

CLEAR and I-CLEAR: A Status Report on New Information Technology and its Impact on  
Management, the Organization and Crime-Fighting Strategies

Prepared by  
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## **Executive Summary**

This is the third evaluation report on the status of the new information technology enterprise system under development by the Chicago Police Department (CPD). Since 2001, the CPD, in partnership with Oracle Corporation and the Police Executive Research Forum, has been developing a state-of-the-art integrated criminal justice information system. This system – Citizen and Law Enforcement Analysis and Reporting (CLEAR) – is another step in the Department’s ongoing quest to “police smarter” and be “intelligence driven.” In its 1993 strategic plan for the future, “Together We Can,” the Department foresaw the expanding relevance of technology for policing. In its plan, the CPD committed itself to using new technology to support the broader goals of the city’s community policing program – “enhancing our crime-fighting capacity, improving the quality of neighborhood life and developing a strong partnership with the community.” CLEAR is designed to provide anytime, anyplace access to vast repositories of centralized, relational data. The data warehouse is the engine that powers the numerous interrelated applications that comprise CLEAR.

The CPD’s newest effort to harness the power of information technology began in June 2001, when they began an intense program of software development and testing. The department’s superintendent and deputies made CLEAR a top organizational priority. Soon CLEAR’s potential value was realized by civic leaders as well as by the law enforcement community. In early 2004, the governor of Illinois and mayor of Chicago announced their commitment to building a single criminal justice database for the state and all of its criminal justice agencies. The new system – I-CLEAR – will eventually serve all of Illinois through a new partnership between Chicago and the Illinois State Police. It was also apparent that regional integration and information sharing has far-reaching implications for combating terrorism. Hence, Chicago’s Office of Emergency Management and Communications and the federal Department of Homeland Security are also now involved in these developments as well. This report describes all of these initiatives, the “launch procedures” that lie behind them and their impact on policing. The report describes this ongoing process through October 2004.

### **Information Technology and the Police**

CLEAR was launched just as the information technology (IT) revolution hit the criminal justice world. Police departments in particular were ripe for change, as they were becoming increasingly reliant on timely information to guide daily operations, analyze the effectiveness of crime prevention tactics and enhance management accountability. New York City’s famous COMPSTAT management system has given police a taste of what is possible. “Hot spot” policing and other operational programs have a greater likelihood of success if managers have access to up-to-date data for planning and evaluation. However, even by 2000 most police departments had yet to exploit the capabilities offered them by new information technologies. Police agencies the size of the CPD are awash with data. Each day, they receive thousands of 911 calls, complete thousands of crime reports and arrest hundreds of people. Although tens of thousands of data elements are entered into their databases each day, this information has been of little value because it is not easily extracted in useable form.

Today, data-driven policing is the “buzz” in law enforcement circles. Interest is driven in part by external demands on the police: that they become more accountable for their cost-effectiveness, that they “right-size” their staff and that they make more strides in pursuing procedural regularity. These trends are not coming about in a vacuum; in the private sector, IT is affecting internal business processes by lowering recordkeeping costs, encouraging flexibility and speed in decision-making, giving management better control over product quality and enabling businesses to have more individualized relations with their customers. The current IT revolution in policing also comes at a time when the required computer hardware and software have at last become inexpensive and more “user-friendly.” Many police agencies want to get involved, and they showcase new mission statements, business and marketing plans, and training programs that focus on information technology. Too often, however, in too many places there has been more talk than progress in implementing integrated data systems, gathering data consistent with National Incident-Based Reporting System (NIBRS) standards, sharing data in partnerships with researchers and conducting sophisticated crime analysis and forecasting.

Good ideas are the cornerstones for innovation, but the gaps between theory and practice, and between planning and implementation can be substantial. Innovative ideas, hard-working developers and good technology are critical to making automation projects a success, but they are not sufficient to ensure success. Agencies consistently underestimate the human factors (individual, social and organizational influences) involved in implementing new initiatives – especially those relating to technology. Real people are involved, and they must understand 1) what is expected of them; 2) how changing their behavior will benefit them personally and make their jobs easier; and 3) how to do their new jobs, which calls for effective training. Those involved also frequently underestimate how much their vision is eventually going to cost, as well as how long it will actually take to be realized. CLEAR is an enterprise system, meaning that it has the power to impact everyone in the organization – from the way officers perform their jobs daily to the administration and management of the agency as a whole. Equally important, through I-CLEAR this is reaching beyond the Chicago police to involve the community and other agencies. Sections of this report describe the behind-the-scenes effort that has gone into CLEAR and I-CLEAR, and how they have impacted the organization by reshaping the daily work of police officers in the field.

## **Information Technology in Chicago and Illinois**

In Chicago, and eventually throughout Illinois, information technology promises to impact three functional aspects of law enforcement: police management, criminal justice integration and community/business partnerships. In terms of police management, CLEAR is expected to promote effective resource allocation; officer management and accountability; risk management and early warning; tactical and strategic planning; and fiscal accountability. Chicago’s departmentwide management accountability process makes use of the new systems to help the organization address crime and disorder problems; react to emerging crime; optimize community involvement; and manage available human and material resources.

CLEAR is intended to support unified strategies to reduce crime; eliminate criminal justice bottlenecks; increase accountability between criminal justice agencies; and provide a comprehensive picture of offender activity. Information sharing eventually will involve other law enforcement agencies, prosecutors, the court system, the corrections system and other interventions, perhaps including non-criminal-justice partnerships. The CPD has stated that it hopes the criminal justice integration component will give it the capacity to “police smarter;” enhance partnerships with surrounding suburbs and cities, improve the quality of criminal-justice information, improve employee morale and reduce liability costs.

Finally, The CPD anticipates that CLEAR will strengthen its problem-solving capacity; enable it to conduct community-needs assessments; and allow for easy and convenient information sharing and intelligence gathering from the community. Currently the CPD partners with citizens through monthly beat community meetings and through District Advisory Committees in each of the 25 districts. There will be increased effort to reach people currently not participating in these activities as well as an increased focus on meaningful problem solving, citizen involvement at beat community meetings, and community-based performance assessment. The CPD is embarking on a joint project with the University of Illinois at Chicago to develop and test a web-based community survey that will help to achieve these objectives. The preliminary work is summarized in this report.

## **Developing Key Applications**

In practice, CLEAR is a series of analytic modules that draw on data stored in the CPD’s central data warehouse. They are being constructed in parallel by teams of developers from the CPD and Oracle Corporation. The report examines their progress toward completing four key applications. One, their Automated Incident Reporting Application (AIRA), will enable officers to complete case reports via portable data terminals in their cars or at LAN-based work stations in any CPD facility. Automated Arrest is a new system for recording arrestee information and tracking offenders, while the Personnel Suite automates a number of important internal business processes. e-Track is a system designed to improve the recording and tracking of evidence and property, thus improving efficiency and accountability in this domain.

Each application, and those to follow, goes through a multi-step development process that is designed to field a user-friendly and effective system. After initial **conceptual development** each system undergoes a series of day-long **joint application development (JAD) sessions**, often held over a period of several months. At these working sessions, people from the division for which the application is being developed – the eventual users – provide their knowledge of their unit’s business operations. Process flow documents are drafted based on procedural information gleaned from the day’s activities. After three or four JAD sessions, a process model is drawn up for review by the division’s key personnel. After the unit or division management team carefully reviews and accepts the document, it becomes the foundation for the application’s development. Some applications require subcontracting with outside vendors to create or supply hardware or software for the various systems. The city’s bidding process must be followed, usually necessitating proposals from several vendors. This process can hold

up the development of an application, particularly if there are protracted negotiations about a contract's language. Occasionally vendors realize that they cannot deliver the promised product, and the agencies must begin anew, further delaying the application's development.

Applications in the **design/build** stage have progressed from a concept, with appropriate input, and are nearing a "ready for testing" mode. A significant outcome of this stage is the identification and detection of flaws and unexpected glitches in the system. Solutions to these are implemented by the developers and additional input may be sought from potential users. At this stage security decisions are made concerning who will have access to, and the ability to alter, data in the system. Pilot-testing is then conducted at a variety of sites. The type and duration of pilot-testing depends upon the complexity of the application and its targeted users. Pilot-testing may be completed in one day or over the span of a longer period. At this stage, unanticipated problems or user-acceptance-test results can send developers back for fine-tuning of the application.

