifier and Duplicate Analysis. Site license is limited to the PennDOT facilities and network for the purpose of IntraID and Duplicate Analysis web client access by PennDOT designated staff.
- Eight (8) hard copies and electronic copy of the FaceEXPLORER end-user manuals

- Two (2) copies and electronic copy of the FaceEXPLORER System Administrative Guide
- Presentation slide Materials for FaceEXPLORER end-user training
- Training for system end users consisting of two classes of two hours duration and System administrator training.

3.0 Project Scope

Viisage will provide, implement and support an integrated facial recognition solution. Viisage's software will convert the subject's image to our patented biometric template for fast and accurate face recognition. This technology enables one-to-one and one-to-many matches.

All Viisage FR Biometric products and solutions are built on the latest Viisage Foundation 4.0 which incorporates the fusion of two distinct technological approaches to facial recognition: Viisage's Independent Component Analysis (ICA) and former ZN Vision Technologies' Hierarchical Graph Matching (HGM). The new technological framework developed by Viisage, called Flexible Template Matching, is designed to incorporate future algorithms and improvements quickly as they become available.

The solution will integrate into the current PennDOT operating environment. All central FaceEXPLORER components will utilize the Microsoft's Windows 2003 Operating System and Oracle's 10g database. All new end user applications will be web based and require only a standard Microsoft Internet Explorer enabled PC. The system will be built to accept additional search capabilities with only minimal changes and allow for future expansion of users and/or images beyond this contract.

The proposed solution will be implemented through the following top level tasks: System server hardware acquisition, FaceEXPLORER System configuration, legacy template creation, training, and commencement of on-going operations.

FaceEXPLORER System Configuration & Functionality

Viisage will deliver a Facial Recognition solution that is configured to provide the following features to the PennDOT. Below in *Figure 2* is a network block diagram of the FaceEXPLORER solution. This is then followed by a description, process flow diagrams, and screen shots of the end-user applications.

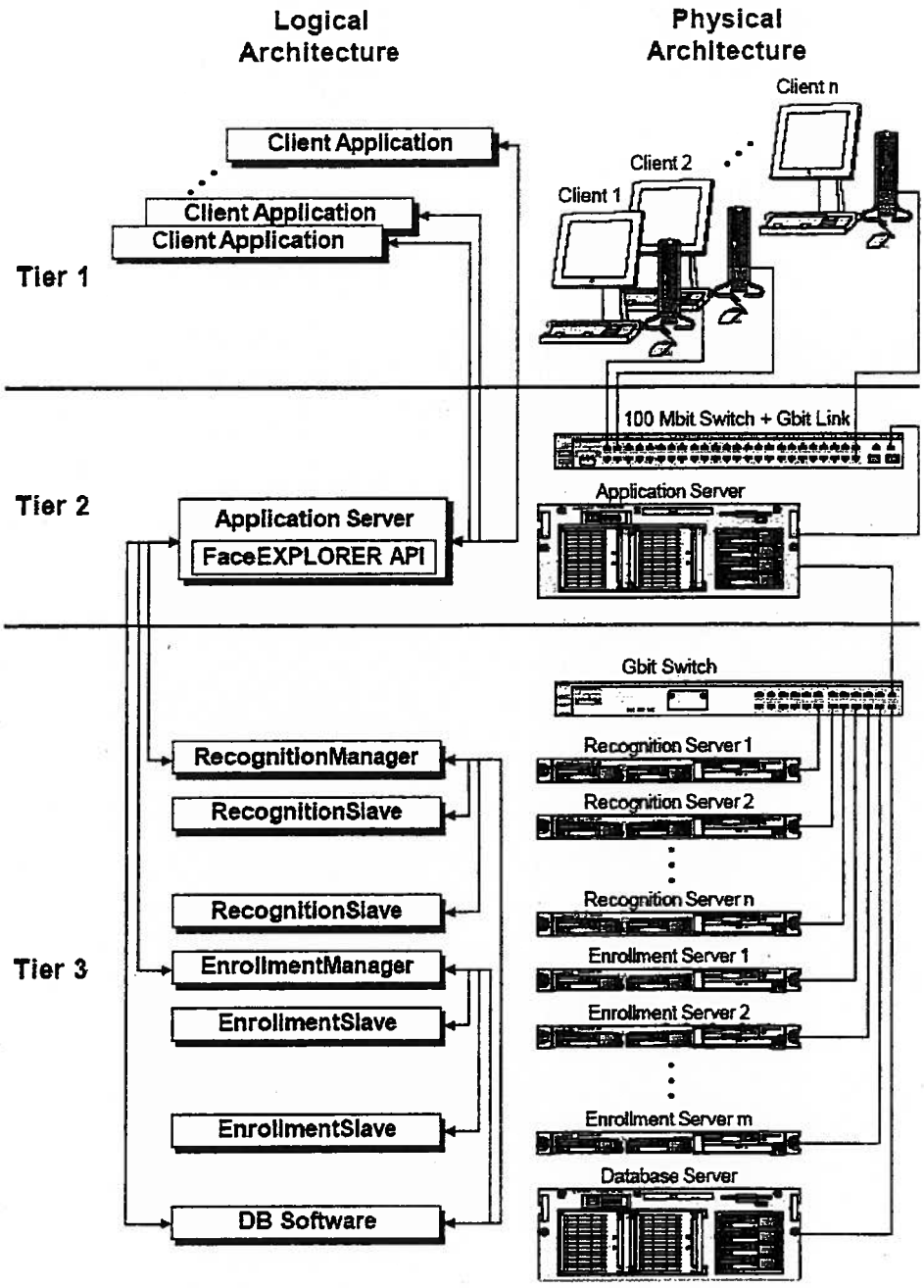


Figure 2: Viisage FaceEXPLORER Architecture

For PennDOT, Viisage will implement Image Query, Duplicate Analysis, IntraID Verifier, and Investigative Browser for use by the PennDOT Fraud investigators. These application are web based requiring only Internet Explorer v6.0 or higher, connectivity to the FaceEXPLORER web server, and security login privileges.

