
Core Principles and Practical Applications of Law Enforcement Academy Automation

**A White Paper outlining Law Enforcement Academy
modernization strategies**

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I. Executive Summary

Law enforcement academies are faced with a set of unique and critical challenges as enormous burdens are being placed on existing academy administrators, instructors, and infrastructures to adapt to the new realities of a post September 11th environment. The priorities of our law enforcement community broadened to include an urgent focus on both domestic and international terrorism. Under the umbrella of the Department of Homeland Security, a new mandate has emerged for increased cooperation, intelligence sharing and cross training amongst Local, State, Tribal, Federal and International law enforcement agencies. The need to accelerate academy throughput while increasing existing workloads by requiring trainees to absorb additional vital materials is putting significant strain on current systems and requiring academies to reevaluate everything from instructional approaches and learning delivery to logistics, budgeting and academy benchmarking.

This white paper is the result of numerous interviews with academy administrators and reviews of existing operational infrastructure and training methodologies at some of the largest law enforcement academies in the country. Our research concluded that in most cases academies that were struggling with the new demands placed upon them shared one or several of the following traits:

1. Lack of, or inadequate strategic planning
2. Operational inefficiencies/bottlenecks
3. Inadequate funding
4. Lack of standardization
5. Paper laden processes and record keeping
6. Failure to exploit technology as a force multiplier to maximize throughput
7. Inadequate management reporting infrastructure
8. Loss of institutional knowledge due to staff and instructor turn-over
9. Lack of management infrastructure to benchmark Academy performance
10. Resistance to change, unwillingness to review and incorporate new methods, practices and technologies

By outlining some best practices in both process and technology that have been implemented by several of largest U.S. law enforcement academies, this white paper can serve as a reference point for academies facing today's difficult challenges. In addition, some of the key advances in academy technology, pedagogical methodology and operational practices that have been proven to work in the law enforcement context will be discussed along with several practical, real-world use cases from those that have successfully undertaken the modernization process. Though this white paper is by no means exhaustive, we

hope it will be a valuable resource for academies wishing to explore ways to further their core mission of excellence in law enforcement training.

II. Core Principles of Law Enforcement Academy Automation

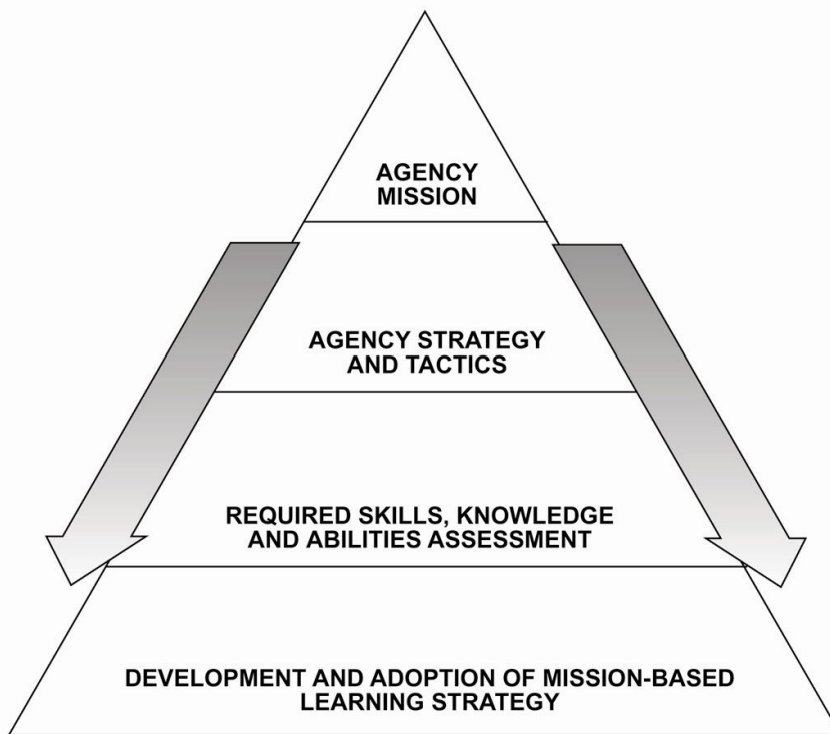
In this section, we will discuss core principles that apply to law enforcement academy automation. These principles, though easily grasped at the conceptual level, proved difficult to apply consistently, as their implementation requires a strong consensus among top managers as well as determined leadership from the internally designated implementation task force. In addition, reevaluating strategic imperatives along with subjecting operations to intense scrutiny requires a willingness on the part of the entire organization to develop a culture that welcomes new ideas and willing to sacrifice obsolete and inefficient processes in order to facilitate the academy's evolving mission. Successful academy modernization initiatives all bear these twin hallmarks of determined leadership and willingness to examine current operational structures objectively.

Developing a mission-based learning strategy

The mission and priorities of our law enforcement agencies are constantly evolving to deal with new threats alongside an ever more complex legislative backdrop. New requirements for integration and cooperation between local, state, tribal, federal and international law enforcement and the consolidation of key federal agencies under the umbrella of the Department of Homeland Security place over-burdened academies in an increasingly difficult operating environment. Attempting to increase operating capacity through the addition of personnel and funding alone risks academies not fulfilling their primary mission of preparing law enforcement professionals with the skills, knowledge and abilities they need in order to safely execute their respective missions. It is therefore extremely important that academies craft and adopt learning strategies that are designed to dovetail with each agency's mission.

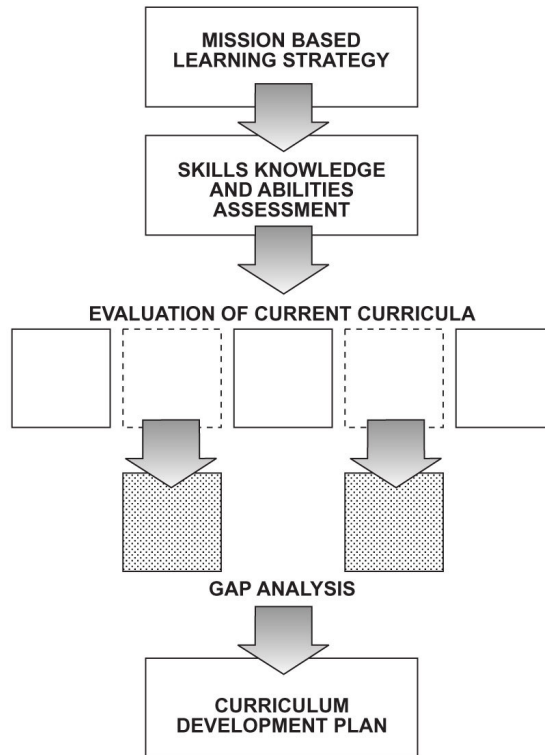
Skills, Knowledge and Abilities assessment

Utilizing the mission as a starting point for the learning strategy, academies will need to analyze the strategies and tactics employed by that agency in fulfilling its law enforcement functions and derive from that analysis a prioritized set of skills, knowledge and abilities that are essential for each job classification in order to fulfill the stated mission. Though this may seem academic, as shall be seen further on, the resulting information has proven extremely helpful in determining both the tactical implementation requirements of training as well as pinpointing deficiencies in current curricula and academy operations.



Evaluation of Current Curricula & Training Methodology

Armed with the information collected in the skills, knowledge and abilities assessment, academy instructional designers and staff will possess the data necessary to evaluate both content and delivery of current curricula. Juxtaposing and associating current curricula with individual skills, knowledge and abilities required, provides instructional designers with the ability to not only judge adequacy of content, and provide the basis for a critical GAP analysis. This type of analysis reveals both required new curricula development as well as content rendered obsolete by the changing agency mission. On this basis, academies can craft a curriculum development plan, which is derived directly from the mission-based learning strategy.



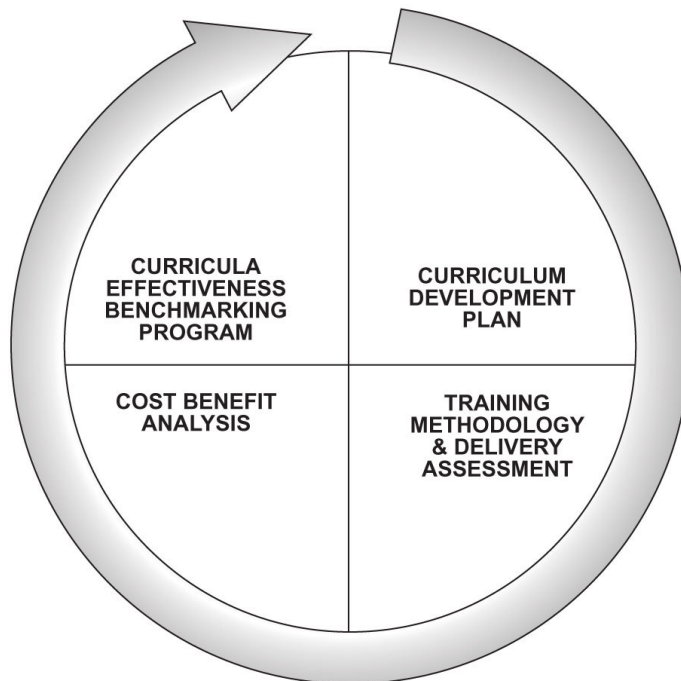
Training Methodology

The myriad of law enforcement subjects trainees are required to complete should be categorized according to subject type and appropriate delivery methodology. In this way, academies can begin the process of evaluating alternative delivery mechanisms that can alleviate resource constraints. Once completed, the training methodology and delivery assessment should include a detailed cost/benefits analysis outlining content type, delivery methodology, costs associated with content development and delivery, benefits of traditional or non-traditional delivery and implementation risk factors.