**Training** also takes numerous forms, depending upon the complexity of the application and the number of potential users. Applications that are simply enhancements of existing systems may require nothing more than widely distributed explanatory memos or brief explanations and streaming video presentations at roll call. (Streaming videos are on-demand presentations stored on a network and can be viewed at any time in multiple locations.) Applications that are replacements of outdated and antiquated systems or that are entirely new modules require more intensive training and continued technical support. For such applications, trainers may spend several days out in the field providing individualized instruction to officers. A "train-the-trainers" methodology is often used for large-scale instruction. For this, designated officers receive training on use of an application, and they subsequently return to their units to train fellow officers. The CPD has created a special training team whose primary responsibility is to make sure that users of each CLEAR application are adequately familiarized with the module either prior to or at the time it is implemented.

When an application reaches the **implementation** stage, the expectation is that nearly all of the bugs have been worked out, and it should be technically unflawed. The challenge at this stage is to create excitement and motivation among potential users in the environment where the application will be fielded. Users must be convinced that the new application will help them do their job more expeditiously. Support must be in place to work through early resistance and to get users through the technical learning curve.

By the end of 2004, significant progress had been made for all four key CLEAR applications. AIRA, the automated reporting system, was deployed in several districts and our survey of users indicates that it is well-regarded. Progress has been slower on the wireless version for use in patrol vehicles, for it interacts with a number of complex computer systems and needs to transmit large packets of information. Wireless AIRA has been deployed in a pilot district and is being used with variable reliability. Significant headway has been made in resolving some major obstacles to the wireless application, including limited bandwidth, dispatch system upgrades and outdated hardware. However, the enormity of the training

required to implement this system departmentwide will slow the pace at which AIRA is deployed.

Automated Arrest shifted the recording of arrest information from station personnel to the arresting officers, thus giving the department near-real-time access to arrest data throughout the city. Near the end of 2004 Automated Arrest was running in two of five Area headquarters facilities and seven district stations. The application is considered “solid” at this point. However, both the need (again) for citywide training and procuring and installing new computer hardware will slow the implementation of this new system.

The Personnel Suite automates and integrates the human resource functions from five Departmental units to assist individual employees and managers in monitoring personnel matters. The Personnel Suite is expected to improve efficiency in the daily functions of these units, to help monitor performance data, to identify problem behaviors before they result in unfavorable outcomes and to pave the way for intervention and assistance when needed. Advances in the Personnel Suite have been made on individual modules. The Medical Section’s application is working dependably, and users have come to appreciate the value of the automated system, evidenced by the fact that they have requested some enhancements that were previously unimaginable to them. Other systems that computerize some vital personnel recordkeeping functions of law enforcement agencies – such as star (badge) management, family members to be contacted in case of emergency, awards bestowed on officers and use-of-force tracking – have been launched or are in the final stages of testing. One very complex system that automates the labyrinthine processes of the Internal Affairs Division and Office of Professional Standards is soon to be deployed, and in the numerous JAD sessions and other meetings related to this application, future users seemed quite optimistic about its utility. A number of management changes have slowed the progress of the oversight committee charged with developing the Personnel Performance System, which will make use of the personnel data gathered by the numerous applications of the Personnel Suite. What is accomplished on this system in the next year will depend on whether the project is properly staffed, funded and assigned a high priority.

Finally, the automated E-Track evidence system has been fully operational for quite some time. The first phase, used by police officers to inventory evidence and property, as well as by couriers to record the movements of the evidence and property from intake to inventory, has been working well. Furthermore, there is progress on revamping evidence room procedures to take advantage of the new system. Users agree that the automated system is an improvement over manual procedures, but they also hope that evidence information can be made queriable, thus improving the reliability of the complicated process of tracking evidence and property.

### **Impact in the Field**

The CPD tested several applications in the field before beginning departmentwide implementation and officer training. The research team used this opportunity to gauge the utility of particular CLEAR applications in the field, with special attention given to their effects on the

day-to-day functions of district personnel and their attitudes toward this new way of doing business. The study was conducted in the district designated by the department to test new applications, and parallel data were collected in other, similar districts where officers did not have access to the full complement of applications being tested in the pilot area. Other officers were surveyed during training sessions. Almost 1,500 officers were queried for this part of the evaluation.

On the whole we found that the majority of officers in both the pilot and control districts are using the automated systems available to them. Officers in the pilot district, however, are more likely to use the data warehouse several times a week (88 percent versus 57 percent) and more likely to use it daily (52 percent versus 32 percent), which is a very positive sign. Smaller percentages of personnel in the control district reported using each of the applications.

Attitudes about the CPD's new technology were also very positive, as both groups responded that computers make their work easier, improve their response, increase information sharing, allow them to work more effectively and enhance the professional status of police. More than 90 percent of officers working in the field reported that computers were making them more effective. Overall, 94 percent of field officers in the pilot district felt competent to use the new computer applications being made available to them. These findings are encouraging because in the pilot district, the wireless version of the automated incident reporting application has been less than reliable. This has not discouraged officers or dampened their attitude about the importance of computers to their work. One of the most common complaints officers have about new programs of any sort is that they create more paperwork. It is encouraging to note that 58 percent of the officers in the pilot district, where many of the applications are tested, believe that these applications have reduced the amount of paperwork in their jobs.

### **Impact on the Organization**

CLEAR has played a major role in helping district and area managers become intimately familiar with the crime problems they face in their jurisdictions. Because of increased accountability, they are compelled to use these new technology tools to discover hot spots, crime spikes and new offending patterns. Far from considering it a burden, most commanders have welcomed the oversight capacity it gives them on a day-to-day basis.

CLEAR has also assisted in advancing the goal of holding the entire Department responsible for focusing on problems identified as priorities for the districts and headquarters. All of the specialized units that are involved in the accountability sessions have access to the same set of data and analytic tools. One of the superintendent's goals is to ensure that all units are working on the same Department priorities, and CLEAR provides an important mechanism for reaching that end. Over the past year, for example, the top priority has been reducing violent crime, and CLEAR has been an essential tool for the Deployment Operations Center's efforts to direct CPD resources to locations where violence has recently occurred or is expected to occur.

Police have always closely examined crime statistics, so one of CLEAR's biggest contributions to management has been the depth and breadth with which it permits managers at police headquarters to effectively monitor the actual implementation of announced plans by examining employees' activities. Making sure that commanders have actually "punched the ticket" is one of the most important roles of the accountability bureau, and CLEAR gives them some tools to determine whether this has been achieved. To reach its maximum utility, however, CLEAR will need to produce additional management reports that are tailored to the needs of the accountability managers. At present, the system is geared primarily toward the investigation of individual incidents rather than aggregate summaries for management review. Consequently, the accountability bureau and other units must sometimes generate their own statistical routines or hand tallies to produce the data they need. In future refinements and development, the definition of "CLEAR user" must be expanded, with input sought from a wide variety of potential users to ensure that the needs of personnel at all levels are met.

Along these same lines, the true power of CLEAR will only be realized when data analysis moves beyond tracking down individual suspects to a sweeping emphasis on crime analysis that includes patterns of offending, patterns of victimization, environmental correlates of crime, predicted crime trends, and the like. We cannot emphasize enough the importance for Chicago becoming the first large city to achieve NIBRS (National Incident Based Reporting System) compliance, which is one of the goals of CLEAR. NIBRS is a relational database that will someday replace the Uniform Crime Report (UCR) nationwide and give police managers the opportunity to understand their crime problems at a much deeper level. If patrol officers on the street are willing to take the time to collect these additional data, the Department should fully exploit them.

Although CLEAR has many positive attributes, as with any new management system, the behavior of employees is sometimes shaped in ways that were not intended.. At the district level, we have observed management teams, for example, choose between district problems for their operating plans (SOPs) because they were convinced that it would be easier to "make their stats" on one rather than another. Likewise, management teams strategize about their ability to make their numbers when they have to implement their plan. Some districts propose a checklist of strategies (traditional enforcement tactics, for example) because they know they can get them done, rather than because they think they will be particularly effective or address the most important problems. These activities are easily implemented and easily counted by the headquarters accountability team.