Duplicate Analysis

Within the FaceEXPLORER system the Duplicate Analyzer Service process performs the one-to-many batch searches of all newly captured images against the existing enrolled image database. The process aids in the identification of similar looking faces with different demographic data. Legitimate license renewals are not flagged to the operator.

New enrolled images designated for FR processing are automatically flagged within the database in order to indicate their readiness for batch processing. The Duplicate Analyzer batch process uses Viisage's FaceEXPLORER backend architecture to generate possible matches to a newly enrolled probe image. This one–to-many batch process can be configured to run on any time interval bases as defined by PennDOT. Stored search results are made available for display through the Duplicate Analyzer web based application in a match report format that shows the possible duplicates in order of facial similarity. Operators can review the report to accept or reject matches. Operators can also save or print the match report. This process flow is represented in *Figure 3*.

FaceEXPLORER provides the ability to have batch searches performed using predetermined "bins" based on demographic criteria. Such demographics include age, gender and height. Additional demographics can also be defined. All queued requests are run against the facial database to generate, for each request, a report of potential matches. The size and number of match reports generated is governed by an administrator defined maximum number of potential matches as well as probable match threshold. Therefore, each batch search request will result in a database stored match report only if the corresponding identification search had one or more probable matches within the predefined threshold. Furthermore, no single match report will contain more than the preset maximum number of possible matches. All match criteria such as binning data, maximum number of matches and match threshold are configurable and will be defined as required for the PennDOT implementation.

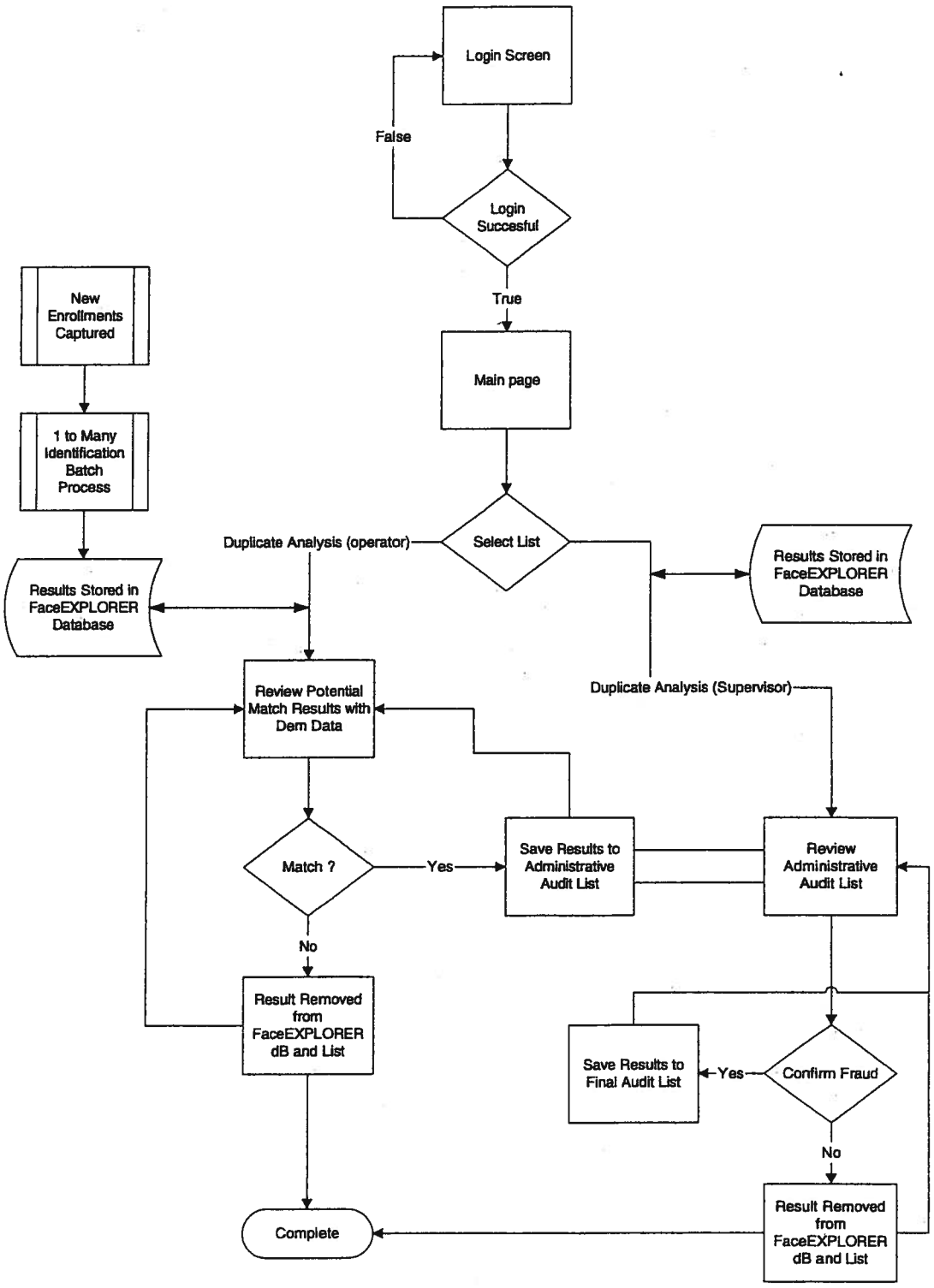


Figure 3: Overview of the Duplicate Analysis Process Flow

The results of the one-to-many search conducted at the end of each workday will be provided to authorized personnel by 7:00 a.m. the following day. The adjudication operation is performed at one or more client workstations running the Duplicate Analyzer client web application. This client application provides the operator the ability to manually review each of the potential matches and make a final determination based on manual image comparison and corresponding demographic information.