Development of distributed education for law enforcement subject matter is still in the early stages. The current state-of-the-art strongly suggests that eLearning will find its place beside traditional, classroom and instructor-based training as an important and powerful instructional platform. It is because of promises to address some immediate academy bottlenecks that it is tempting to view eLearning as a “silver bullet” that will reduce costs, increase throughput and provide anytime/anyplace instruction to our law enforcement community. While in principle, eLearning does provide some significant advantages over traditional

approaches; in fact, it is not suited for every subject. Careful consideration must be given not only to course content, but to effective pedagogical design before the advantages of eLearning are obtained. Deploying a distributed learning architecture prior to solidifying a curriculum development plan or finalizing an initial delivery assessment could result in reducing the overall efficacy of training while generating significant unwanted expenses. In addition, careful scrutiny must be given to the underlying IT infrastructure at the academy; does it allow the academy to integrate both eLearning and traditional delivery of training seamlessly? Does the academy possess the core systems and processes required in order to benchmark eLearning's effectiveness against traditional approaches?

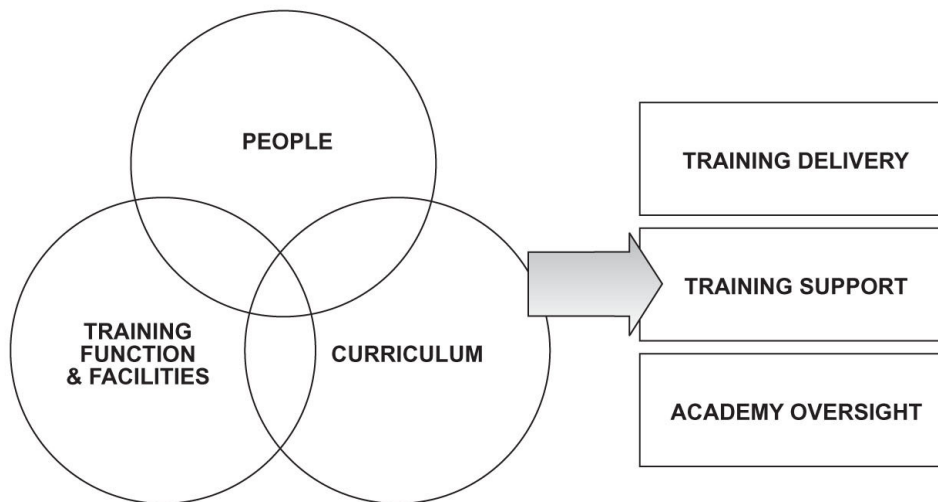
Without a foundation of solid operational processes and systems capable of providing holistic academy management reporting, the objective performance of eLearning will remain difficult to ascertain. Section III of this white paper will discuss current applications of learning technology within the law enforcement academy context and outline the prerequisite academy management systems that will provide the infrastructure our research indicates should be put in place prior to the deployment of online learning solution.



Structuring academy training & operations in support of the mission-based learning strategy

Execution of the mission-based learning strategy requires that training and administrative operations are structured to achieve the academy's desired strategic objectives. Evaluation of current operations will need to encompass not only processes, staff, infrastructure, information technology and physical plant required to meet the objectives but also take into account operating environment, political, human capital and budgetary constraints which affect the ability of the organization to modernize its training. Finding a balance between all of these factors requires a periodic reprioritization of the goals and objectives that support the mission-based learning strategy along with innovative approaches to solving the inevitable resource constraints that most academies are subject to.

In the final analysis, academies are made up of core resources; people, facilities and curricula, which in turn facilitate three interlocking functional categories; training delivery, training support and management oversight.



By applying a combination of analysis, process, technology and feedback to each functional category, academies will greatly enhance efficiency, cost savings and deliver more qualitative pedagogical experiences to their student population. The result will be a better prepared force, able to meet the challenges of an ever-evolving law enforcement landscape.

Training Delivery

Delivering training encompasses curriculum development, training activities (in classroom or online), student support, counseling & mentoring and student/instructor lifelong learning. The quality of training delivery is directly related to the relevance and contextualization of learning materials, exercises and exams within the context of the mission-based learning objectives. Motivated and knowledgeable Instructors are clearly one of the most important factors in achieving excellence in training. As a result, instructors should be shielded from as many administrative burdens as possible and be allowed to focus on lesson planning and student interaction as much as possible.

Training Delivery – Analysis

The following questions help contextualize the analysis of training delivery at the academy:

1. Are the mission-based learning objectives for each class clearly defined?
2. Has each class been assessed for its appropriate training delivery method (online, blended, classroom, simulation or hands-on)?
3. Are instructors focused primarily on achieving the objectives or delivering the content?
4. Are students achieving the learning objectives? If they are not, why?
5. Can the results of the academies training delivery methods (online vs. offline) be tracked? If they can, are the objectives being achieved for each delivery method?
6. Are both objective (score-based) and subjective (questionnaire based) assessments showing upward or downward trends in achievement of the learning objectives? What is working and what is not?
7. Does the academy possess a process and technology infrastructure to benchmark curricula, instructor and student performance?
8. Are sufficient resources (instructors, classrooms, training inventory, and information technology) available to deliver the required training?
9. Are students able to obtain all of the support they need? If not, what can be done to improve student support services?
10. Are there processes on the critical path of training delivery that are creating operational bottlenecks? If there are, what are they?

Answering these questions will allow academy administrators to gain a better understanding of training delivery within the framework of the mission-based learning strategy. Using the analysis, the academy can target key areas in process and technology that need to be addressed, modified or better supported to optimize training delivery.

Training Delivery – Process

Mapping the academy's training delivery processes accomplishes two fundamental goals. First, it ensures that curriculum development is focused on the objectives outlined in the learning strategy and secondly, that each component of training delivery provides the most appropriate means of delivering instruction based on the unique subject matters. Starting from the curriculum plan, and the training delivery analysis, administrators should gauge the effectiveness of the various delivery methods based on the course content being taught. Language instruction for example could be delivered online, in the classroom or as a combination of both (blended); in this case, the academy must determine the most effective delivery method based on a combination of available resources, cost, speed, pedagogical appropriateness, proven efficacy and most of all learner impact.

Training Delivery – Technology

Information technology is a fundamental enabler; allowing academies to automate some critical functions and accomplish others with less effort. Through appropriate use of delivery technologies, academies can realize additional powerful capabilities such as distributed education or eLearning which promises to significantly enhance teaching and learning. The non-traditional delivery platforms that could be considered by academies include:

1. LMS – Learning Management Systems
2. LCMS – Learning Content Management Systems
3. Content Development Platforms
4. Synchronous Learning Platforms
5. Electronic Student Support Systems (ESS)
6. Student Intranets

Technology platforms will be discussed in depth in section 3 below. However, it is worth mentioning that although a great fuss has been made regarding LMS & LCMS systems, in and of themselves, these systems are primarily a means of organizing, storing and delivering online content. In order to successfully deploy distributed learning, attention must be given *first* to pedagogically sound, engaging and learning-objective driven course content development. The LMS platform should be selected to deliver the desired content, not the content developed to suit the platform. With all of the buzz surrounding the XML-based interoperability standards such as SCORM (Sharable Content Object Reference Model) that are designed to allow content to be shared across different LMS platforms, we must specifically note that there exist numerous additional factors unique to our law enforcement environment that will impact standards adoption,

content development and delivery platforms. Implementation of problem-based learning and law enforcement simulations may require more flexibility than some of the interoperability standards allow and thus, care should be taken prior to establishing rigid technology standards before impacts on content development are fully ascertained.

Training Delivery – Feedback

Feedback for training delivery should focus on curriculum relevance, instructor performance, student achievement, learner satisfaction and post training surveys tied directly to applicable GPRA (Government Performance and Results Act) metrics¹. The academy should continually assess training delivery and maintain flexibility to alter delivery methods as the mission-based learning strategy evolves. In addition, feedback mechanisms should be automated, allowing administrators to focus their efforts on qualitative analysis rather than laborious and costly manual aggregation of feedback results.

Training Support

Training support encompasses all aspects of academy operations and administrative functions. Included are student registration, student records management, exam score processing, training inventory management, class-instructor and resources scheduling, human resources management, instructional design support and research & evaluation functions. Many of the aforementioned processes are currently paper-laden and manual, translating into significant ongoing administrative support costs for the academy. In addition, as training throughput increases, costs rise in reverse proportion to level of automation present at the academy. It is essential therefore that academies recognize their operational leverage points (those functions that are absolutely critical to the effective administration of the academy) and apply scrutiny to these areas in order to identify ways to improve them.

Training Support -- Analysis

The following questions help contextualize the analysis of training support within the academy by focusing on key operational leverage points:

1. What are the support functions at the academy?
2. Which of these functions are mission critical?
3. Which of these functions are currently standardized?

¹ See our previous whitepaper entitled "Validating Performance Measurements -- Performance and Results Act (GPRA) Applied In Web-based Law Enforcement Training Simulations"

4. Which of these functions are currently efficient?
5. Which of these functions are scalable?
6. Are sufficient infrastructure resources (facilities, technology, and personnel) available to support the required training?
7. Where are the academy's operational bottlenecks?
8. What are these bottlenecks costing the academy on an annual basis?
9. Can any of these bottlenecks be alleviated by the introduction of a new process or automation? If yes, which ones?
10. Does the academy's mission based learning strategy require additional support functions? If yes, what are they?
11. Which functions could be automated? What would the cost benefits/avoidance, efficiencies, and savings be of applying automation?
12. Does the academy find itself entering the same information many times into disparate databases, paper forms or documents? If yes, should information aggregation/consolidation be considered?
13. Does the academy possess a technology platform and process to track student information? If yes, how accessible is this information? How easy is it to export the data? How easy is it to integrate into other core operational systems?
14. Does the academy possess the ability to track instructor/detailer certifications efficiently?
15. Is scheduling of classes, instructors and resources efficient? If not, would automated scheduling technology be cost effective?
16. Does the academy possess the operational infrastructure to perform & evolve its training support function into the future? If not, what infrastructure components would be required in order to position the academy for growth and excellence in training?