CLEAR has yet to demonstrate that it can achieve the goal of fostering more innovative problem-solving, and yet problem-solving at the neighborhood level is one of the most important functions of policing. Although violent crime has been reduced dramatically, the chronic crime and disorder problems that become SOPs earn that label because the usual routines of the organization have not (yet) alleviated them. Over the past decade, Chicago has emphasized "thinking outside the box" about solutions to problems, rather than just repeating more strenuously what the Department has always done about them. While CLEAR helps them a great deal when it comes to identifying certain problems and assessing their success in

countering them, there is currently little in it that can help them craft their plans and deploy their resources in innovative ways. CLEAR can help with planning and evaluation, but it cannot tell CPD management or officers what to do. Designing new and more effective responses will continue to be the responsibility of creative personnel at all levels of the organization.

Creative problem solving may be left to individual ingenuity, but “necessity is the mother of invention” and, therefore, organizational emphasis on neighborhood problem solving via the accountability process will be critical for spurring creativity. In the past, at headquarters sessions commanders were routinely quizzed about problems that are not on their priority list, including any identified in beat meeting logs, SOPs and other indicators of resident concerns. Finding vehicles for integrating information from the CAPS process into CLEAR and into the level-three accountability meetings should go a long way toward enhanced problem-solving success.

Although it represents an important innovation that is widely used internally and externally, the data warehouse is, arguably, a tool that facilitates traditional policing. As it turns out, the most intensive users of the data warehouse are detectives, who embody traditional police tactics. We have already suggested that innovative data analysis could have potential benefits in shaping strategic and tactical responses. There is another way this information technology can be viewed as “shaking up” the status quo within the organization – CLEAR has the capacity to democratize access to information, thus changing the opportunities for success (defined as number of arrests and property seizures) among various units and individuals. Historically, only detectives had access to details about crime incidents. Today, officers at all levels can obtain this information. How this will affect the organization in the long run remains to be seen, but it may generate more productivity in more diverse ways.

An important limitation of the present CLEAR applications is that much of what matters in policing is not captured in these data. The organization’s reliance on CLEAR has pushed it toward a renewed focus on statistics – numbers of incidents, arrests, guns seized and calls for service – to determine whether something is a problem; if anything is being done about it; and whether the problem is getting any better. As we noted in our 2002 report on community policing in Chicago, managers in the field report that CLEAR undervalues the “intangibles” that were community policing’s hallmark, including community satisfaction and the formation of police-community partnerships.

An example of how reliance on CLEAR for evaluative information can turn the attention of the Department away from other organizational goals be found in the city-services component of CAPS. To a remarkable degree, CAPS harnessed the delivery of city services to community policing, both to support police problem-solving projects and to respond effectively to the concerns of residents attending beat community meetings. In the early years this was one of the most successful components of CAPS. Over time, however, the police have moved away from this goal. A painfully small percentage of city service requests are being generated by officers. City service delivery is not a CLEAR data item, and district commanders must go to a stand-alone computer to monitor whether their officers are submitting service requests. Beyond

its use in closing drug houses, the city-service component of CAPS is perhaps in danger of disappearing from the menu of tools that are available for problem solving in Chicago.

Finally, CLEAR has not yet played a role in facilitating external accountability by the Chicago Police Department. A possible use of the system is to increase the external transparency of the organization's activities. Currently, top administrators use the data and their management tools to hold mid-level managers accountable, leaving open the question of the extent to which the organization as a whole is accountable to anyone. If external actors were to establish clear, quantifiable goals for the Department, they may be able to use CLEAR – which is so user friendly that anyone with a bit of training can use it – to hold the organization as a whole accountable. The mayor, city council, the media and sophisticated community organizations come immediately to mind as entities with an interest in finding ways for holding the CPD as a whole accountable for its efficiency and effectiveness. The CPD, in turn, would gain in public confidence by increasing its organizational transparency.

### **Criminal Justice Integration**

I-CLEAR's strategic plan includes extending the capabilities of Chicago's data warehouse beyond the city's borders. I-CLEAR has the potential to help eliminate bottlenecks in the criminal justice system by facilitating the flow of information via the data warehouse between agencies and by enhancing agency partnerships around the creation and use of that information. I-CLEAR potentially increases the accountability of criminal justice agencies because of the easy availability of integrated data. Everyone involved understands that these goals and the issues that underlie them are not confined to the boundaries of any city; Chicago's decision to open its vast data warehouse to outside agencies reflects the view that "crime has no borders."

Chicago's data warehouse is an information repository that can produce a variety of relational reports using modern, flexible database-query software. It features an intuitive, web-like appearance that allows users to quickly search the CPD's deep databases using "fill-in-the-blank" forms on the screen. It can be accessed via high-speed Internet connections that already reach most justice agencies in Illinois. The warehouse includes an expanding list of data elements. Currently available to outside agencies are data on the criminal history of arrestees, outstanding arrest warrants, traffic violations, investigative alerts, suspect searches, property checks, mugshots and digitized fingerprints. The data warehouse also provides incident reports, victims reports, contact card searches and repeat offender information, but these reports are currently only available within the CPD. Participating agencies also have access to CPD directives, digital streaming training videos, and email addresses and directories. The CPD's offer of access to the data warehouse includes training for participating agencies in how to use the system and followup technical assistance. Chicago created mechanisms to track usage of the system by outsiders and established procedures to ensure that I-CLEAR is used responsibly.

The first outside users of the data warehouse were trained in October 2002. By September 2004 a total of 264 criminal justice agencies of all kinds had begun to use the

system. By then, 17 county sheriffs, 11 federal agencies, six state's attorney's offices, six county probation offices, two regional 911 communication centers and the Illinois State Police had gotten involved. By this date, more police officers outside of Chicago had been issued log-on IDs than there were members of the Chicago Police Department. The peak month of use was August 2004, when almost 63,000 queries were issued by the city's 256 partner agencies, and by September 2004 the total volume of system use to date had grown to more than 840,000 queries. Based on our survey of partner agencies, the most frequent uses were to check mugshots, to run name and address checks, and to check suspects' criminal histories (79 percent). The longer agencies had been using the system, the more uses they reported finding for the data.

The user survey asked why departments joined in using the data warehouse and the benefits that they foresaw. The most important reason cited was that gaining access was inexpensive. Fully 80 percent of agencies cited this as a very influential reason to get involved. Other important influences were the perception that the system would help identify offenders from Chicago, the opportunity to improve their officers' technical and investigatory skills and enthusiasm among the staff about participating. Reading about this kind of technology in publications or hearing about it at professional meetings were among the least important factors influencing the decision to get involved in I-CLEAR. However, among suburban police departments, being linked to policing networks that promulgate innovative ideas was one of the factors linked to the adoption of information technology. This included membership in the Police Executive Research Forum (PERF) and the International Association of Law Enforcement Planners, involvement in the Illinois Association of Police Chiefs and being a CALEA-certified agency. Another factor affecting adoption was the experience agencies could draw on when choosing to participate. Adopters were much more likely to already be users of databases and data-sharing arrangements. They were more likely to be a "NIBRS-compliant" agency and participate in the Cook County Sheriff's Criminal Apprehension and Booking System (CABS). Agencies that signed up were also already better equipped with computer hardware, including portable data terminals (PDTs) and laptop computers. Adopting departments regularly conducted training for their officers in how to use computers, and a higher percentage of their officers had college degrees.

Another important reason for the rapid early diffusion of data warehouse usage was that it had an "evangelist." As it turns out, marketing matters in the public sector as well as in the private sector. The Chicago Police Department employs a staff member who continually contacts agencies to describe this new free resource, and he visits jurisdictions to give demonstrations, distribute materials and answer questions. He is able to describe a system that is easy to access using a web browser and other familiar Internet tools, and offers free training for representatives of each participating agency.

A continuing issue in the interagency partnership emerging around data warehouse access is governance. To get the process underway, the Chicago Police Department moved ahead on its own, simply opening access to other agencies, who could sign on without any out-of-pocket costs. One drawback, however, is that participants had to accept the system "as is," without modification. Other actors in the criminal justice system are now pressing for input and

oversight of this information-sharing process by some formal governing body. Some actually have resources to contribute, and many want a say in the system's evolution.

## **Statewide Integration**

At a press conference in January 2004, the Illinois governor and Chicago's mayor made a commitment to the statewide integration of criminal justice information. The flagship application that is now under development is a common case reporting system called I-Case. The long-term goal is to make I-Case available to all police departments and sheriffs in Illinois. The report details what led to this development and some of the near-term obstacles to making it a reality within the promised timeframe.