The main window of the Duplicate Analyzer application is shown in the following figure.

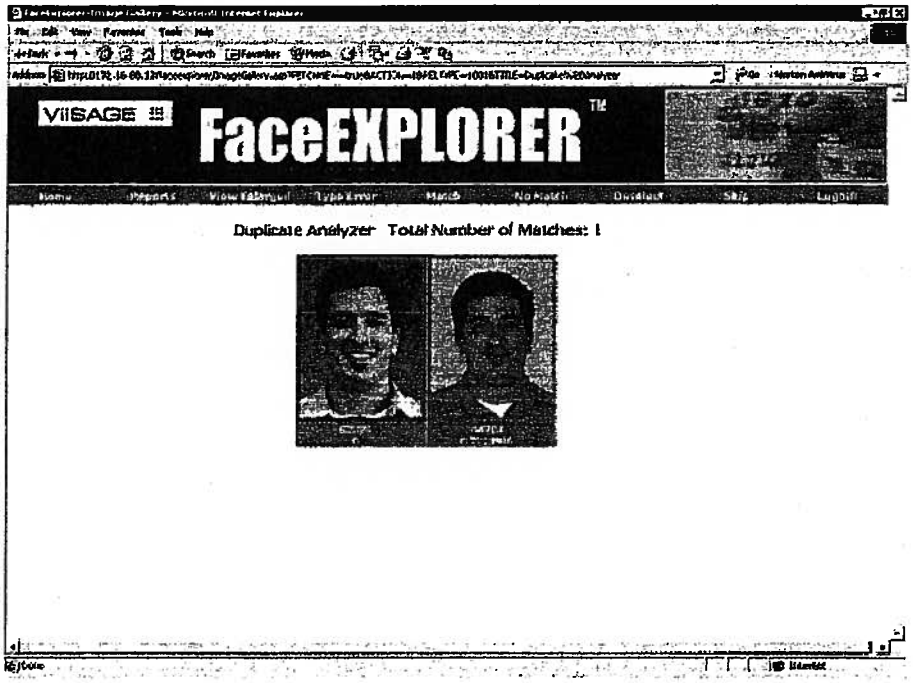


Figure 4: Duplicate Analyzer Screen

The main window is used to display the next available match report retrieved from the FaceEXPLORER database. The match report consists of the probe and rank ordered potential matches. The "probe" image that was the input for the search request is in the upper left-hand corner. The potential matches are then sequentially ordered left to right and top to bottom based on descending match probability. The match score is displayed under each image to indicate the probability of the possible match. The reviewing operator has a number of options available, including:

- Enlarge the image representation for improved visual inspection
- Show associated demographic data for each image
- Print image(s)
- Skip this match report
- Save match report
- Indicate 'No Match
- Save as a typographical or operator error

Once the report adjudication is complete or the report is skipped, the next available potential match report is automatically displayed.

IntraID Verifier

IntraID Verifier, a feature of FaceEXPLORER, is an effective 1:1 verification tool for detecting operator error or potential fraud in a centralized image database. IntraID Verifier aids in identifying instances of multiple individuals sharing the same index (DL/ID number) in the database.

As a batch service, the application processes every designated record from the current day's new images. The process looks for dissimilar faces within the same "record". For each designated record, IntraID Verifier automatically locates and performs a comparison for all other images in the FR enrolled database sharing the same alphanumeric index. Any records with the same index but determined to potentially contain different facial images are saved as output to the database for future review by an operator. The process flow is shown in *Figure 5*.

Viisage also provides a review application which is web based. This application shows the "probe" image with any and all potentially different or non-verified images from the corresponding record. The operator has options within the review process to enlarge individual images, display record demographics, print the suspect mismatches, and save the mismatch set for future review and/or disposition. If the images within a set are the same person the operator simply hits a button and moves on the next potential dissimilar match set. It should be noted that several operators will be allowed to review individual sets in parallel. Figure 6 is the main screen of the Intra ID reviewing application. It shows the original probe image with the red box and a potential mismatch next to it. Figure 7 shows an enlarged image of each and the accompanying record's demographics to aid the investigation process.