Asking and answering questions such as these allow academy administrators to gain a better understanding of training support within the framework of the mission-based learning strategy. By developing and applying this analysis, the academy can focus on both the processes and technology platforms that will support training at the academy.

Training Support – Process

Training support and logistics form the core of law enforcement academy administration. Successful academies place emphasis on qualitative and scalable processes that facilitate the delivery of training and additionally, are engineered to provide academy oversight with meaningful management information. A process that works is only the beginning, the academy of tomorrow will integrate all of its critical functions into a knowledge base that can instantly alert management of problems and provide the academy real-time administrative performance benchmarking. Ideally, management will be able to measure

administrative performance not only quantitatively, for example student registrations processed or number of instructional hours performed, but also track qualitative benchmarks such as overall student satisfaction with administrative processes and counseling support.

Training Support -- Technology

The application of technology to the area of training support automation provides enhanced throughput, significant cost savings and higher levels of service. After applying proven academy management technologies, numerous training support functions were significantly enhanced resulting in an up to 90% reduction in paper and paper-based processes. The successful academies we reviewed revealed that several core training support and administrative technologies significantly contributed to both a better support environment and enhanced visibility into academy performance. The core technologies related to training support that any academy should evaluate are:

1. Student Information System
2. Instructor Certification and Assignment Tracking system
3. Automated Scheduling System
4. Workflow Automation
5. Online Course Catalog and Student Registration System
6. Automated Testing Platform
7. Enterprise Reporting Platform

During our research we saw a variety of technologies/platforms and processes that academies adopted over the years to perform training support functions. We found that regardless of what systems are deployed; the ability to share and aggregate data became the most important success factor for training support. Without integration, staff was required to input identical information into multiple systems and academy administrators found it challenging if not impossible to compile required aggregate performance reporting. Technical support, IT training and hardware/software costs for multiple proprietary systems became generally higher and required more staff to maintain.

In light of the above, mid-size and large academies should consider an enterprise law enforcement academy administration system that integrates all of the required functions into a single, secure platform accessible from any required location. This approach facilitates not only multi-campus applications but in addition, allows for secure access from agency headquarters or directly from field offices.

Training Support -- Feedback

As with delivery, training support feedback must be structured to enable the academy to easily benchmark operational performance over time. Information which proved helpful in tracking support functions include administrative costs per enrolled student and associated trend line (are administrative costs rising or falling on a per student basis?), curricula effectiveness (based directly on student performance and results from delivery feedback), attrition reporting (with action & reason) to identify why students are leaving the academy, number of registrations per administrative support staff and associated trend line, number of instructional hours scheduled vs. number of instructional hours cancelled (cancellation reasons).

Oversight

The most crucial element in maximizing the effectiveness of all aspects of law enforcement training is solid oversight. Oversight should encompass Federal policy integration agency mission, training strategy, tactical implementation and the people, curricula and facilities required for proper execution of training. Effective articulation of the academy's vision and how it dovetails with the agency mission should be coupled with internal dialog and the solicitation of tactical innovation from instructors, administrators and support staff. Periodic realignment of priorities and continuous monitoring of academy performance will insure that the mission based learning strategy is executed effectively.

Oversight -- Analysis

Several fundamental questions need to be answered in order for oversight to begin developing a monitoring strategy for the academy.

1. Starting from the mission-based learning strategy, what are the academy's key objectives?
2. What are the metrics that support those objectives?
3. What are considered excellent, normal and sub-standard thresholds for those metrics?
4. Do we possess the core data to support our metrics? If not, how do we obtain it?
5. If we have sufficient data, can it be efficiently compiled into meaningful management reports?
6. Can we view management metrics in near-real-time? If not, how could we accomplish this?
7. Do we possess the capability to insure that we abide by all key Federal Policies and mandates? Can we track compliance?

8. What management review process will we adopt to insure maintenance of an up-to-date, flexible, mission-based learning strategy that accounts for changing agency priorities?

Oversight – Process

Based on each unique agency mission, the academy should distill the key goals and objectives down to a clear set of performance metrics that can be objectively tracked. This set of metrics will form a basis for decision making regarding academy direction, facilities, technology implementations and staffing requirements. In addition, the metrics should be designed to allow oversight to monitor increases, steady-state or degradation in critical performance areas that affect the execution of the mission-based learning strategy. These metrics will serve as both a validation of direction as well as an early warning system should benchmarks not be achieved, allowing sufficient time for oversight to correct problems before they grow too pervasive. Over time, as the mission changes, metrics may be added or removed reflecting the evolving priorities of law enforcement training.

Oversight -- Technology

Without easy access to information, oversight will not be able to perform its functions. Many academies are struggling to compile planning, performance-measurement, budget, and facility utilization statistics from paper documents and inputting these data into electronic spreadsheets for analysis. Not only are these methods costly, in many instances the time required to compile the raw information for analysis ensures that information is out of date by the time management receives it thereby severely complicating both problem resolution and accurate needs forecasting. Several technologies can facility the oversight process. However, critical to this effort are the ability of the academy to *aggregate* information efficiently. Without solid training delivery and support systems that can feed data directly to management reports, academy oversight is not given the information resources it needs to operate. Provided these systems are available, implementation of some of the following tools will significantly enhance management's decision making process.

- 1.) Enterprise reporting tools
- 2.) Executive Information System
- 3.) OLAP (on-line analytical processing)

Oversight -- Feedback

In order to “move-the-needle” on academy performance, oversight must incorporate feedback from training delivery and support while juxtaposing that to the academy’s stated goals and objectives. Using the performance metrics developed, ongoing monitoring of each functional area will insure that the academy continues to execute against the objectives. The final scorecard of academy performance includes applicability of law enforcement training to real world situations and on the job performance. Using both objective (score-based) and subjective (survey-based) evaluations, oversight should maintain a GPRA-centric monitoring strategy that takes into account force performance after initial training is complete.

Evaluating New Technologies

When evaluating new technologies, four (4) fundamental questions arise that help contextualize the capital investment allowing managers to make objective decisions regarding technology implementations:

- 1.) Does the technology support the mission and objectives? How?
- 2.) Will the technology provide a return on investment? If not, will the additional capabilities sufficiently enhance academy performance to warrant the cost?
- 3.) What are the impacts of the deployment in terms of human resources, infrastructure and required training to implement?
- 4.) Is the technology proven, flexible and scalable enough to meet our needs into the future?

Because technology is rapidly evolving, evaluating, installing and maintaining core automation platforms that support the overall mission and enhance operational capabilities can be a challenge. To avoid execution risk, criteria for IT investments must be aligned with academy objectives and not viewed as a “quick fix” for more substantial problems otherwise, failed implementations and significant costs will result.

In the next section, we will briefly discuss a variety of technology platforms and applications that are suited to most law enforcement academy environments. Assessing strategic leverage points for technology and prioritizing projects by ROIE (Return on Investment and Effort) will go a long way towards ensuring that academies are successful when deploying technologies within their organization. What follows is by no means an exhaustive list. It is intended as a starting point for academies to consider while undergoing modernization.

III. Academy Management – Practical Applications of Technology and Process

For the sake of consistency, technologies are categorized by the three (3) main functional areas of an academy and a section for Core Technologies has been included. Entries have not been prioritized by importance or by proper order of deployment, as this list is intended to serve only as a quick reference of available technologies and not as an implementation plan. Clearly, certain core technologies must be in place prior to deployment of others for example, without electronic student records, online automated testing would be nearly impossible to implement effectively and, without core delivery and support systems, implementation of OLAP (Online Analytical Processing) would be meaningless.

Core Technologies

Student information System

Student records form the foundation of any academy management system and ultimately, are the backbone of the agency's Human Resource information system. Reflecting not only current but historical biographical information, career history and training accomplished, a good student records system will maintain accurate and easily accessible transcripts of student courses, classes and exams taken (both online and offline) as well as providing access to all associated registration, placement, instructor, grade and counseling records. Without a comprehensive dataset, scalable and open architecture, the deployment of many of the technologies we describe below will not be possible. Academies should place special emphasis on ensuring that their student information systems are robust, well prepared to integrate into external systems and are sufficiently scalable to meet the data intensive requirements of emerging academy automation technologies such as workflow management, automated scheduling and learning management systems.

Internal/External Messaging

Both internal and external messaging are important core components of an automation strategy. Utilizing email for communications with academy students will reduce turnaround time and mitigate costs associated with managing information interchange between the academy, instructors and trainees.

Academy Network Infrastructure

Before considering advanced learning technologies, a robust, secure and scalable network must be in place. eLearning requires a network infrastructure that is both efficient and capable of delivering audio and video streams to students both on and off campus. Within the context of law enforcement, information security is especially paramount. Each academy needs a sound security policy, strong firewall, intrusion detection mechanisms and be prepared to implement countermeasures against cyber attack. This topic is too broad for us to cover in this white paper however there are numerous resources both online and offline that outline key security considerations. If the academy has not already done so, it is recommended that a full security audit be performed to insure that best practices are being followed.