Illinois police agencies have a long tradition of data sharing, beginning with the LEADS (Law Enforcement Agencies Data System) network pioneered by the Illinois State Police in 1969. Soon after the Illinois Criminal Justice Information Authority (ICJIA) developed its Police Information Management System (PIMS), an automated police records and information package encompassing arrest and crime incident data and crime analysis. ICJIA also administers ALERTS (Area-wide Law Enforcement Radio Terminal System), a fee-based, in-car data communications system for police. In 1999 the Cook County Sheriff's office launched a high-tech system to quickly and accurately identify criminal suspects. Known as the Criminal Apprehension and Booking System (CABS), the system provides a uniform booking system and statewide digital mugshot database. The initiative brought 108 Cook County jurisdictions into CABS. Arrest data from these agencies were merged with CPD arrest records, allowing for a robust database and easy access for those who had a need for these data. This became a model for data sharing across jurisdictional borders without concern for data "ownership." In 1997, the Illinois State Police, with cooperation from ICJIA, began development of the Illinois Wireless Information Network (I-WIN), which became fully operational three years later. I-WIN provides fast, secure wireless connectivity to a variety of state and local public safety agencies, enabling them to access mission-critical database applications from virtually anywhere in Illinois. Since, ICJIA had provided funding for new information technology initiatives in Illinois, including CLEAR and I-CLEAR.

Now in development, I-Case creates a single automated case reporting system for the entire state, consolidating incident reports and detective follow-up reports. I-Case's importance goes beyond the creation of a single statewide automated case reporting system. For example, using I-Case will enable Illinois to join the handful of states that have become NIBRS-compliant. I-Case is also a critical tool that facilitates regional integration by gathering and sharing information across borders – a tool that may be critical in addressing terrorism. Funding for its development has come from ICJIA, the federal Office of Community Oriented Policing Services, and contributions from Oracle Corporation. However, the funding stream supporting I-Case has been discontinuous, and funding logjams have been a significant factor in delaying the I-Case launch statewide. Continued funding is essential to keeping I-CLEAR moving ahead.

The I-Case project has a rather complex organizational structure because the application itself impacts so many different areas within the two agencies involved. Most of the development work takes place at CPD headquarters. The process looks much like that for CLEAR applications. To date, I-Case development has progressed through the conceptual stage and is now in the hands of user groups. During the next year the development will move through the design/build stage, pilot-testing, training and implementation. It is apparent that members of the application development team are capable and cooperative. The group appears to share a belief in the product. Team members possess skills and a knowledge base that is extensive and appears to be well-suited to their tasks and complementary to the skills of others on the team. The Oracle members have demonstrated a remarkable knowledge of CPD policies and procedures and are showing the same growing understanding of those of the ISP.

We observed meetings where team members painfully grappled with minutiae and ensuing potential policy and procedural conflicts emerging from the joining of two vastly different organizations. However, as can be expected when two distinct organizations set about to create a single shared system, issues arise. To deal with this, the I-Case group set up a conflict-resolution process, with settlement within the group as the first step. If necessary, technical or field experts will be brought in to provide input in the decision-making process, and if issues still remain, a multi-level conflict resolution structure is in place. As this suggests, I-Case raises for the first time issues of the governance of cross-jurisdictional information technology initiatives. Governance is currently one of the top issues looming in the development of I-CLEAR. This issue is important not only for resolving conflicts among the developers, the Chicago Police Department and the Illinois State Police, but a governance body will be critical for understanding and accommodating the needs and wishes of potential future users of the system. If I-CLEAR is to be responsive to the needs of all law enforcement agencies in Illinois, input from agencies other than the founders will become increasingly important.

Another continuing problem is the disconnect between the high-level I-Case decision-makers and the development teams in terms of setting realistic timelines for product development and implementation. This likely is due, in part, to the fact that the early deployment date was publicly announced by state and city leaders who have limited knowledge of the complexity of developing and implementing such a system. However, timelines appear to be becoming more realistic. The law enforcement community has learned from past experience that launching an unreliable product on an arbitrary date is far worse than introducing a well-crafted product at a somewhat later date. The challenge for this group will be to develop and deploy its best product amid pressures to produce whatever it can to meet the financial and political constraints in their environment.

### **Business-Community Partnership**

The Business-Community Partnership component of CLEAR is intended to 1) enhance the department's problem-solving capacity, 2) improve its ability to assess community needs, 3) make information sharing easier and more convenient, and 4) gather more intelligence through

community sources. It includes Automated Pawnshop, which is in the conceptual stage; Auto Theft Recovery, which is developed, but awaiting contract approvals; and Traffic Crash Report, which is partially implemented but requires further funding.

Also in development is an innovative attempt to use CLEAR and the Internet to enhance the involvement of the community in community policing and problem solving projects. A fundamental problem in Chicago and elsewhere around the nation is that the police have few good ways of collecting systematic data on residents' primary concerns and perceptions about their neighborhood with respect to crime, disorder, anti-violence programs, community crime prevention behaviors, police performance and other matters. The question, then, is how to build a data system that can measure, on a geographic basis, what matters to the public.

The Chicago Internet Project, headquartered at the University of Illinois at Chicago, has completed a feasibility study of using a web-based survey to assess public priorities on a beat-by-beat basis. A 2002 survey of residents attending beat community meetings found that 68 percent had access to a personal computer, and 80 percent of this group also had access to the Internet. Many others are able to access the CPD's web site from work or at public libraries throughout the city. Several focus groups indicated that beat meeting participants were receptive to the concept of reporting their concerns about public safety issues via web-based surveys. Finally, a limited field test of a web-based survey instrument demonstrated successful participation by residents.

Based on these findings, a more extensive feasibility test was conducted that had two primary objectives. The first objective was to field test a web-based survey methodology that included monthly feedback sessions of survey results at CAPS beat meetings. The second objective was to develop and field test a comprehensive multi-component survey instrument for measuring a wide range of variables. The field test included training for police and residents at selected beat meetings and special training for beat officers and their sergeants. They were trained in using the Internet materials developed for the project, and received a refresher in the department's problem-solving model. Followup surveys were conducted in the study beats and in matched comparison areas. One of the conclusions of these tests was that limited knowledge and commitment to the department's problem-solving model was as large a barrier to effectiveness as any computer or Internet-related issues. Another was that senior citizens – who are frequent participants at beat community meetings – will need special attention when training is conducted. Finally, the project was less successful in heavily Latino beats, again due principally to unfamiliarity with information technology. The feasibility test established the viability of the concept, and a new, much larger experiment is now in progress to assess the impact on problem-solving skills, police-community relations and community engagement in crime prevention.

## Introduction

This is the third evaluation report on the status of the new information technology enterprise system under development by the Chicago Police Department.<sup>1</sup> Since 2001, the Chicago Police Department (CPD), in partnership with Oracle Corporation and the Police Executive Research Forum (PERF), has been developing a state-of-the-art integrated criminal justice information system. This system – Citizen and Law Enforcement Analysis and Reporting (CLEAR) – is another step in the Department’s ongoing quest to “police smarter” and be “intelligence driven.” In its 1995 strategic plan for the future, “Together We Can,” the Department foresaw the expanding relevance of technology for policing. In its plan, the CPD committed itself to using new technology to support the broader goals of the city’s community policing program – “enhancing our crime-fighting capacity, improving the quality of neighborhood life and developing a strong partnership with the community.” CLEAR is designed to provide anytime, anyplace access to vast repositories of centralized, relational data. The data warehouse is the engine that powers the numerous interrelated applications that comprise CLEAR.

CLEAR’s value to civic leaders as well as the law enforcement community was quickly noticed. In early 2004, the governor of Illinois and mayor of Chicago announced their commitment to building a single criminal justice database for the state and all of its criminal justice agencies. The new system is called I-CLEAR, with the “I” designating that it will serve all of Illinois. I-CLEAR represents an unprecedented partnership between the Illinois State Police and the Chicago Police Department, one that promises to grow in the future. A web-enabled case management system is currently being developed that will be available to all law enforcement agencies in the state. Eventually there will be one statewide system for crime incident reports, arrest reports and follow-up investigation reports. These changes will require governance to take a high priority so as to accommodate the needs of users as well as provide a conflict resolution body between agencies.

In this report, CLEAR applications are those used by the CPD internally and by Chicago residents. I-CLEAR applications are those that will be implemented externally, such as the case reporting system jointly developed by the CPD and the Illinois State Police (ISP). This report describes these initiatives and examines some of the “launch procedures” that lie behind the systems. Development of the CLEAR and I-CLEAR enterprise systems is an ongoing process; this report covers progress and activities through the end of October 2004.