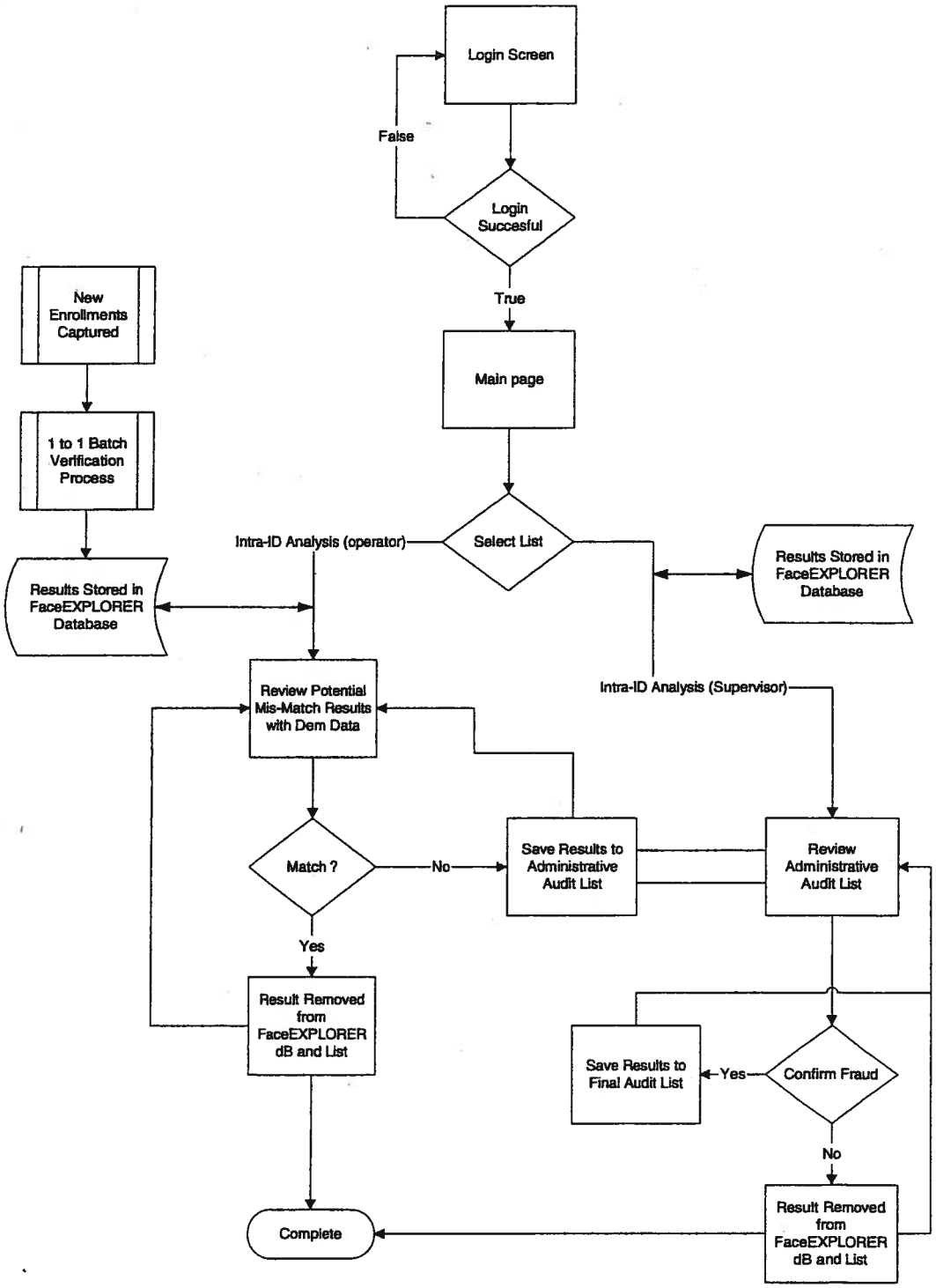

Login Screen
False
Login Succesful
True
Main page
New Enrollments Captured
1 to 1 Batch Verification Process
Results Stored in FaceEXPLORER Database
Intra-ID Analysis (operator)
Select List
Results Stored in FaceEXPLORER Database
Intra-ID Analysis (Supervisor)
Review Potential Mis-Match Results with Dem Data
Match ?
No
Save Results to Administrative Audit List
Review Administrative Audit List
Yes
Result Removed from FaceEXPLORER dB and List
Save Results to Final Audit List
Yes
Confirm Fraud
No
Result Removed from FaceEXPLORER dB and List
Complete