Training Delivery

eLearning – Delivering learning online

Debate continues on the topic of eLearning, its benefits and drawbacks. We will briefly explore eLearning in the context of the law enforcement environment which poses its own specific challenges. Deployment of an eLearning portal for law enforcement academies can provide meaningful value, provided, some of the fundamental challenges of our environment are understood and overcome. eLearning is delivered through broadband networks and enables the delivery of curricula directly to a student's computer regardless of location. Training materials and updates are readily available 24/7 and technology exists to facilitate instructor/student or student/student collaboration. Because content is dynamic and can be accessed anytime, students gain the ability to recreate a pedagogical experience as often as needed and can learn at their own pace. Though eLearning promises to provide academies with reductions in both travel and training delivery costs however, no matter how far we peer into the future, we cannot foresee a day when all law enforcement training will be delivered electronically as the profession requires too many hands-on skills that are impossible to fully simulate online. Another difficult challenge is the current generation of electronic curricula which is often linear and static. This is not the fault of eLearning per se, but rather a function of old-school instructional design which has tended to imitate the textbook format online and has not yet fully adapted itself to the tools and techniques recently made available due to significant advances in technology. It is our view that though linear learning has its place for certain topics, many law enforcement specific courses will need to be custom developed based on the outcomes of the curriculum development plan.

Recently, cutting-edge online pedagogical approaches demonstrated that eLearning can be a truly effective tool within the broad landscape of the law enforcement environment when combined with in-classroom instruction and hands-on exercises. This approach called “blended-learning” encompasses the best of both worlds, providing instructors new tools that may be used to introduce a leaning topic, to explore a number of practical applications of a given law enforcement technique, to reinforce a discussion taking place in the class, or to test the comprehension of the learning taking place by the students. eLearning simulations can prepare students for practical exercises and simulate real-world scenarios at a fraction of the cost of traditional methods. Though more expensive to produce, performance-based learning (PBL), utilizing immersive multi-media and time-revealed scenarios provide a more authentic learning experience and better prepare students for real-world situations. We predict that PBL will become a mainstay of law enforcement training delivery.²

Adoption of a blended learning approach will require that both teachers and instructional designers become comfortable with a wide array of instructional development techniques, design, and learning environments that are designed to be student centric and promote active learning.

Learning Management Systems & Automated Testing

The primary technology platforms utilized to deliver online learning are the LMS (learning management system) and the LCMS (learning content management system). There are many LMS & LCMS platforms to choose from, each with its own unique set of features and drawbacks. The academy should carefully select the platform according to the type of content to be delivered, security requirements, functional needs and ability to integrate the technology with other core academy systems. The LMS should only be selected after development of the curriculum development plan, as some LMS platforms are not well suited to certain types of content.

Automated testing is finding its way to law enforcement academies as a natural extension of online learning. Automated testing platforms (often bundled with the LMS platform) allow students to take exams online from their location or proctored at a computer lab at the academy. The advantages of automated testing are numerous including the ability to randomize questions and answer sets, instant grading, ability to provide expert feedback on a question by question basis, real-time statistical analysis of question validity and numerous features for granular grading. Automated testing provides convenience and significant

² Pedagogical approaches and technologies required for online learning to be effective in the law enforcement context will be explored in-depth in our next white paper.

savings over standard paper based methods. In addition, it can be used by students to assess their learning at any point during training. Thus, automated testing provides optimal tools for self-paced & self-directed study. In order to obtain the maximum benefit from an automated testing platform, it should be directly integrated with the Student Information System allowing for the student transcript to reflect both online and traditional exams side by side without requiring additional data entry by training technicians.

Training Support

Instructor Certification and Assignment tracking system

Maintaining accurate and timely instructor certification records helps ensure that the quality of the academy's instructional resources is properly maintained. Centralized tracking of ongoing certification requirements can provide timely notifications of certification expirations and streamline scheduling of re-certification training. The same database, integrated with an automated scheduling platform can ease the often considerable burdens of identifying and matching qualified & available instructors to training classes scheduled at the academy. Also desirable is the ability to quickly pinpoint candidates for advanced training in order to maintain or increase the number of qualified instructors in each required discipline. It is additionally very important to integrate instructor tracking with student records in order to achieve the capability of tracking instructor performance against student grades. This helps the academy spot under-performing instructors before quickly allowing for added training or counseling as needed.

Automated Scheduling System

Reconciling availability of core resources required to provide training is difficult at best. Because these individual calendars are always in flux due to unforeseen circumstances such as a firing range down due to repair, an instructor falling ill and any number of events that can impact the training schedule, academies have struggled with maintaining accurate and up-to-date training schedules. Many large academies provide food, lodging and transportation for the trainees. When schedules are severely impacted, it causes a direct effect on training costs. There are several enterprise-level automated scheduling systems available. Our primary criteria for the Law Enforcement Academy is that the scheduling system be well integrated into core academy automation platform and that information such as courses, classes, exams, instructors and training resources not require extensive additional data entry. In order to be more than a shared calendar however, automated scheduling must be "intelligent", "rules-based" and automatically facilitate the resolution of scheduling conflicts. For large academies, true

automated scheduling can achieve a much more efficient utilization of available resources and instantly realign the schedule should a necessary training resource become unavailable. This capability can translate into tremendous ongoing cost savings. The ability to perform “what if?” scenarios and requirements projections allows administrators to better plan capacity utilization and deal with bottlenecks well before training begins. A well designed automated scheduling system immediately notifies the schedule administrator of insufficient resources, instructors or classrooms to fulfill the training requirements projected for a given number of students. With the dramatic increase in the amount of training required post 9/11 we view automated scheduling as a key factor in academy cost containment.

Workflow Automation

Most academies are still managed the old fashioned way, generating large quantities of paper documents in numerous formats which must be stored and cannot be easily accessed. Workflow automation can be an important component of the law enforcement academy modernization strategy by helping academies both standardize and digitize their operational processes. Implementation of workflow automation provides a consistent, repeatable and scalable process for accomplishing administrative tasks associated with every aspect of running the academy. These tasks include everything from real-time access to automated daily status reports, task management, and generation of all necessary letters, certifications, documents or forms with data elements automatically pre-filled. Additional key benefits of this approach are both the continuity of operational process due to automating of day-to-day tasks as well as the retention of essential institutional knowledge. Often, when an employee retires or changes job, the institutional memory of the processes they performed is lost. When any given operational process must be reinvented the cost to the academy can be significant. Workflow automation provides a means for the academies to institutionalize their operational process and thus, training new employees becomes very efficient. Most importantly, when information input and access are standardized, management is empowered with instant, real-time access to academy management, budget and benchmark reporting that improves their ability to pinpoint problems and track academy performance. In a paper-based environment, management reporting remains largely a costly, labor-intensive process.

Online Course Catalog and Student Registration System

The internet provides a proven means of inexpensive distribution of course catalog information and student registration. Though not all students may have access to an internet account, by capturing a fair percentage of registrations online, academies can generate substantial cost savings. Printing and data entry

costs are reduced, training authorizations can be streamlined and student notifications automated. The course catalog is created and maintained by the Registrar. Entries can be grouped according to the pertinent curricula for each type of student based on a job-task analysis. Students register and take both the online or classroom-based courses that comprise the curriculum essential to prepare them for their law enforcement duties, and enables them to fulfill the responsibilities of the professional position they hold in their career path. Student registration features that are very helpful include the ability to wait-list students and automatically notify them when training slots become available or when insufficient registrations have been received to fill a particular class, the ability to quickly pinpoint and notify training candidates via bulk email of the opportunity to attend the particular class.

Oversight

Management Technology

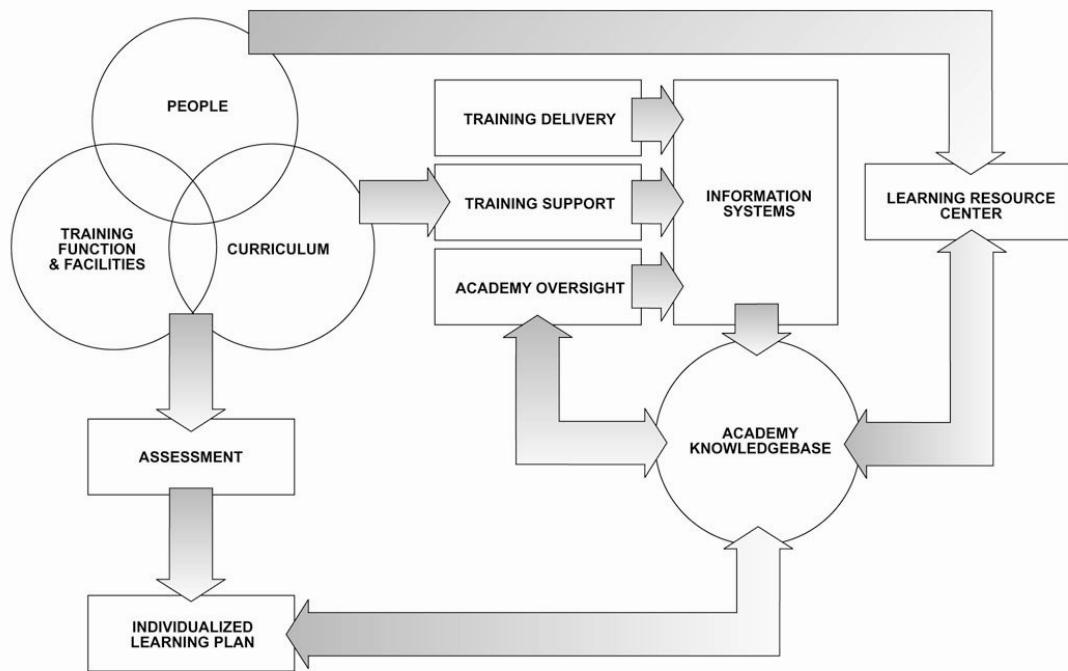
Several technologies can assist management in gaining visibility into academy operations. Enterprise reporting tools enable managers with real-time access to operational reports, utilization statistics and ad hoc information access. Information available in an aggregated, consistent, and accessible format creates enormous benefits that management can capitalize on. In order for enterprise reporting to succeed, managers must be able to clearly articulate reporting needs and how individual reports are linked directly to operational management objectives.