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<sup>1</sup>The first report can be found within the CAPS Years 8&9 report at [http://www.northwestern.edu/ipr/publications/policing\\_papers/years8&9.pdf](http://www.northwestern.edu/ipr/publications/policing_papers/years8&9.pdf); second year reports can be found at [http://www.northwestern.edu/ipr/publications/policing\\_papers/Policing\\_Smarter.CLEAR.pdf](http://www.northwestern.edu/ipr/publications/policing_papers/Policing_Smarter.CLEAR.pdf) and <http://www.cops.usdoj.gov/default.asp?Item=1331>

## Information Technology and the Police

CLEAR was launched just as the information technology (IT) revolution hit the criminal justice world. Police departments in particular were ripe for change, as they became increasingly reliant on timely information to guide daily operations, analyze the effectiveness of crime prevention tactics and enhance management accountability. The “CompStat” management system in New York City, as well as data-driven law enforcement programs such as the federal Strategic Approaches to Community Safety Initiative, have given police a taste of what is possible. “Hot spot” policing and other operational programs have a greater likelihood of success if managers have access to up-to-date data for planning and evaluation. Unfortunately, as Dunworth (2000) noted, “the present reality is that too few police departments are utilizing that capability effectively.” Most police departments have yet to exploit the capabilities inherent in information technology. Agencies the size of the Chicago Police Department are awash with data. Each day, big cities receive thousands of 911 calls, complete thousands of crime reports and arrest hundreds of people. Although tens of thousands of data elements are entered into their databases each day, this information has been of little value because it is not easily extracted in useable form.

Today, data-driven policing is the “buzz” in law enforcement circles. Interest is driven in part by external demands on the police: that they be more accountable for their cost-effectiveness, that they “right-size” their staff and that they make more strides in pursuing procedural regularity. These trends are not coming about in a vacuum; in the private sector IT is affecting internal business processes by lowering record keeping costs, encouraging flexibility and speed in decision making, giving management better control over product quality and enabling businesses to have more individualized relations with their customers. The current IT revolution in policing also comes at a time when the required computer hardware and software has at last become inexpensive and more “user-friendly.” Many police agencies want to get involved, and they showcase new mission statements, business and marketing plans and training programs that focus on information technology. Too often, however, there has been more talk than progress in implementing integrated data systems, gathering data consistent with National Incident-Based Reporting System<sup>2</sup> (NIBRS) standards, sharing data in partnerships with researchers and conducting sophisticated crime analysis and forecasting.

The CPD’s effort to harness the power of information technology began in June 2001. With more than \$35 million in support from Oracle Corporation and other funding sources, the CPD began an intense program of software development and testing. Oracle, a major business software designer, wanted to demonstrate that recent advances in information systems could be

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<sup>2</sup>The National Incident Based Reporting System (NIBRS) expands on the UCR system, which simply collects summary information about crimes reported to the police. Under NIBRS, data collection elements include the expansion of the number of offense categories, detail on individual crime incidents, the linkage between arrests and clearances to specific incidents or offenses, inclusion of all offenses in an incident, the ability to distinguish between attempted and completed crimes, and the linkages between offense, offender, victim, property and arrestee variables that permit examination of interrelationships.

tailored to help foster greater accountability, efficiency and effectiveness in the public sector. Oracle assigned more than 20 software developers to work on the project. The CPD's superintendent and deputies made CLEAR a top organizational priority. With this level of commitment and expertise from the participants, CPD management has already seen that IT is having a substantial impact on the Department and on the community it serves. Under I-CLEAR, both the CPD and the Illinois State Police have similarly made a substantial commitment in terms of resources and personnel. Oracle is currently involved in executing a \$4 million dollar contract with the ISP for I-CLEAR development.

Good ideas are the cornerstones for innovation, but the gap between theory and practice, between planning and implementation can be substantial. Innovative ideas, hard-working developers and good technology are critical to making automation projects a success, but they are not sufficient to ensure success. Agencies consistently underestimate the human factors (individual, social and organizational influences) involved in implementing new initiatives – especially those relating to technology. Real people are involved, and they must understand 1) what is expected of them; 2) how changing their behavior will benefit them personally and make their jobs easier; and 3) how to do their new jobs, which calls for effective training. CLEAR is an enterprise system, meaning that it has the power to impact everyone in the organization – from the way officers perform their jobs daily, to the administration and management of the agency as a whole. Equally important, the Department intends for CLEAR to reach beyond the organization to involve the community and other agencies. While sections of this report describe the behind-the-scenes effort that has gone into CLEAR, others examine how it has impacted the organization, how it has reshaped the daily work of police officers in the field and the first steps that have been taken to open a window to the general public.

### **CLEAR, the Data Warehouse and I-CLEAR**

To understand the CLEAR project, some knowledge of the context in which the project evolved is helpful. Oracle had been working with the CPD since 1996 on development of a Criminal History Record Information System (CHRIS), as well as on other information technology projects. CHRIS, in its initial release, had many limitations and was not well received by users. One complaint was typical of the reception of IT applications in many police agencies – that officers labored to input information, but they were unable to query the data to use it to their strategic advantage. It was a system that provided management data to “the bureaucrats” rather than operational information to officers working in the field. Detectives in particular complained that they were spending a great deal of time inputting data while not getting anything useful to their investigations. CHRIS needed reworking, and the CPD believed the best way to accomplish this was to develop a menu-driven web-enabled database system.

When the CPD decided to overhaul its information technology systems, it approached Oracle to present the concepts behind what would become known as CLEAR. At a spring 2001 Oracle/CPD meeting, the Department described CLEAR's potential market value and reasons why Oracle would be the CPD's best partner for developing an enterprise system for law

enforcement. Among the several points presented by the CPD were: 1) Oracle would have the full cooperation of the department; 2) the CPD would have ownership of its proprietary version of what was developed; 3) Oracle would have ownership over a generic version of the system which they could market to other law enforcement agencies; and 4) the Department would support the partnership with in-kind services such as development staff, management time and overhead. Both Chicago's police superintendent and the chief of Washington, DC's Metropolitan Police Department were involved, to demonstrate that there was "multi-city interest" in such a project.

Within a week of the meeting, the CPD and Oracle were engaged in continuing dialog about CLEAR development. Underscoring Oracle's enthusiasm for the project was its offer of funds for development purposes. At the same time, a CPD deputy superintendent contacted the Police Executive Research Forum (PERF) to gauge its interest in partnering with the CPD to assemble a portrait of best practices in the IT field and to educate other law enforcement agencies about CLEAR and potential IT applications. PERF showed immediate interest in the CLEAR project's ideas and its proposed role.

A second meeting took place between the CPD and Oracle's first vice president. The negotiation began with Oracle's offer of 90,000 consulting hours for CLEAR project development. After ensuing discussion about the project's need to be "capacity building," Oracle added 500 hours of Oracle University training for CPD staff. The CPD reciprocated with an offer of \$9 million from the Office of Community Oriented Policing Services (COPS) funding that had been allocated for technology. As the project approached the \$40 million mark, a law firm was hired to handle the contract negotiation process. With City Hall's help in the contract process, the agreement was completed in seven days.

In April 2000, the CPD built the data warehouse, which has the ability to sort through large amounts of data – there are, for example, more than 4 million arrest records stored in the system – in a matter of seconds. The data held in the warehouse can be manipulated quickly with the aid of "easy-to-use" features, making it very popular with Chicago detectives and other users. In 2002, the system was marketed to criminal justice agencies in Cook County. As its first endeavor in criminal justice information sharing, the CPD offered access to the data warehouse system through the CPD extranet, free of charge, along with training and an easy login procedure. Adoption and usage spread quickly in Cook County, and access was soon being offered in the border counties and to federal agencies. Interest has since spread beyond the Illinois borders to Wisconsin and Indiana. Because the data warehouse is shared with agencies outside of the CPD, it falls under the I-CLEAR banner. Currently, participating law enforcement agencies can tap into the CPD extranet to get online reports, investigative information and streaming video training. The data warehouse currently holds 14 years of Chicago Police Department data as well as four-and-a-half years of data from the Cook County Sheriff's Office, the Illinois State Police and the participating law enforcement agencies. Later in this report we focus on the adoption of data warehouse access and usage over time by participating agencies, as well as explore their reasons for adoption.