Figure 5: Overview of IntraID Process Flow

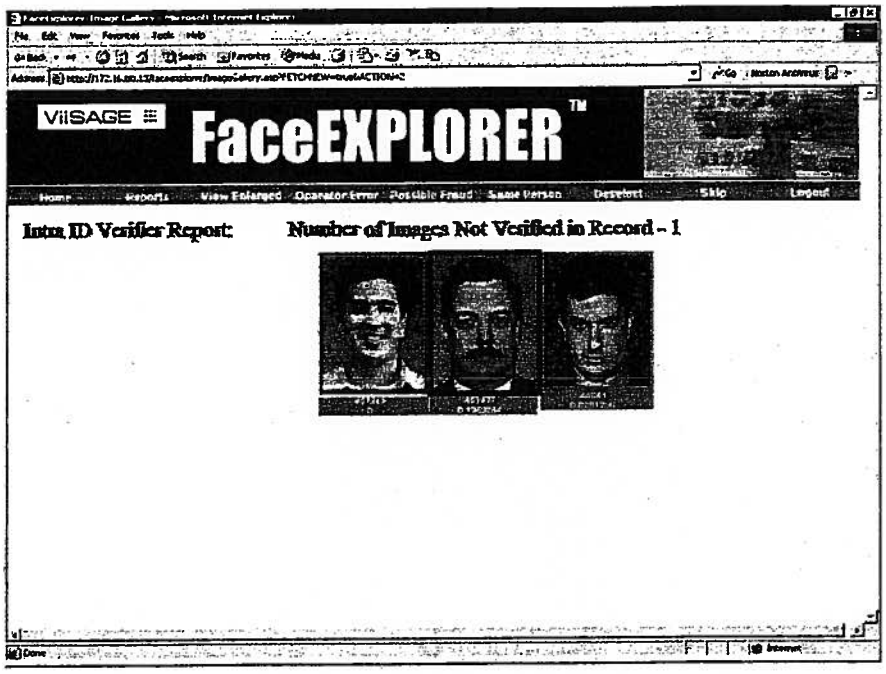


Figure 6: Intra ID Main Review Screen

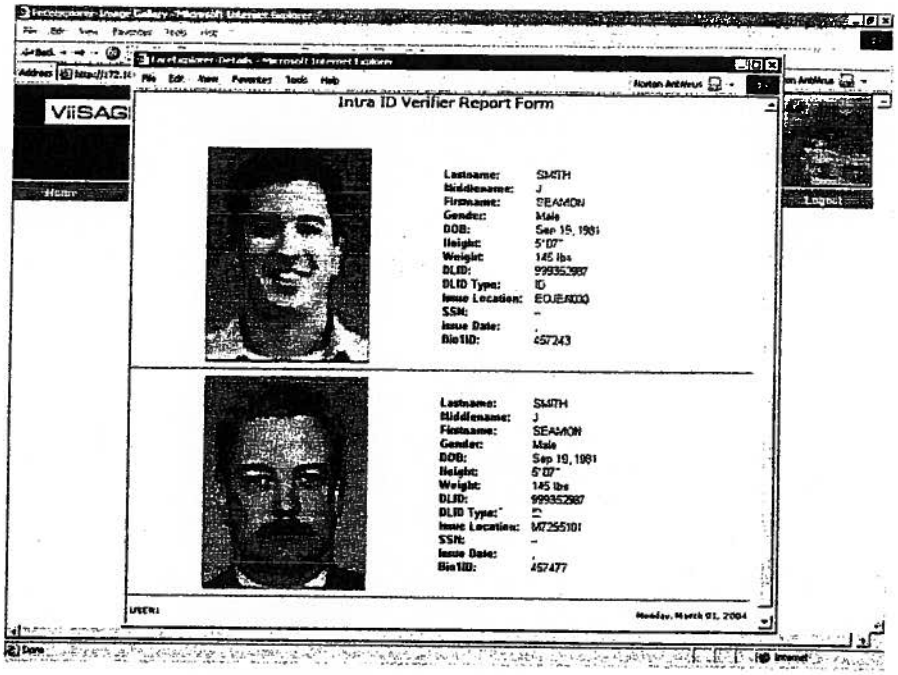


Figure 7: Intra ID Expanded Investigation View

Investigative Browser

Viisage will provide end user licenses for the Investigative Brower real-time one-to-many facial recognition search application to the PennDOT for investigative and fraud detection purposes. This next generation investigation tool has been proven to help solve identity inquiries in a timely manner that could not have been resolved efficiently through a traditional investigative approach. The application allows for follow-on inquiries of adjudicated Duplicate Analysis matches and ad-hoc investigative searches to aid in the identification of unknown or alias images. The process flow is shown below in Figure 8.

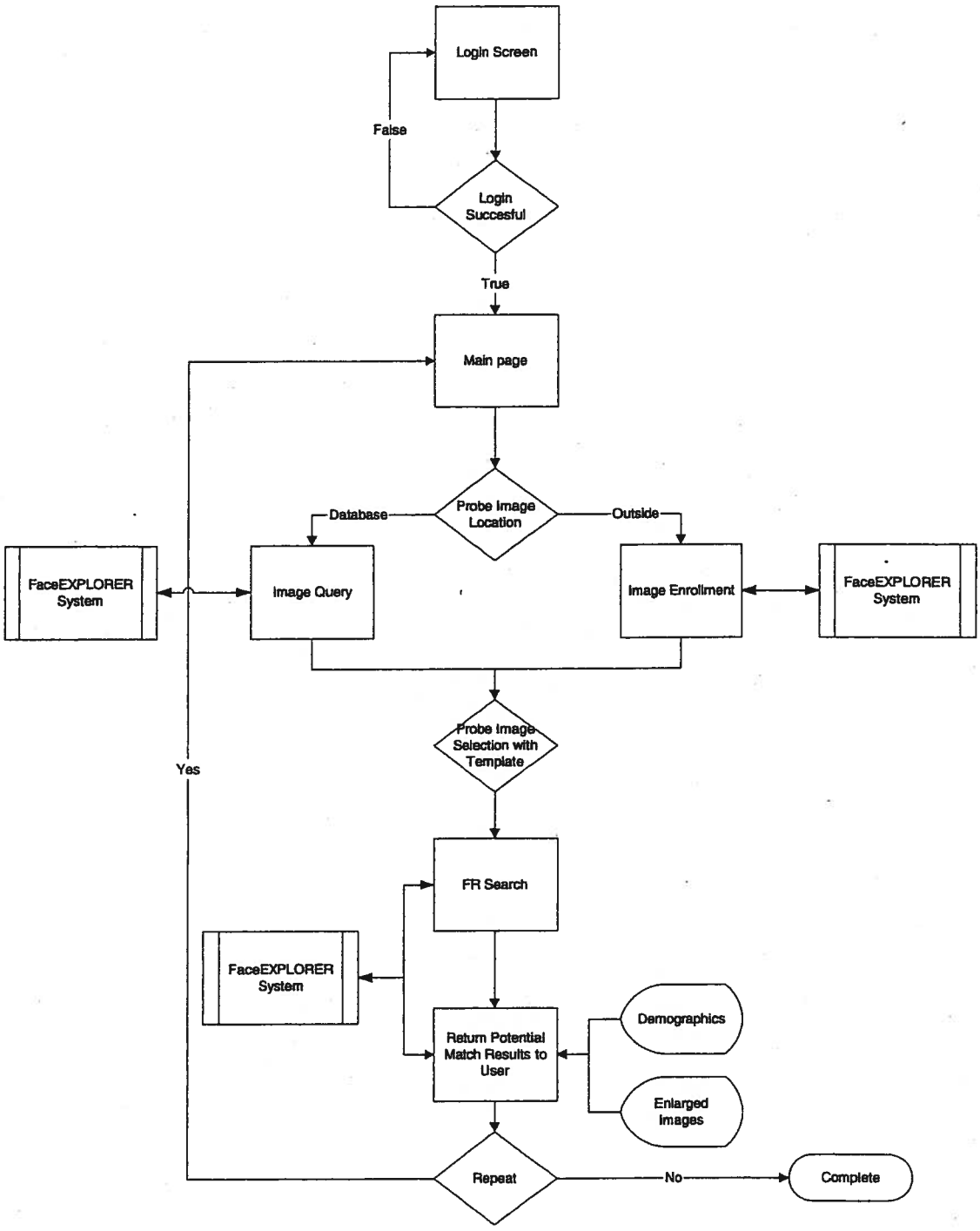


Figure 8: Overview of Investigative Browser Process Flow

This web client can be run from the Viisage provided workstations by authorized users. Images that are currently enrolled in the database can be retrieved and used as search probes. Users can control what type of search to run by selecting the "search criteria". This feature will allow officials the ability to perform searches against the entire database or a specific targeted subset based on any number of physical and biographical features. This configurable parameter set will include age, gender, and height. The following figure depicts the main Investigative Browser window and identifies its components.