Executive Information Systems take enterprise reporting one step further by making core metrics available to management in real time in a dashboard format. These technologies allow managers to implement Academy Performance Benchmarking. Starting from the mission-based learning strategy, the academy can tie specific strategic and operational goals and objectives to actual aggregate performance data and track deviations from the desired outcomes in real time. For example, one key metric may be to graduate 25% more students per session, to reduce the injury rate 30%, to increase recruitment by 25%, or to increase grade averages by 10%. Real time academy benchmarking can track those metrics and show management exactly where they stand in meeting the goals and objectives they set out to accomplish.

The addition of data-warehousing and OLAP (on-line-analytical processing) can help management answer questions relating to why a goal or objective is not being achieved. OLAP is a sophisticated reporting tool that can allow managers to view information stored in their data warehouse. OLAP provides spatial, multi-dimensional views of information and is the foundation for a range of essential business applications, including planning, budgeting, profitability

analysis, performance measurement and data warehouse reporting. Although OLAP is neither a new nor an obscure concept, it is still not widely understood. We believe that OLAP will become an essential academy oversight tool as, once deployed, it allows for the easy transformation of massive amounts of information into actionable knowledge.

Simplified Academy Automation Overview



IV. Case studies:

United States Customs Academy (Dept. of Homeland Security, Bureau of Customs and Border Protection)

Linda Wilcox -- Director of Mission Support and Management Training Division

Overview of Problems faced

Historically, the United States Customs Service served as the primary enforcement agency protecting the Nation's borders. It is the only border agency with an extensive air, land, and marine interdiction force and with an investigative component supported by its own intelligence branch. The Customs Service operates one of the largest Federal Law Enforcement Academies in the Nation. With a force strength of 15,000 enforcement officers worldwide our requirements for both basic and advanced training were considerable even prior to the tragic events of September 11th. That singular event caused us to add significant anti-terrorism elements to our curricula as well as to expand our recruiting and basic training programs. Faced with a 48 student basic inspector class starting almost every week, the operational stress required us to reevaluate our operational processes and review some of our outdated administrative technology platforms. With the transition to the Department of Homeland Security on March 1, 2003, the impetus for an automated class management system including a scheduling program caused by escalating student numbers and declining resources has become stronger.

Key drivers for Automation

- 1.) The need to process and access student biographical and grade information more efficiently became apparent as we found bottlenecks in our data processing and access procedures.
- 2.) With over 1.8 Million blocks of instruction to schedule every year, our academy needed to find a way to efficiently automate the scheduling of classes, instructors, classrooms and academy resources. Complex scheduling rules required us to seek innovative approaches to enterprise resource scheduling.
- 3.) The acceleration of our basic training programs necessitated automating key elements of our administrative workflow.
- 4.) Our need to obtain timely management reporting and budgeting information both at the Academy and at Headquarters

- 5.) The absorption of the Customs Academy into the Department of Homeland Security required an open systems approach and the ability to share and consolidate information with other DHS academies.

The conclusion that was reached by management was that significant improvements in both process and throughput could be achieved by the adoption of a modern enterprise automation platform. It was imperative that the various academy functions (student information system, instructor tracking, scheduling, budgeting, enterprise reporting) be seamlessly integrated and allow for single point of data entry, multiple points of data access. Consolidated workflow by user role would create an environment where a maximum of productivity could be reached. In this way, the academy would be able to achieve a level of automation required to increase throughput by several orders of magnitude while additionally providing accuracy and timeliness of crucial academy operational data.

Elements of Modernization

The U.S. Customs Academy is currently in the process of implementing a robust Academy Class Management System with integrated Automated Scheduling tool. The result of over 4 years of ongoing development, the enterprise platform was created in conjunction with the United States Border Patrol and Immigration Officer Academies. Specifically designed for the needs of the modern Law Enforcement Academy, the system fulfills all of the initial modernization requirements outlined by management. The technology resides on a scalable Oracle database platform and can be accessed securely from anywhere on our network through a standard web browser. This approach will lower the overall cost of ownership as software updates can be managed easily without requiring applications to be loaded on each of our thousands of desktop computers.

Integrated Automated Scheduling promises to allow us significantly better management of limited resources insuring that the academy achieves optimal utilization of classrooms, instructors and other required training resources.

Challenges to Modernization

As with any modernization endeavor within a large organization, we faced the challenges of articulating and communicating the overall project vision as well as creating buy-in at all levels of the organization. Because the changes to our law enforcement mission were so suddenly thrust upon us, there was little time to accomplish detailed needs analysis as it was imperative that we move rapidly to increase training throughput immediately following the September 11th terrorist attacks.

Critical decision making required of our organization while dealing with significantly increased demands on each individual's time as well as our overall budget. Though additional monies were provided for anti-terrorism activities, the organizational structure of the academy was in flux as we transitioned to the Department of Homeland Security in March of 2003. The uncertainties regarding implementation requirements for new projects became more challenging as one key goal of DHS is to reduce the overall number of information systems across the 22 consolidated agencies. Balancing the desire to consolidate redundancies with immediate needs of the academy became a cornerstone our decision making process. What finally resulted was a review of best practices among the other large Law Enforcement Academies and the adoption of the same technology platform successfully deployed at the U.S. Border Patrol Academy and Immigration Officer Academy. Effective October 1, 2003, the Investigations Training Division of the Legacy Customs Academy will move to the Bureau of Immigration and Customs Enforcement as the ICE Academy. The U.S. Border Patrol Academy and the inspector functions of the Immigration Officer Academy will be consolidated with the remaining aspects of the Customs Academy to form the Customs and Border Protection Academy. The goal is to create one automated system for the CBP Academy.

Modernization Results

It is too soon to evaluate the results of this project as final implementation will not be completed until October of 2003. We are currently implementing a pilot installation of the Academy Class Management System with a goal of having the pilot operational by August. Once completed, the pilot project will serve as a benchmark allowing us to perform functional analysis and development prior to our final consolidation into the new Customs and Border Protection Academy. One important result of this initial pilot will be that our core student information data set will be both compatible and interoperable with that of the other 2 academies thus creating a critical platform for consolidated academy benchmarking.

Lessons Learned

One of the more important lessons learned to date in this ongoing change management process is the need to maintain a flexible and nimble organization, an organization capable of adapting and evolving its priorities within the confines of an increasingly complex law enforcement universe.

United State Immigration Officer Training Academy (Dept. of Homeland Security)

Michael John Baker -- Automated Data Programs/Information Technology Operations

Historical Perspective

Prior to the installation of our modern Academy Class Management System (ACMS), the Immigration Officer Academy (IOA) used a program that was developed in-house known as TIMS (Training Information Management System).

Aside from providing limited functionality, TIMS cost the IOA an estimated \$93,000 per year in maintenance expenses alone and because the technology was obsolete and maintenance requests relatively slow to process, it became increasingly difficult for our academy to remain operational and to conduct our daily business. Management agreed that something should be done to replace our outdated technology. In a detailed cost justification, we were able to show exactly where money was spent and time was wasted by continuing to operate on a very inefficient system. The costs cited included support for normal system maintenance as well as support for major system failures, which occurred on a monthly basis. Some of the justifications we used in order to fund our modernization effort included:

- An example of “Maintenance Expenses”, associated with system failure involved the grading of student examinations. The cost and time required to grade examination by hand was \$34.45 per hour; the average cost for one GS-12 Instructor.
- The average amount of time required to hand grade an examination was 3 hours and required 3 instructors costing the IOA \$309.15. Should 2 examinations be involved the cost doubled to \$618.30.
- TIMS System Security was a real and serious problem, as TIMS did not meet nor could it be modified to existing Department of Justice or Freedom of Information Act (FOIA) standards and requirements.
- Additionally there existed no standardized backup system or method to save TIMS data which could have resulted in catastrophe for our academy.

- TIMS consisted of several, (approximately 12) disjointed software packages that were not compatible with existing Service software programs. Programming was a serious concern and system security was all but non-existent.
- Over 4 man-hours were required to prepare simple class graduation materials using TIMS, as the software involved was not compatible with newer Service programs and would not convert properly.
- TIMS required 2 or 3 Academy support personnel to complete common tasks that could easily and swiftly be accomplished by 1 staff member using the new Academy Class Management System (ACMS). This was because each task in TIMS required significantly more steps and was far more complex than necessary.
- The IOA provides twelve different programs and the old TIMS system physically required a different set of software for each. The maintainability of each set of programming code was a configuration nightmare. The time loss from waiting on software upgrades, modifications and changes was not specifically captured but had a large impact on daily operational costs at the Academy. In addition, obtaining aggregate management reporting was impossible.
- Each of the twelve (12) programs generated 46 different reports consisting of 113 pages for each student in a class. Thus, with class sizes between 24 to 48 students, we were generating a total of 2,712 physical pages to support a single class of 24. In a class of 48 students a total of 5,424 pages of documentation were produced. Each of these documents was produced by staff members by hand and required costly storage.

When properly analyzed, the cost benefits of migrating to a new, more modern platform were staggering here is an example:

TIMS Operating Costs:

- 3 employees x \$40/hour x 40 hours per week = \$4,800 per week per program
- \$4,800/week x 12 programs = \$57,600 per week

Projected Operating Costs with a modern system:

- 1 employee x \$40/ hour x 40 hours per week = \$1600 per week per program
- \$1,600 x 12 programs = \$19,200 per week

The above proved that a modern system had the potential saving our academy **\$1,996,800/year** in Labor Costs alone!

What was needed we successfully argued, was a comprehensive new system that would meet existing agency security, software and hardware requirements. A system that was flexible enough to allow for expansion and growth as the needs of the Academy changed and that could automate our most time-intensive tasks, freeing up personnel for the more qualitative aspects of managing the academy.