In January 2004, Governor Rod Blagojevich and Mayor Richard Daley announced a shared vision whereby Illinois would become the first state in the nation to establish a single criminal justice database for the state and all its local agencies. The primary goal of I-CLEAR is to design and build an enterprise information system – customized for the CPD and the ISP, but adaptable for others – to fundamentally change the way criminal justice agencies conduct business. I-CLEAR provides the foundation for an integrated criminal justice system statewide. Anticipated short-term outcomes include expanding the CPD criminal case and incident management systems to a common system that all ISP troopers can utilize; expanding the current CLEAR system into a statewide law enforcement data warehouse by creating a criminal database that is accessible to all law enforcement agencies in Illinois; and providing information directly to officers on the street through a wireless system.

The first I-CLEAR application being developed is I-Case. The I-Case application consolidates incident reports and detective follow-up reports and allows for a single automated case reporting system statewide. I-Case is an adaptation of the CPD’s wireless automated incident reporting application, known as AIRA, which is described later in this section. I-Case, like AIRA, will collect robust data elements, enabling Illinois to be the first fully NIBRS-compliant state with a rich relational database for crime analysis and law enforcement decision-making. The I-Case application is expected to serve as a critical building block for regional integration and dissemination of information across borders. The utility goes beyond the benefits of regional data sharing, as it has far-reaching implications for addressing terrorism. To that end, the CPD and Office of Emergency Management and Communications (OEMC) recently announced a \$9.5 million expansion of I-CLEAR that will augment the system by centralizing Homeland Security databases. I-CLEAR’s vast repository holds great potential as a tool in the war on terror by ensuring that comprehensive investigative leads are made available to all branches of law enforcement both locally and nationally.

## **Description of CLEAR**

A distinguishing feature of CLEAR is that it is not a static system, but rather an evolving one that is open to feedback, refinement and redefinition when necessary. Each CLEAR application undergoes a multi-stage development process and is implemented only after focus groups have offered feedback about its usefulness; after internal marketing has taken place to elicit user interest and buy-in; and after field testing has determined that the application will work properly. If there are difficulties at any of these stages, the application team works out the problem before the application is made available in the field. Target implementation dates are set for the various CLEAR applications, but they are often adjusted when unanticipated issues arise. A major goal of CLEAR is to help users understand that the automation process has the potential to enhance their jobs, as opposed to viewing new procedures as another set of tasks being added to their already long list of things to do.

CLEAR applications impact three major functional aspects within the CPD: police management, criminal justice integration and community/business partnership. The goals for each include:

**Police management:** CLEAR is expected to promote effective resource allocation; officer management and accountability; risk management and early warning; tactical and strategic planning; and fiscal accountability. The departmentwide management accountability process will make use of the new systems to address crime and disorder problems; react to emerging crime; optimize community involvement; and manage available human and material resources.

**Criminal justice integration:** The system is intended to enable unified strategies to reduce crime; eliminate criminal justice bottlenecks; increase accountability between criminal justice agencies; and provide a comprehensive picture of offender activity. Information sharing will involve other law enforcement agencies, prosecutors, the court system, the corrections system and other interventions, perhaps including non-criminal justice partnerships. The CPD has stated that it hopes the criminal justice integration component will give the CPD the capacity to “police smarter;” enhance partnerships with surrounding suburbs and cities; improve the quality of criminal justice information; improve employee morale; and reduce liability costs.

**Community/business partnership:** The Department anticipates that CLEAR will strengthen problem-solving capacity; conduct community-needs assessment; and allow for easy and convenient information sharing and intelligence gathering from the community. Currently the CPD partners with citizens through monthly beat community meetings and through District Advisory Committees in each of the 25 districts. There will be increased effort to reach people currently not participating in these activities as well as an increased focus on meaningful problem solving, citizen involvement at beat community meetings, and community-based performance assessment. The CPD is embarking on a joint project with the University of Illinois at Chicago to develop and test a web-based community survey that will help to achieve these objectives. The preliminary work is summarized in this report.

In sum, CLEAR provides the tools for predictive resource allocation to deploy officers when and where needed; unprecedented availability of information for management analysis and officer accountability; shared performance and problem-solving information for community policing partners; pre-packaged information to support decision making at all levels of the Department; and a framework for information integration across criminal justice agencies. When CLEAR is fully deployed, the CPD expects to enjoy reduced crime and safer communities; proactive community involvement; proactive resource allocation; decreased redundancy in administrative functions; and increased management and officer accountability. The various CLEAR applications will be available through the intranet at the CPD, the Internet for the public and the extranet for other government agencies.

## **Applications and the Development Process**

The following subsections of this report provide an overview of active CLEAR applications and the development of I-CLEAR. Information in this section and for the section on

I-CLEAR was derived from 38 in-depth face-to-face interviews with application developers, trainers, implementers and users; observations of six focus groups and joint application development (JAD) sessions; seven application roll out meetings and demonstrations; 36 general meetings; and 32 telephone interviews with law enforcement officials. In addition, we collected data from hundreds of police officers in the pilot-district and a comparison district before and after the implementation of many CLEAR applications to examine awareness and possible short-term impact of specific CLEAR applications. Survey data were also collected from 2,256 officers attending Automated Arrest training at the academy. Data collection began in November 2003 and continued through October 2004. This report represents the most up-to-date information at the close of the data collection period.

Within the CLEAR enterprise system there are four key applications that are used by, or have the potential to impact, the majority of CPD personnel. These applications, which provide the focal point of this report, are the following:

- Automated Incident Reporting Application (AIRA)
- Automated Arrest Phase II
- Personnel Suite
- e-Track

**Development Process.** An application can pass through seven stages before being launched: 1) conceptual development, 2) joint application development (JAD) sessions, 3) subcontracting, 4) design/build, 5) pilot-testing, 6) training and 7) implementation.

At the **conceptual** stage, a module exists only as an idea that, when developed, will either allow for a more efficient and cost-effective means for accomplishing a core function or enable the Department to use data to engage in a wider scope of law enforcement strategies.

Each system being developed undergoes a series of day-long **joint application development** (JAD) sessions, often held over a period of several months. At these working sessions, people from the division for which the application is being developed – the eventual users – provide their knowledge of their unit’s business operations. After each session, the Oracle and CPD teams jointly produce a process flow document. Flow documents are based on procedural information gleaned from the day’s activities, and they are reviewed at the next meeting. After three or four JAD sessions, a process model is drawn by the Oracle team and given to the division’s key personnel. After the unit or division management team carefully reviews and accepts the document, it becomes the foundation for the application’s development.

Some applications under development require **subcontracting** with outside vendors to create or supply hardware or software for the various systems. The city’s bidding process must be followed, usually necessitating proposals from several vendors. This process can hold up the development of an application, particularly if there are protracted negotiations about a contract’s

language. Occasionally vendors realize that they cannot deliver the promised product, and the agencies must begin anew, further delaying the application's development.

Applications in the **design/build stage** have progressed from a concept, with appropriate input, and are nearing a "ready for testing" mode. Usually Oracle development team members and CPD members have worked together on different aspects of the application to get to this stage. A significant outcome of this stage is the identification and detection of flaws and unexpected outcomes. Solutions are undertaken by the developers and additional input may be sought from potential users. At this stage role-based security set-up is developed; this determines who has access to the application.

The **pilot-testing** stage is next and is conducted in a number of ways. Pilot-testing can be conducted at CPD headquarters, at a select stationhouse site or in a particular unit of the Department. The type and duration of pilot-testing used depends upon the complexity of the application and the targeted user of the application. Pilot-testing may be completed in one day or over the span of a longer period. At this stage, unanticipated problems or user-acceptance-test results can send developers back for fine-tuning of the application.

**Training** also takes numerous forms, depending upon the complexity of the application and the number of potential users. Applications that are simply enhancements of existing systems may require nothing more than widely distributed explanatory memos or brief explanations and streaming video presentations at roll call. (Streaming videos are on-demand presentations stored on a network and can be viewed at any time in multiple locations.) Applications that are replacements of outdated and antiquated systems or that are entirely new modules require more intensive training and continued technical support. For such applications, trainers may spend several days out in the field providing individualized instruction to field officers. A "train the trainers" methodology is often used for large-scale instruction. For this, designated officers receive training on use of an application, and they subsequently return to their units to train fellow officers. The CPD has created a special training team whose primary responsibility is to make sure that users of each CLEAR application are adequately familiarized with the module either prior to or at the time it is implemented.