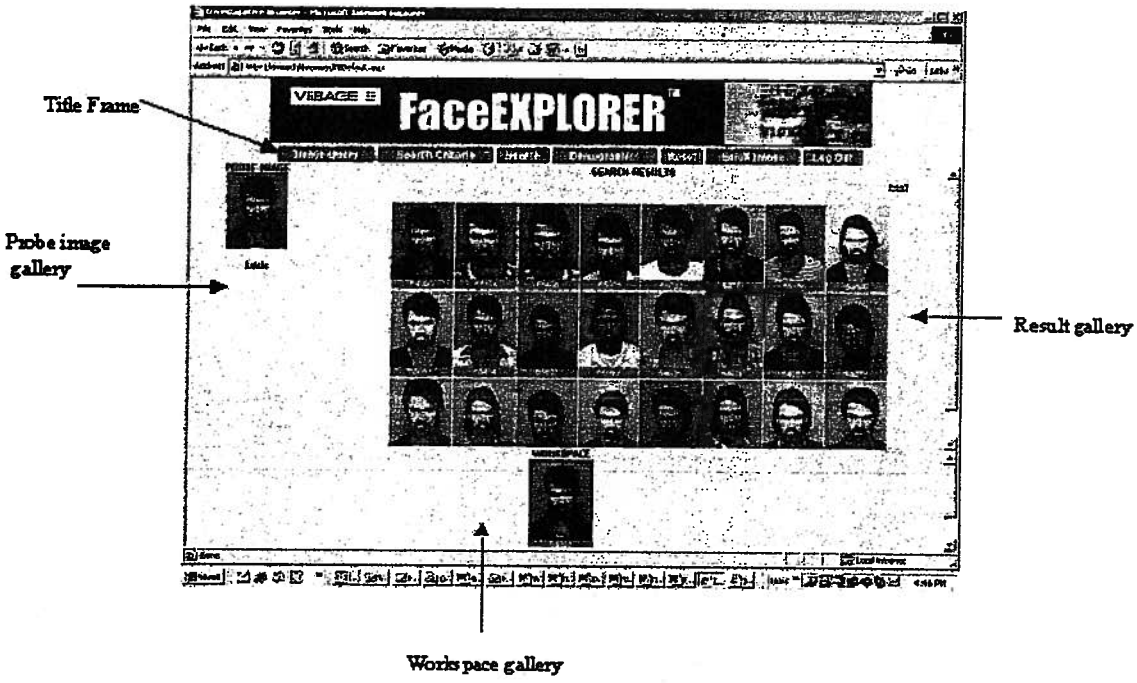


Figure 9: Investigative Browser Screen

Title frame – This area contains the navigation menu to activate other features of Investigative Browser: Image Query, Search Criteria, Search, Demographics, Continue, Reset and Enroll Image.
Workspace gallery – Users can use this area to populate images from database queries and from locally enrolled images, which eventually would be used as search target images.
Probe image gallery – This area contains images that are designated as probe images to perform a facial search.
Search Result gallery – This is a destination area where all the closest FR matches found in a search are displayed in rank match order.

Once a gallery has been returned, the user will have the ability to retrieve all

demographic information associated with any gallery image. Likewise, to assist the user in comparing similar faces, a separate window can be utilized to enlarge possible match images for review. All demographic results can be printed, and all images can be copied, e-mailed, saved to a file as well as printed.

As part of the FaceEXPLORER Investigative Browser application the user has the ability to **"enroll" images from an outside source** to search against the DL database. With FaceEXPLORER 3.2 these images and FR templates are not directly stored in the database. Since for most investigative searches there is no reason to store this outside image with DL information, the image and template information is used only for that search session and is not permanently resident on the server. Any outside image can be enrolled and searched. The only requirement on these images is that they are jpeg. Scanned instant photos, still video frames, composite sketches, digital camera still shots can all be used as search probes in the Investigative Browser.

The process begins from the main screen in the Investigative Browser. The user selects the enroll image button which takes them to the following screen:

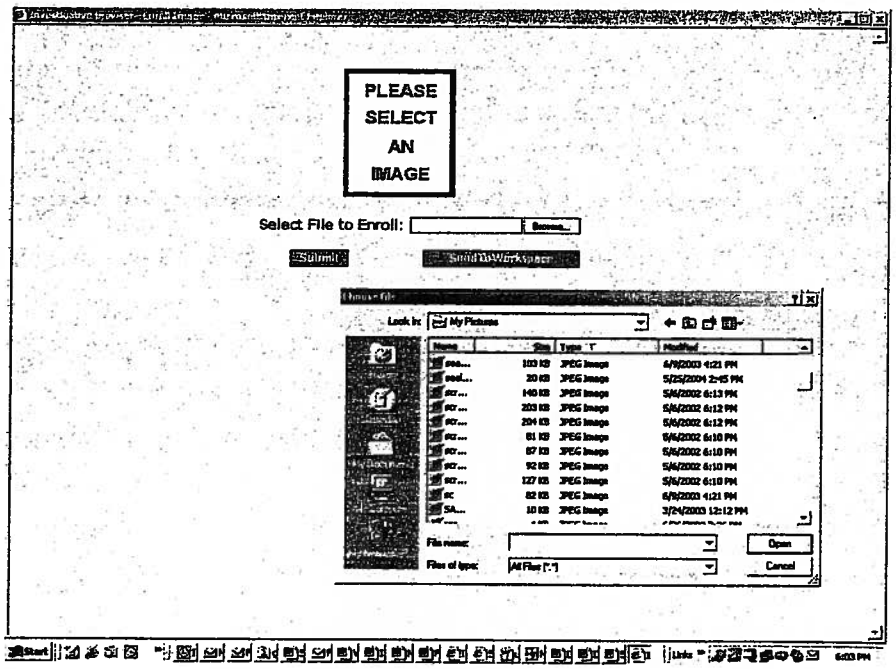


Figure 10: Image Enrollment Image Selection

The user then locates the intended probe image and submits it to the FaceEXPLORER FR Engine for eye finding and template generation. The central process will return to the user the results of the automatic eye finding process. This is shown below in *Figure 11.*