Implementation of an Academy Class Management System "ACMS"

Through the use of contractor support, the U.S. Border Patrol Academy had undertaken and completed their internal migration of TIMS to a scalable, internet-based Academy Class Management System running on an Oracle database. We decided to have the same contractor customize the existing ACMS platform to meet our additional requirements. As a result, the IOA benefited from both the capital investment and the groundbreaking development of ACMS, making this alternative a very cost-effective and timely option for the IOA. Initial functional requirements were gathered during meetings between IOA representatives and the Contractors in July 2000 which culminated in a detailed Functional Requirements Document. The focus of this document was the Immigration Detention Enforcement Officer's Basic course provided by the IOA but it was our intention to manage all of our 12 courses on the ACMS system.

Results of Implementing ACMS

ACMS has achieved a resounding approval by our Academy. The use of a common system within the Immigration Officer Training Academy environment has standardized many of our critical business processes. It has also standardized the reporting of student, class and grade information across the Academy. Another key benefit is the drastic reduction in the amount of time it was taking for us to generate meaningful management information for headquarters as all data calls can be performed in real-time directly from the database from any authorized user on our network. Data integrity issues have been significantly improved due to the fact that manual report generation has been nearly eliminated entirely in lieu of automated reports that can be generated with a few mouse clicks.

Our migration to the ACMS quickly paid for itself, not only from a pure Return on Investment (ROI) perspective, but also by standardizing the business operations of all the twelve (12) programs within the IOA. Our ACMS modernization initiative has created a much more efficient and streamlined

academy, one that has critical information at its fingertips whenever, wherever it may be needed. Our model implementation of the ACMS has become the primary system of choice for use by the new Customs and Border Protection (CBP) Academy and Citizenship and Immigration Services (CIS) Academy under the umbrella of the Department of Homeland Security. What we have learned through this process is that it is very beneficial to constantly strive towards process improvement and objectively and critically evaluate current operations. Prior to deploying an enterprise system like ACMS one should have a clear idea of where the organization can benefit the most from automation, how technology will save us money, improve operations, enhance management visibility and provide us with new strategic capabilities. On a final note, technology is constantly evolving. Once we embrace technology as a fundamental enabler, we must prepare ourselves to evolve alongside it.

Federal Law Enforcement Training Center (Dept. of Homeland Security)

Dr. Sandy Mihal -- Distributed Learning Program

Prior to the development of a Distributed Learning Program, the FLETC learning model consisted primarily of instructor-led, classroom-based training delivered in residence on the FLETC campus. Practical demonstrations, physical exercises and some simulations were used for subject areas including Firearms, Physical Techniques and Driver Training. Instructors from the FLETC, State and Local police, Federal and International agencies delivered a modicum of export training at student sites. In addition, a small number of courses were taught via some form of technology, including video teletraining via satellite delivery and Computer Based Training (CBT) via multimedia CD-ROM.

Recently, FLETC initiated a proactive training solution by establishing a distributed learning program based of a comprehensive system to develop, transmit, and track student learning in a distance format. This decision proved strategically crucial for us because the demand for law enforcement training is projected to increase exponentially, straining FLETC's already overtaxed resources. Most of the training at the FLETC is currently conducted in residential environments. Basic training comprises 75% of the FLETC at Glynco, Artesia and Charleston. A largely untapped third option was law enforcement training via a virtual learning environment.

Distributed learning is defined as a number of relatively new technologies used to train students at their worksite or telecommuting location. It unites learners with training resources, and connects those who want to learn with the most efficient means of delivering the knowledge they need. This initiative provided the

FLETC a way to improve its distributed learning capacity including its Internet training capabilities without requiring the building of specialized and costly facilities. Additionally it allows for simulcasts of law enforcement training at multiple remote locations

Chronology of events

FLETC tested several forms of distributed learning that included: videotapes produced in-house; publication of a quarterly Legal Update via the internet; export training through in class instruction given at duty locations which involved travel; satellite TV broadcasts; interactive video teleconferences for FLETC, Glynco. June 1999, FLETC hosted a Distributed Learning Feasibility Conference, attended by 67 participants. A list of conclusions reached by the participants was as follows:

1. Distributive learning is a feasible and desirable approach for law enforcement training.
2. FLETC should develop and implement a comprehensive, coherent distributed learning strategy.
3. Success of a distributed learning strategy requires the commitment of essential fiscal and personnel resources, the designation of a central focal point for coordination and continuity, and a senior management FLETC emphasis and approval.
4. The FLETC distributed learning strategy requires collaboration that embraces the Center's Partner Organizations.
5. The timing is right and the FLETC workload compels the use of alternative training delivery methods and technologies, which are cost effective.
6. Training content drives technology, not the reverse.
7. Distributed learning utilizes an array of training technologies to provide law enforcement training which include: interactive Web-based training via the internet; interactive television via satellite and/or cable broadcasts; video teleconferencing; computer-based training; videotapes, electronic books, and self-paced training materials.
8. FLETC reviewed and garnered the experience with distributed learning from two government organizations, Department of Justice and the Department of Agriculture.
9. A continuously growing body of literature and research, supported by the experience of the military and academic institutions, indicates that courseware competently developed and appropriate for distributed learning is as effective as residential learning, at a much greater efficiency.
10. Strong evidence exists that technology-based learning results in equal or higher quality learning over traditional classroom instruction. The

outcome of a higher quality of learning is a more productive, efficient, better trained workforce.

11. There exists strong evidence that technology-based distributed learning requires less time for training than instructor-led training.

The FLETC Investment Review Board examined the impact of a distributed learning architecture and approved the initiative. As a result of this review, FLETC established a virtual campus in support of the primary goals and objectives of the FLETC strategic plan. The specific goals are to:

1. Reach student populations that cannot physically attend training at FLETC
2. Provide a more comprehensive training approach
3. Support more effective and efficient use of classroom time
4. Leverage technology to increase FLETC's capacity to train in all areas without increasing staff or physical facilities
5. Create a continuous learning environment and professional life long learning for law enforcement officers

Our success metrics for distributed learning included achieving the following survey ratings:

1. > 90% rating on the Student Quality of Training Survey for Basic and Advanced training
2. >80% rating on the Partner Organization Satisfaction Survey
3. >65% rating on the Employee Satisfaction Survey
4. >90% rating on the Student Quality of Services Survey

The evaluation of survey outcomes cover student attitude, student learning, job skills application, and organizational impact.

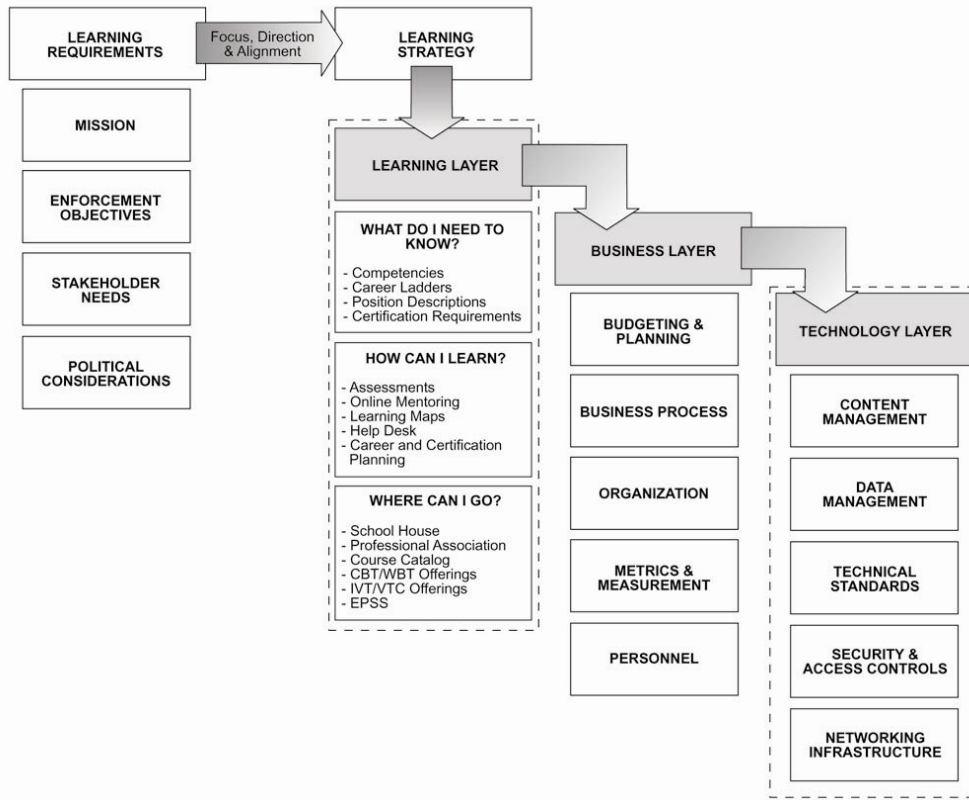
FLETC Distributed Learning Architecture

The Federal Law Enforcement Training Center (FLETC) established a virtual FLETC learning portal to help fulfill its mission to train law enforcement officers' cost effectively at their duty locations. Prior to creating its virtual academy, the FLETC completed a distributed learning architecture assessment, which provided the three-layer model used to implement its online learning portal. A team comprised of both of FLETC, and contract staff conducted the analysis of FLETC's current training environment. Data collection focused primarily on the Glynco and Artesia facilities. The interviews took place to gather data from all levels of the organization, within in three layers of distributed learning: Learning Architecture, Business Architecture and

Technology Architecture. The results of this analysis served as the basis for the development of the three layer distributed learning program architecture.