When an application reaches the **implementation** stage, the expectation is that nearly all of the bugs have been worked out, and it should be technically unflawed. The challenge at this stage is to create excitement and motivation among potential users in the environment where the application will be fielded. Users must be convinced that the new application will help them do their job more expeditiously. Support must be in place to work through early resistance and to get users through the technical learning curve.

The I-CLEAR model of development follows many of the same stages as CLEAR and will be discussed in detail under the section on the CPD and ISP partnership in this report. I-Case development is in its earliest stages, but is viewed as having great potential for criminal justice integration.

## **Use and Impact of CLEAR**

This report also looks at CLEAR usage and its impact upon the CPD. A case study of the district at which new systems are pilot-tested examines the use of CLEAR and its impact on officers in that district. To do so we conducted personal interviews, administered officer surveys and rode with officers on patrol. We also looked at CLEAR's impact on the management and organization of the CPD, particularly as it relates to planning, deployment, supervision and accountability. One of the CPD's highest priorities is to reduce violent crime in the city, and we looked at how CLEAR has been used to address this goal.

## **Criminal Justice Integration**

As access to the data warehouse has spread beyond the borders of Chicago, we have documented who uses the system, which I-CLEAR functions they use, why they chose to get involved in a partnership with the CPD and issues that arose as they became users. A section of this report examines our findings in detail. Some of the information presented here was extracted from the data warehouse itself, as the system keeps track of who uses it and the queries that are made. This enabled us to identify patterns in the adoption and use of CLEAR outside of the CPD. We also conducted a survey of actual and potential users of the data warehouse. The survey examined their decision to get involved, the equipment and training needs they faced, and the kinds of uses they make of the data. A follow-up study tracked specific crimes that were investigated using the data warehouse. From this we learned in more detail how agencies were using I-CLEAR data to tackle crime. Critical issues remain, particularly with regard to security and governance, and both are addressed in the section of the report examining criminal justice integration.

## **Community Input**

As part of the CLEAR initiative, the CPD and the University of Illinois at Chicago (with input from Northwestern University) have developed and tested the feasibility of a web-based survey system for obtaining input and feedback from Chicago residents regarding neighborhood problems, local anti-crime initiatives, and assessments of local police, community and partnership activities. The expectation is that a standardized system of geo-based survey data can be developed to "measure what matters" to the public within a community policing framework, and that this system can provide the CPD and the public with useful information for planning, evaluation and accountability. Feedback from ongoing geo-coded community surveys is expected to enhance beat-level problem-solving, police-community partnerships and joint accountability for public safety activity. This developmental work, which began in 2002, has progressed through several stages. Citywide survey data, focus groups, in-person interviews and questionnaires administered to both CAPS participants and police officers in selected locations were useful for evaluating and refining this application. In 2004, a field test in three beats was completed and many lessons were learned. The findings of this field test are discussed in this report, along with future directions for development. The initiative has been sufficiently successful that the CPD has agreed to expand this

experimental project to include 60 Chicago beats during 2005, and the National Institute of Justice, in recognition of the potential utility for other jurisdictions across the nation, has funded us to conduct a scientific assessment of the Chicago Internet project.

### **CLEAR Development, Year Three**

#### **Overview**

This was a year of transition and evolution for CLEAR developers. Sweeping changes in management had a ripple effect throughout the team, at first bifurcating the once united workgroup and, eventually, reducing the size of the already taxed crew. In spite of these substantial changes, the CLEAR team instituted number of administrative changes that are evidence of organizational maturity.

The management changes occurred at the top levels: the deputy superintendent responsible for CLEAR's genesis took advantage of an early-retirement package offered to city employees, and even before a replacement had been named, the executive administrator of the CLEAR project was appointed to a post in another city department. Because the city's police dispatch center fell within the purview of the CLEAR administrator's new post, the team working on the wireless, in-car portion of automated incident reporting system relocated to the dispatch center, and the administrator continued to hold the reins of the CLEAR project. This plan may have been workable conceptually, but in practice, it appeared that the administrator's accessibility to the remainder of the CLEAR development team became limited. When the retired deputy superintendent's replacement arrived, the question of where CLEAR development was to be managed was eventually settled, bringing the project (and a number of the AIRA team members) back to the CPD. However, the executive administrator's move was quite beneficial to CLEAR in one way: infrastructure decisions that would greatly increase the chances of a successful launch of the in-car portion of AIRA would be made by the former CLEAR administrator. This was an outcome that did not seem to be on the horizon prior to these personnel changes. Thus, the major impediment to achieving wireless automated incident reporting in Chicago was potentially eradicated.

Several administrative advancements are notable because they point to an increasing sophistication of the CPD's CLEAR development team:

- The appointment of a network specialist, who instituted a secure network for all of the Department's computers, providing the agency with increased security and agility.
- The creation of a quality control position to ensure that the applications within the CLEAR enterprise system function similarly and have a similar "look and feel."
- The establishment of pre-production meetings, at which project and application managers see a demonstration of soon-to-be-launched applications. These gatherings serve to not only keep everyone informed, but also to enable managers to anticipate potential impacts of the new application on their programs and vice versa.

- The overhaul of the Help Desk unit and the creation of a knowledge database which consists of articles and procedural reports that call-takers refer to when seeking to solve a problem. Application managers submit the articles, which undergo a quality control review before they are entered into the database.
- The establishment of a review system that provides checks and balances for Oracle-related billing and payment.

This section reviews the status of four key applications that impact the Department's core functions and all of its employees.

### ***Automated Incident Reporting Application***

The first segment of the Chicago Police Department's case reporting system has been automated by a CLEAR module known as AIRA (Automated Incident Reporting Application). AIRA enables Patrol Division officers to complete case reports via portable data terminals (PDTs) or LAN-based work stations in any CPD facility. AIRA's development dates back several years, and over that time, the project's scope, depth and timeline have increased almost exponentially.

### **Goals for AIRA**

The Department has several well-defined goals for automated case reporting. AIRA is expected to simplify the reporting process; improve reporting accuracy, quality and completeness; free supervisory personnel from reviewing repetitive report elements; provide follow-up investigators with complete and timely information to improve case solvability; reduce the number of hours tied to report processing; and collect NIBRS data.

The above goals are what the CPD expects from the automated case reporting application, but as part of CLEAR, AIRA is also expected to eventually interface with the Department's other key information applications and systems. Because AIRA is the first-line information collection system – the “on ramp” to CLEAR – it must successfully receive information from the city's automated dispatch system (PCAD) and, in the future, feed data into subsequent branches of the Department's case reporting system (digital mugshots, automated arrest and investigative followup), and transmit data to the data warehouse.

### **Development**

The CPD's efforts to create an automated incident reporting system predates CLEAR development. In March 2000 a lieutenant in the Department's Research and Development unit was charged with creating a user-friendly data entry system to be used by patrol officers to complete incident reports. The project manager recruited five police officers to work over a five-month period to develop the business logic for such an application, which would then be handed over to a vendor for actual development of the application. A few months into the effort, a promotion for the project manager and a number of manpower shifts left only one of the five

officers – a sergeant – to develop the application’s logic single-handedly. As the new project manager, it became quite clear to the sergeant that the project had been “put on the back burner,” evidenced by the fact that the only support staff available to him consisted of interns from a nearby university. In addition, the sergeant was continually given assignments that took him away from the automation project. Development of the incident reporting system limped along for several more months, when an administrator was brought in to see the development of CLEAR to fruition.

The project was resurrected in summer 2001, but despite the fact that Oracle developers were already beginning to work on several CLEAR modules, AIRA remained an in-house project. Two officers with programming expertise joined the project manager, and AIRA began to take shape. Soon thereafter, another officer was brought on, chosen for her knowledge and experience with process mapping. Flow charts were created to make sure that screens were developed for every type of incident – screens that captured the rich data needed for crime analysis. Over the ensuing weeks, five officers from the district where AIRA pilot testing was eventually to take place were brought in to work with the AIRA team to provide insight and input of officers with current field experience.

Because AIRA was not being developed by Oracle, formal JAD sessions were not held, but focus groups regularly provided feedback. In 2002, randomly selected tactical, wagon, beat, lock up and rapid response officers were brought together in three different groups. In addition, four groups of captains and lieutenants were convened to offer suggestions about the application after seeing a demonstration. According to the development team, many members of each group were skeptical at the start of the process, but most left with positive attitudes about the application. These groups were also encouraged to complete a survey eliciting opinions, suggestions and concerns about AIRA implementation and were directed to an intranet site to do so. Other sources of input included officers from the Missing Persons Unit to ensure that appropriate information for these types of cases is included on AIRA; assistant state’s attorneys, who provided their opinions about the printed case report produced by AIRA; and CPD management, who attended periodic demonstrations of the automated case reporting module.