Figure 11: Manual enrollment Eye Marking Screen

In this example, the automatic eye finding process marked the eyes correctly so no additional processing is required by the user. This would then be passed directly to the main window and used in a search (see below for search result). If the eyes were not marked correctly then the user would use his/her left and right mouse button to remark the eye locations. In either case the process of using outside (non customer) images in the one-to-many application is extremely user friendly.

Figure 12: Investigative Browser Search Result with Outside Image

Legacy Data Porting

Following the initial step of setup and configuration of the base FaceEXPLORER System, it will be required to port the existing legacy data from the Central Image Server (CIS) Database. Data porting will utilize CIS database tapes created from the existing systems backup process. Legacy data for the 25 million records will be transferred into the newly configured FaceEXPLORER database structure. Specialized database scripts will be created and run in order to execute this task. Once configured with legacy data ported, the system will then be ready to perform the template generation process. This next process is also referred to as auto enrollment.

Template Creation of Legacy Images

A necessary step in any biometric project is to create templates for the existing image base. Viisage will install and configure software to create templates for the approximately 25 million images in the Viisage provided PennDOT Central Image Server. The process to create templates is as follows:

The Enrollment Servers will quality check and FR enroll the legacy images into the facial recognition database in a batch process called auto enrollment. The

Auto-enroll process generates templates for all "quality" facial images. The process is triggered by a database flag and is processed as soon as the record is inserted into the FaceEXPLORER schema in the Oracle database. The Auto-enroller performs the following steps in order for each record. This process reads in the jpeg image, performs a first pass quality check, attempts to locate the head and center of the eyes, standardizes the image for quality and environmental factors, performs a second quality check against a customer defined threshold, and if acceptable creates the necessary templates. The process completes by writing all FR related data to the FaceEXPLORER Oracle database. If an image fails the quality check process then no template is created and the image record is flagged for manual quality check.

Viisage's experience has shown that automated enrollment will successfully process 98% or more of the images, provided the image quality is reasonable and the software can locate the eyes. Viisage will make every effort to enroll all images of reasonable quality. However, legacy image data that is of poor quality or do not contain a valid frontal face is outside of our control. Images not enrolled automatically are flagged and may be later enrolled via a manual process by PennDOT if desired.

Commencement of On-going Operations

Once the FaceEXPLORER system is installed and configured with legacy templates created the overall solution will be integrated on-site, acceptance tested and rolled out to end users for production operation. This will include the commencement of automated daily FR processes on newly acquired image records. These processes include on-going daily FR enrollment, Intra ID and Duplicate Analysis. Additionally, The Investigative Browser client application shall be made operational for ad-hoc identity investigation queries.

Training

The training of the FaceEXPLORER system end user components will be two classes with a two hour duration. A slide show will be presented and conclude with hands-on training. Eight copies of the end-user documentation will also be provided. This training will include the Duplicate Analysis Viewer and Investigative Browser applications.

Security

The Viisage FaceEXPLORER solution is secure. Every reasonable effort will be made to ensure data/image integrity is maintained from the outset of the project. Viisage will work with PennDOT IT personnel to ensure the solution

conforms to required standards. At a minimum Viisage will provide the following

- End user web application security login accounts managed by PennDOT,
- Reliance on O/S and critical 3rd party security patches and updates
- Minimal requirements of open firewall ports,
- Use of Enterprise Level components for O/S and Database.

Additional Licensing

PennDOT, or other PennDOT authorized law enforcement agencies, may purchase additional licenses to the Investigative Browser application for an additional cost of $2500/ea. plus a yearly maintenance fee of 18% of the total license cost. This price does not include any hardware or network connectivity costs or services.

4.0 System Components

The project is to be completed in two (2) phases. In this section we will itemize the individual system server components that will be implemented as part of the PennDOT Facial Recognition System. The chart below details the components, quantity, comparable make and model, and general specifications. For reference information the functions of the individual components are then described.

Phase I: Performance Period: Contract Execution Date to Sept. 30 2006

Phase 1 Hardware

Component	Item – Description	Type	Qty
FRS Database Server & RAID Storage	Dual Intel Xeon 3.0Ghz , Win 2003 Server 4GB RAM, 4 60GB HDD RAID Array 14x73GB	Dell Power Edge 2850 Dell Powervault	1 1
Web Server	Intel Xeon 3.0Ghz, 2GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	1
Enrollment Manager	Dual Intel Xeon 3.0Ghz, 4GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	1
Enrollment Slaves	Dual Intel Xeon 3.0Ghz, 4GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	5
Recognition Manager	Dual Intel Xeon 3.0Ghz, 4GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	1
Recognition Slaves	Dual Intel Xeon 3.0Ghz, 4GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	24
End user workstation	Intel 3.0GHz , 512MB, 40GB HDD, Win XP, FP monitor, HP Color printer	Dell Optiplex	6

FRS Database Server

The FRS Database Server contains the Oracle 10g database and the related external procedures required for FaceEXPLORER central processing. The server will be configured in a RAID 5 setup with a hot spare drive.

Web Server

The Web Server queues and manages the individual real-time search requests and report viewing pages. The FaceEXPLORER system utilizes Microsoft's Internet Information Server (IIS). We chose to include this product in the FaceEXPLORER system to manage and queue search requests as well as "serve" web pages for the end-user applications. This off the shelf component is universally understood and easily maintained and expanded as business needs change or applications increase or modify functionality.