Our extensive assessment revealed several fundamental opportunities for FLETC. Pre-Training Opportunities provides FLETC students would be able to review orientation material and tutorial material prior to their arrival at the center. Students taking advantage of pre-work material arrive at FLETC better prepared to engage in classroom instruction, and pre-work may act to “level the playing fields” of students with diverse backgrounds when they enter FLETC. Training technologies could be used to provide advance training to local, state, and federal law enforcement personnel without the need for them to travel to a FLETC campus. At the FLETC itself, the implementation of a supporting infrastructure for delivering virtual online learning created opportunities to provide a reliable means for customer agencies to procure advanced training for their students without the requirement for them to travel to FLETC; to increase the revenue generated from advanced training on a fee-for-service basis; to provide students at different FLETC campuses the ability to engage in the same training activities at the same time; and for instructors located at different FLETC campuses, the ability to team teach selected courses or exercises, develop new basic or advanced curriculum, or collaborate on new course development. Opportunities exist for local, state, and tribal outreach to provide law enforcement training in a secure online environment. These students would gain access to basic and advanced training from FLETC never before affordable or even available. Further, instructors would be given the opportunity to engage in the FLETC instructional development and delivery process with on-line interaction with a community of students that may never set foot on the FLETC campus.

The following graphic depicts the FLETC Distributed Learning Architecture consisting of the learning layer, business layer, and the technology layer.



Learning Layer of the FLETC Distributed Learning Architecture

The learning layer of LMS architecture contains competencies, career ladders, position descriptions, certification requirements, and accreditation standards. It is focused on the question: how can I learn? This question is answered through assessments, online mentoring, learning maps, and career planning. Essential to the learning layer is answering the question: where do I go for learning? A number of locations provide the training and education, namely: the online academy, professional associations, courseware catalog, computer based training (CBT) and web-based training offerings (WBT), simulcasts, and electronic performance support systems. The Individual Development Plan (IDP) is a competency modeling component that includes a 360 degree Skills Assessment Survey, skills gap analysis, recommended learning activities, coaching abilities, and an administrative console for managing core competencies.

Business Layer of the FLETC Distributed Learning Architecture

The business layer of the DL architecture as it exists today consists of reimbursable budgeting and planning, business process based on subscriptions for use of the virtual learning portal (an e-commerce model), the Distributed Learning Program (DLP) organization, metrics and measurement, and personnel. For the FLETC, the benefits of distributed learning are: little or no capital plant requirements to meet the high demands post 9/11; ability to assure consistent quality of training; reach law enforcement audiences that otherwise could not be supported by FLETC due to resource limitations; and provide an increased capacity for “just-in-time” delivery of training that reduces the government’s liability for claims that may stem from inadequate or outdated training. The primary focus, in order of priority, was directed at the delivery of post-academy, advanced, and basic training needs. The business case for the establishment of DLP required the development of several key management documents: a Return on Investment analysis, a budget plan complete with budgets for the out-years; and a budget review process with projected time frames for implementation, and the goals/objectives for the program’s life cycle.

Technology Layer of the FLETC Distributed Learning Architecture

The technology layer focuses on the network infrastructure, security, technical standards, data management, and content management essential for a virtual learning portal. FLETC training includes a combination of on-line internet-based training, CD-ROM, video teletraining, and classroom training. The FLETC Distributed Learning Program provides virtual online training on a level five secure computer site. Today, it is hosted on a leased Learning Management System provided by the DLP’s industry partners. Content management consists of self-study courseware, traditional standup training, interactive video teletraining, videoconferencing, and other collaborative learning tools such as threaded messaging and moderated chat. Its components include data management, security, access controls, network connectivity, and application software all sufficient to enable the FLETC virtual user community to pursue offered courseware “anywhere” and “anytime.” The virtual learning portal provides a Web-based gateway to available courseware and materials. An automated mechanism exists for students to register for the online courses. A planned addition is access to comprehensive digital learning resources for students, instructors, and staff. A comprehensive system tracking and reporting function provides student progress in courses they are taking. An automated mechanism exists for collecting and aggregating performance metric training data. Feedback mechanisms are in place to capture new training requirements, and to assess and evaluate existing courses and materials. A help desk and support infrastructure is available 24x7 to assist the students, instructors, and staff with online training issues.

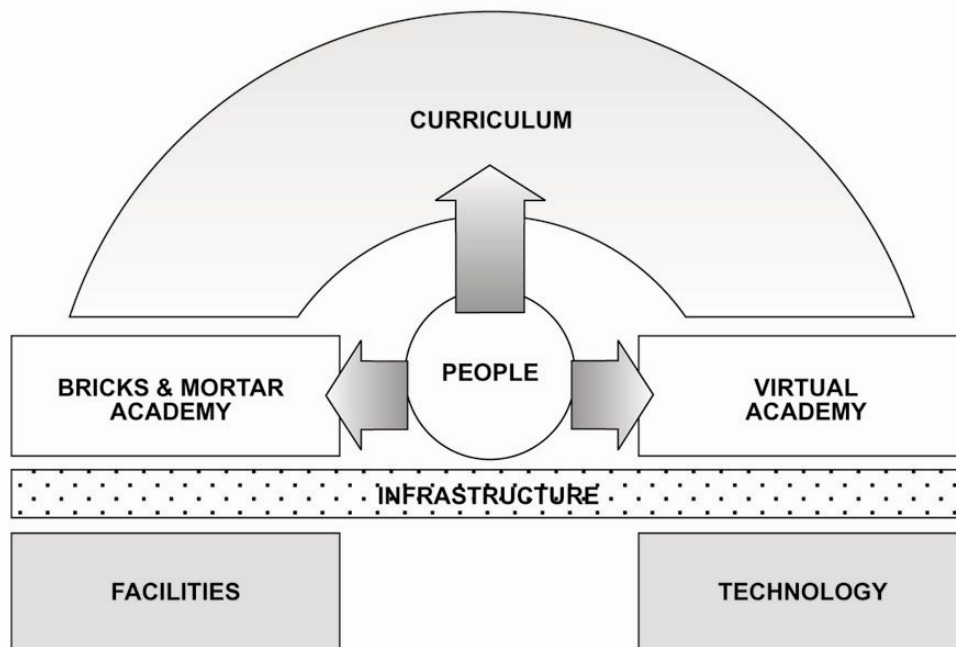
Today, the Distributed Learning Program of FLETC offers 2,100 course hours covering professional, computing and law enforcement topics to 10,000 students at present, and projected to more than triple by end CY'04. DLP uses technology to connect Rural, Local, State, Tribal and Federal law enforcement, Public Safety Officers, and First Responders to Information, Learning and collaboration on a virtual campus anywhere that the Officer accesses the Internet. This training is available 24/7, whenever the Officer is ready to learn. The purpose is to help Law Enforcement and Public Safety communities of practice do their job. The four primary initiatives of the FLETC DLP are: to develop Law enforcement, other 1st responder training content; to provide information, training, communication, collaboration for all communities of practice; to deliver training that is secure, encrypted, robust, scalable, and affordable based on a subscription service; and provide e-Commerce access for credit card subscribers. The FLETC, Office of Personnel Management (OPM), and Office of Management and Budget entered into a joint initiative to provide government-wide eLearning. This initiative allows employees to access online learning across at their desktop. It enhances the training capabilities of the federal government while reducing the duplication of effort of eLearning the agencies based on economies of scale. The joint endeavor provides a learning portal for professional development of employees and a secure online environment for law enforcement, public safety, and first responders to do their training.

Lessons Learned

We learned several valuable lessons when deploying the FLETC Distributed Learning Program. First, with a project of this scope, it is important to obtain adequate initiative support and a permanent budget with a planned phased expansion of funding to support the growth, infrastructure and ongoing curriculum development needs to properly support a growing online student population. Second, in our law enforcement context, security is paramount, implementation of a level five computer security environment is very important. Third, academies should institute a complete quality enhancement cycle by soliciting extensive feedback from participants, instructors and academy management personnel and the early institution of a user group to provide increased levels of input and support for the online learning environment. Finally, we benefited extensively from inter-governmental partnerships by initiating joint eLearning initiatives and co-funding development of mutually beneficial technologies and curriculum.

V. The Future: Nexus between Bricks-and-Mortar and Clicks in Virtual Learning Online

This whitepaper would not be complete without a brief foray into what the future of automation within the law enforcement academy could bring. As technology advances and we gain access to more powerful computers, networks, and multimedia rich virtual environments, training will become increasingly distributed, moving from the confines of the classroom to an anytime/anywhere format where learning becomes a constant activity. Students will be immersed in a knowledge-rich environment and benefit from the best that both the physical and virtual training environments have to offer. To facilitate this evolution, structures will need to be created that form a Nexus between the physical, bricks-and mortar academy and the virtual learning environment. What is this nexus? We believe it will be the blending of common processes, functions, facilities, curriculum, and roles or positions held by people in both the “bricks and mortar” and “clicks and virtual learning” environments. Over time, these two environments blend together, shattering the limitations of time and space. This will enable students to immerse themselves in “continuous learning”, a multi-context environment that adapts itself to each student’s individual learning style and provides learning on an as-needed basis.

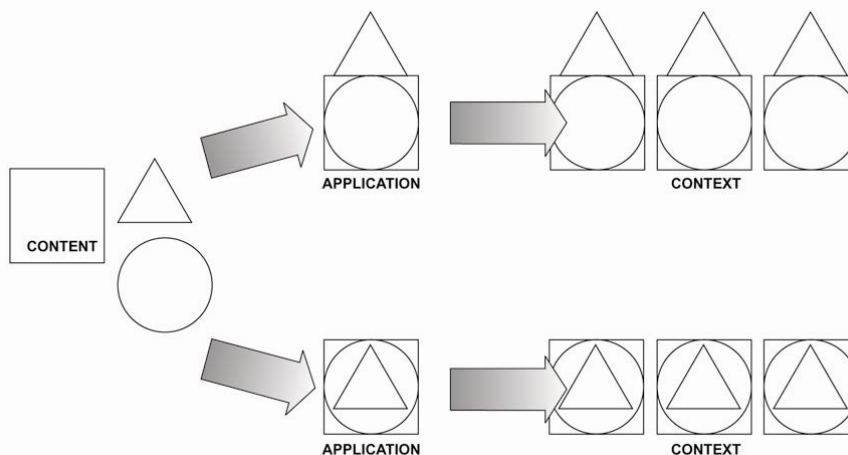


Electronic Student Support Division (ESSD)

The ESSD serves as an essential part of the nexus between “bricks and mortar” and “clicks and virtual learning,” or online learning. Each of these environments is intertwined and serves as an extension of the other, while strengthening learning taking place within each. The ESSD facilitates access to “continuous learning” by providing the trainee with all the learning supports they need to facilitate their training. Thus almost every aspect of the academy from the registrar to the library possesses a virtual counterpart allowing access to training, testing, administrative functions and reference materials both physically and electronically.