Enrollment Manager

The Enrollment Manager manages the images which are scheduled for processing. It accepts input via the API or reads requests from a database table with the image Id and desired processing request.

Enrollment Slaves

An Enrollment Slave sends a request for an image to the Enrollment Manager. After receiving the image together with the task description it processes the image in order to perform the specified tasks (ISO image generation, eye finding, template generation, etc). After finishing processing it sends the results back to the Enrollment Manager.

Recognition Manager

The Recognition Manager is used to process FR search requests. The Manager receives and manages the facial recognition requests, which are submitted by distributed client applications such as the "Investigative Browser" or through the FaceEXPLORER SDK API. In batch processing mode, the Manager polls new recognition requests in a database table. Each search request is received by the facial controller, which commences an execution of the facial recognition search algorithm in a string of parallel service processes running across multiple processors and servers. A submitted search request may include the following data:

- Search Type,
- FR Template(s),
- Optional Demographic Match Criteria,
- Optional Threshold Value,

- Optional Maximum Number of Match Results, and
- Requestor's ID.

The controlling process manages the incoming requests in a queue and routes them to the next available string of processors. Depending on the search request type, certain bins within the string may be searched with higher priority. As the string's processors complete their searches, the controller gathers the resultant sets of facial identification IDs from each slave recognition process running on multiple recognition servers. The complete result set of facial matches for a single search request is packaged by the master process and transmitted to the requesting client. Information for a single facial match includes, at a minimum, the image identification ID along with its corresponding distance measurement from the probe image. Using the ID that is returned, the client application can retrieve the stored image(s) of the person from the image database. The manager is also capable of handling the background facial searches for new image enrollments against the complete database of facial records.

Recognition Slaves

Each recognition slave processor is responsible for carrying out searches on particular subsets of images. The processors receive a set of gallery templates and other relevant data from the Recognition Manager and load them in its internal physical memory. When a recognition request is received, the recognition slave will perform the facial search on its subset and return results to the Manager.

Phase 2 and Year 2 Hardware

Additional hardware will be added in Phase 2 to provide the required resources for the remainder of the contract term. This information is detailed in the chart below.

Phase 2 Hardware

Component	Item – Description	Type	Qty
Recognition Slaves	Dual Intel Xeon 3.0Ghz, 4GB RAM, 40GB HDD, Win 2003	Dell Power Edge 1850	18

5.0 Project Plan Timeline

The project will be implemented in a two phased approach each with their own top-level milestones. The components of these milestones have been described in the earlier sections. A general outline of each phase's itemized tasks and scheduled completion date is given below.

Phase I

Milestone I – FaceEXPLORER System Server Hardware Acquisition

Scheduled/Tentative Completion Date: 03/30/06
The major tasks of this milestone are the following:

- Approval of SOW
- Order Server Hardware
- Receive and Inspect Server Hardware at Viisage Billerica, MA
- Receive Third Party Software at Viisage Billerica, MA

Milestone II – FaceEXPLORER System Configuration with Legacy Data Port

Scheduled/Tentative Completion Date: 04/28/06
The major tasks of this milestone are the following:

- Configure FaceEXPLORER System Hardware at Viisage
- Install & Configure FaceEXPLORER System OS's & Oracle DB
- Install & Configure FaceEXPLORER Enrollment Software
- Install & Configure FaceEXPLORER Web Server
- Export Required Legacy Data for Port
- Import Legacy Data into FaceEXPLORER DB
- Test Ported Legacy Data in FaceEXPLORER DB
- Requirements analysis for business process and reporting/analysis process defined.

Milestone III – Legacy Template Creation

Scheduled/Tentaive Completion Date: 06/15/06
The major tasks of this milestone are the following:

- Generate upgraded templates for ~25 million legacy images
- Install & Configure FaceEXPLORER FR Recognition Server Software
- Test Templates Generated through FR search and verify processes

- Test Back-end Duplicate Analysis and IntraID Batch processes on legacy data subset.
- Test Web Client Applications with enrolled legacy data
- Deliver FaceEXPLORER Sofware License for image enrollment.

Milestone IV – Training and Commencement of On-going Operations

Scheduled/Tentative Completion Date: 06/26/06
The major tasks of this milestone are the following:

- Move new system components to designated facility in PA.
- Integrate System with existing CIS and network
- Configure & Test Daily Data Port process
- Configure & Test Daily FR enrollment process
- Configure & Test Daily FR Duplicate Analysis & IntraID processes
- Configure & Test Duplicate Analysis & IntraID processes for legacy data.
- Configure & Test Web Client Applications
- Install and configure six (6) workstations at the ROC
- Perform end-user training
- Perform System Administrator training
- Begin On-going FR Duplicate Analysis Operations of legacy record set.

Milestone V – Initial Review and Integration into Business Process

Scheduled Completion Date: 09/29/06
The major tasks of this milestone are the following:

- Support PennDOT in the integration of the FaceEXPLORER System results into the business processes with initial review and follow-on modifications to the FaceEXPLORER application and system configuration
- Integrate FR flag into IVIEW application.

Phase 2

Milestone VI through Milestone XIV – FaceEXPLORER Duplicate Analysis Processing

Scheduled Performance Period: 10/02/06 through 09/30/07

The major tasks of this milestone are the following:

- FaceEXPLORER Duplicate Analysis FR legacy processing in operational use
- Installation of additional hardware for remainder of contract term
- Configuration of software and licensing for remainder of contract term
- Daily FR processing of new images through the Duplicate Analysis and IntraID Analysis begins

Note: "Duplicate Analysis Processing" in the above milestones refers to the automatic process of Duplicate Analysis FR searching. It does not apply to the manual process of adjudicating the results of the Duplicate Analysis searching.

Annex A

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