Components of the Nexus and 3-D Learning environments

The Nexus will be formed between the three core components of the academy; people, facilities, and curriculum and extend their reach into the virtual environment. For example, instructors will be able teach virtually while at the same time they are standing in a classroom, lab or practical exercise location, teaching students face-to-face. Law enforcement students will be able to participate in classes in both environments. Instructors possess the option of mixing or blending the learning experience by utilizing online courseware, located on the internet, hands-on training in the “bricks and mortar” classroom or a combination of both (blended learning). The blended approach offers the law enforcement student the opportunity to fully experience 3-dimensional (3D) learning, which emphasizes the positive effect of combining the elements of *content*, *application*, and *context*. *Content* consists of the facts, techniques, theories and other types of knowledge applicable to law enforcement topics. *Application* is the appropriate way to employ the knowledge gained. *Context* consists of the application of knowledge set in a real world environment.



3-D learning will allow for the assimilation of all three elements to occur simultaneously through the use of standup instruction intertwined with online gaming, virtual simulations and web-based interactive multimedia comprised of voice/audio, text and video. For instance, law enforcement students could perform practical exercises within a virtual crime scene allowing them to reinforce and expand their understanding of how to apply the appropriate techniques or processes within a practical context. Within this virtual learning environment, trainees could actually control the outcomes of the exercise. For example, an online simulation might consist of practicing interview techniques used at a crime scene to gain information from witnesses. The trainee would be able to interact with the virtual characters, choose what questions to ask the witness and have the ability to repeat the exercise as often as needed until she/he understands the use of basic interview techniques. The final exam might consist of filling out an incident report or deciding, based on witness testimony what to do with the suspect. Simulations provide trainees with the opportunity to learn by doing: to make decisions, to experience success, and to make mistakes. Creating these experiences will be central in better preparing our trainees to confront the challenges of modern law enforcement.

3-D learning will allow both the students and the instructors to remain central and active within the learning process; The Instructor, by creating the learning environment and the student, by actively exploring and controlling his/her learning experience. In order to attain maturity however, blended learning will require dramatic changes in curriculum design, development and pedagogical approaches. Notwithstanding the challenges involved in developing 3-D learning, we believe it will play a central role in law enforcement training in the future.

VI. Summary & Conclusions

It is our hope that this whitepaper is helpful in summarizing some of the issues modern law enforcement academy administrators should consider in order to evolve their organizations to meet the significant challenges on the road ahead. Though space did not allow us to cover each topic in-depth, it is our intention to continue researching relevant topics to the law enforcement training community and to publish our findings periodically.

In conclusion, we would like to give our heartfelt thanks to the many individuals that contributed their thoughts, time and energy to this project. Without them, this white paper would not be possible.

VII. Author Bios

Dr. Sandy Mihal

Distributed Learning Program

Dr. Sandy Mihal served as the Distance Learning Specialist and Project Manager with the U.S. Immigration and Naturalization Service where she was nominated for the prestigious Department of Justice Justworks award (Vice-President's Hammer award) for her groundbreaking technical design of a Mass Immigration Emergency Plan training project.

Dr. Mihal possesses over twenty-five years experience in course development, curriculum design, and instruction and computer systems analysis. She led the development and implementation of the first Associates Degree in Computer Network Management in the United States. In the academic community, Dr. Mihal has served as a tenured professor, department chair and division chair at several universities and colleges.

Holding a Bachelor's Degree, two Master's Degrees, and a Doctorate from Vanderbilt where she graduated with highest distinction, Dr. Mihal is extensively published with two instructional technology textbooks, twelve journal articles and twenty-eight professional papers. Her doctoral dissertation entitled "An Examination of Accreditation: Views Held By the Key Participants is widely used as a benchmark for accreditation standards within the Federal Academy and Higher Education environments. And she has been called upon by numerous institutions including the University of Southern Indiana, University of Kentucky, the Middle States Association, The American Council on Education and the U.S. Army to evaluate and review their accreditation standards.

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Linda Wilcox

*Director of Mission Support and Management Training Division,
Department of Homeland Security, Bureau of Customs and Border
Protection*

Linda is the Director of the Mission Support and Management Training Division at the U.S. Customs Academy. She is currently responsible for coordinating the administration of a training budget of more than \$37 million. Her responsibilities include human resource management, supervisor training, research and evaluation, ADP and communications systems, procurement, property and logistics, space management and the administration of the national badge and credentials program.

Over the past 20 years, Mrs. Wilcox has held several significant federal government positions both in the field and as an administrator. She served as a Sky Marshall assigned to Chicago and flying both domestic and international flights to prevent aircraft hijacking. Linda worked as a Customs Inspector in Detroit, Michigan, and Del Rio, Texas and became a Supervisory Inspector on the Southern Border.

Mrs. Wilcox was the first female Port Director of a Laredo Texas District, port of entry. She served as the Deputy Assistant Regional Commissioner and Assistant Regional Director, managing all Inspector and Canine Enforcement Officer activities across the land borders of Texas, New Mexico, and Arizona, with Mexico as well as the major airport and seaport locations of Houston and Dallas/ Ft. Worth. In Laredo, Texas, Mrs. Wilcox, in her capacity as Assistant District Director responsible for all inspector and canine officer functions, working closely with investigators and State and Local LEOs, was instrumental in establishing enforcement operations and significantly increasing major drug seizures by 48% at eight ports of entry consisting of 850 employees at 16 individual crossing points, three rail bridges, and a distance of over 400 miles.

Mrs. Wilcox was designated Assistant Director Field Operations functioning as the senior advisor to the Customs Management Center Director with responsibilities to lead or participate in national project design, implementation, and evaluation. In this role, she provided significant leadership in implementing substantial changes in current operating environments. Detailed to the Federal Law Enforcement Training Center, International Law Enforcement Academy (ILEA) Branch, Mrs. Wilcox served as the Branch Chief and coordinator responsible for international programs conducted by the ILEA staff and participating federal and international agencies. Linda provided significant leadership in the development, redesign, and update of law enforcement curricula and instructional methodologies.

Mrs. Wilcox holds a Masters degree in Education and Criminal Justice from Troy State University; she is working on her Doctorate in Organizational Leadership from Argosy University and a BA from Elmira College and York University in England. She is an Honor Graduate from the Federal Executive Institute.

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Michael J. Baker

Automated Data Programs/Information Technology Operations, United States Immigration Officer Academy (Dept. of Homeland Security)

Mike Baker serves as the Program Manager for legacy U.S. Immigration Officer Academy system known as the Academy Class Management System (ACMS). As a Program Manager, he also oversees the legacy system, called EDITS (Employee Development Information Tracking System which tracks all training in the U.S. Immigration and Naturalization Service Training Division nation wide.

His law enforcement career includes: 15 years with state and local law enforcement in Michigan, serving as Chief of Criminal Investigation prior to starting a career with the Federal Government. He served 22 years with the U.S. Immigration and Naturalization Service serving in various positions with Inspections, Examinations and Enforcement sections of the agency. Mike spent 12 years with the U.S. Immigration Officer Academy, at the Advanced and Basic Training Academies in Artesia, NM and Glynco, GA, as Instructor, Course Developer, Instructor and Assistant Director. Mike serves for two years as guest and part-time instructor in the Criminal Justice Program at Lake Superior State University.

Mike received of 20 letters and commendations from state, local, federal and foreign law enforcement agencies in Michigan; Ohio; Ontario, Canada, U.S Customs; U.S. Forest Service and U.S. Immigration Service related to the investigation and the arrest of suspects in narcotics, sexual assault, homicide, prison escape and vice cases. He holds a Degree in Criminal Justice from Lake Superior State University.

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Ari A. Vidali

Founder & Chairman, ENVISAGE

In his 15 year career in high-technology, Mr. Vidali has been the lead founder and visionary for 5 high-tech enterprises. Over the last 4 years, he has been instrumental in assisting Federal Law Enforcement Academies with automation strategies, and pioneered one of the leading enterprise architectures focused primarily on law enforcement training applications. Mr. Vidali is currently working with several of the Nation's largest Law Enforcement Academies to deploy state-of-the-art Academy Administration, Workflow Management, Enterprise Scheduling and Learning Management Systems.

In addition, he is at the forefront of developments in eLearning tools and methodologies and worked closely with a top 10 University to develop and deploy a eUniversity strategy supported by an enterprise-class LMS (learning management solution) targeted at Fortune 100 companies. His current work involves researching uses of artificial intelligence for adaptive learning environments and immersive eLearning simulations.

Mr. Vidali has consulted for the Federal Government, Law Enforcement, Higher Education, Medical, Financial, and Real Estate industries.

As a nationally recognized, visionary and frequent speaker and writer on the subjects of technology as an education enabler, online transaction management, reinventing business on the Internet, data standards and Internet eCommerce, he has been featured in publications such as the Wall Street Journal, Chicago Sun Times, Realtor Magazine, RIS Media, and PC Week.

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