During this process, a member of the team reviewed the various general orders that would be affected by AIRA and worked with individuals in R&D responsible for rewriting them. The officer also proposed the elimination of various procedures that, in practice, are not carried out despite being specified in the orders. More than 30 department general orders are affected by the advent of automated case reporting.

Generally, reaching this point in the development of a CLEAR application would mean that after a period of programming, pilot testing and training, the application would be ready to launch. However, such was not the case for AIRA, because it must interface with many different systems. A new operating system would need to be installed in each of the Department’s portable data terminals (PDTs); complex adaptations would need to be made to the city’s automated dispatch system; and message-oriented middleware would need to be designed to serve as an interface between AIRA and

CLEAR. Vendors were sought for these projects, and though it was eventually decided that the original PCAD vendor would make the changes, much wrangling ensued between the vendor and the city's legal department over contract language. After looking for a vendor to design the message-oriented middleware and realizing that an outside firm might take up to a year to complete it, a recently-hired (but-soon-to-be-leaving) Information Systems director of development decided to develop the middleware in-house. The middleware was eventually created by an outside vendor's programmers working in conjunction with the AIRA team. While this was underway, an Information Systems project manager was working with an AIRA team member on a massive mapping project to document CLEAR structural changes needed to accommodate AIRA data.

Field testing of the automated case reporting application was underway by early February 2002 to discover what problems emerged in practice and to find flaws in the logic. At first, several cars with AIRA-equipped PDTs answered calls in the district where the application was to be deployed first. After a few weeks, a group of 10 to 12 officers, composed of AIRA team members and Information Systems trainers, began testing the application in a different district each week to observe the application's behavior in the city's various radio dispatch zones.

Various problems were encountered in the initial field testing. Software and system problems resulted in screens that did not appear during the report-taking process. "Crashes" and scattered "dead spots" – areas within a radio zone where dispatches are not received – occurred as well. Perhaps most troublesome was the limited battery life of the PDTs. Despite numerous promises from various vendors that their product would offer lengthier usage periods between charges, none offered substantial improvement. Batteries that hold the charge longer than those currently in the Department's PDTs are available, but their drawback is that they do not work in temperatures below 15F, making them an impractical choice for Chicago's climate. Also vexing are some PDT issues. In addition to being particularly bulky to carry around, the placement of the PDTs in the squad cars is problematic; screens are difficult to see in daylight and, at all times, the PDTs are inconveniently situated for ease of data input.

The complexity and sophistication of the AIRA project continued to increase, and the decision was made to bring in professional programmers, who were onsite by mid-April 2002. Within a month, another key decision was made – to change AIRA's format to extensible markup language (XML) and extensible stylesheet language (XSL), which became an industry standard during the course of AIRA's development. XML controls AIRA's data transmission and storage, and XSL directs its display on a web browser. In addition, XML/XSL provides the CPD with greater ease with which to make programming modifications. This change, however, delayed pilot testing in the test district once more. While the XML conversion was underway, Oracle programmers began working on the AIRA/CLEAR interface. During this period, the decision was made to change the site of the pilot test, and field testing stopped for several months.

As it turned out, the delay caused by conversion to XML was immaterial, because disagreements over contract details between the vendor and the city's legal department prevented changes to the city's automated dispatch system from beginning when expected, and then the

vendor continually revised its timeline. While completion of the dispatch system work was scheduled for January 2003, with pilot district testing in the field planned for the following March, the vendor actually completed the dispatch system changes in November 2003. This delay virtually split development of the automated incident reporting application into two distinct projects – LAN-based AIRA and mobile AIRA. The split was formalized in November 2003 when a new project manager was named for the LAN-based application. The long-standing AIRA project manager was then able to focus his attentions on implementation of mobile AIRA.

### **Implementation of LAN-based AIRA**

As mentioned above, the original intention was to launch AIRA in the pilot district as a single application that would be used for mobile and onsite incident reporting. However, when the program was finally web-enabled and performing reliably – and a completion date for PCAD upgrades was nowhere in sight – AIRA was implemented at the pilot district's front desk, capturing data provided by people who came to the station to report an incident.

LAN-based AIRA became operational on the second watch only in summer 2003. Two members of the training team were onsite during the second watch throughout the first two weeks as a resource to already trained users as well as to observe circumstances during glitches. Front desk personnel attended a two-day, hands-on training session at the academy before they were given log-in access.

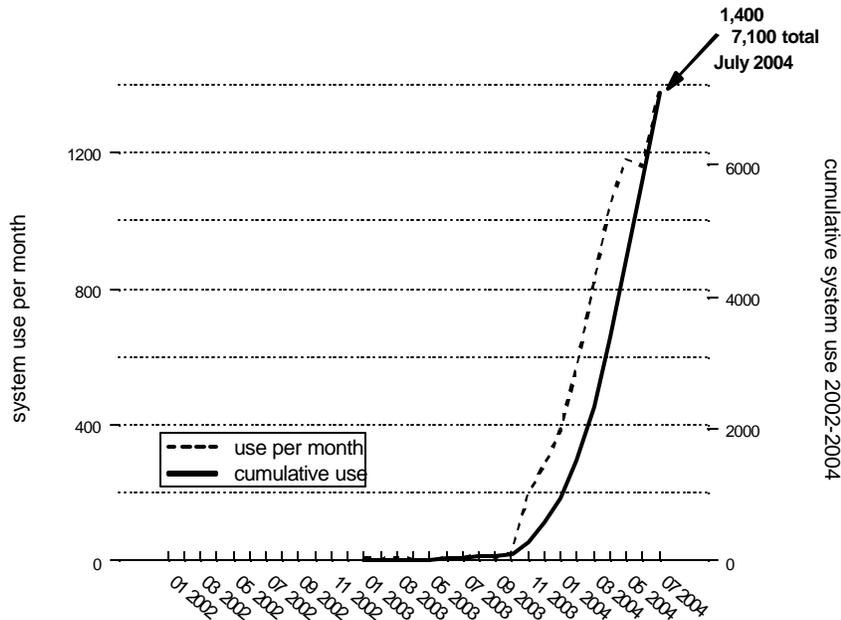
While several needed fixes or enhancements were identified in the first weeks of the pilot, no significant difficulties arose. There was, however, a somewhat awkward consequence caused by the stalled PCAD system upgrades: officers had to log on to a stand-alone PCAD terminal to access an Records Division (RD) number; write the number on a piece of scrap paper and then return to the AIRA screen to input the RD number. Timely completion of the PCAD upgrades would have automatically assigned RD numbers to the incident report.

By November 2003, LAN-based AIRA was being used around the clock in the pilot district. Training was held for desk and relief personnel, again at the academy, and district gang and tactical team officers, who routinely complete incident reports in the station, later received training and joined the district's users group. By early December 2003, 137 officers (51 patrol officers, 21 sergeants, four lieutenants, three captains and 52 gang/tactical officers) had been trained and were using the application. In addition, 20 civilian Help Desk employees received instruction on the system. A total of 23 two-day sessions were held, each held during the trainees' regular watch.

When this report was written, LAN-based AIRA was being used in four district stations spanning two policing Areas, and the number of incident reports being submitted electronically is increasing steadily, as shown in Figure 1. It was just introduced for use by officers working in the city's Alternate Response (311) facility as well. Pilot testing is underway, with two call-takers using the application, each of whom are submitting more reports daily than are being completed in

the districts using LAN-based AIRA. Supervisors have requested that a few modifications be made to accommodate their report approval process. When the changes have been made, use by the entire group of 311 call-takers is expected to occur quickly.

Figure 1  
Volume of AIRA Cases



### Implementation of Mobile AIRA

Unlike other CLEAR applications, which are launched when the program has been developed and tested, deployment of mobile AIRA is dependent on a range of additional factors, technical and otherwise, that must be in alignment before it can be fully implemented. In previous reports, we noted that the implementation of automated incident reporting in Chicago still faced several significant challenges – bandwidth capacity, facilities limitations and the magnitude of training – but none of these had a direct impact on the Department’s inability to get the mobile pilot test started before late November 2003. Instead, the major impediment to mobile AIRA’s launch had to do with completion of PCAD programming changes. These changes were handled by the vendor that created the city’s automated dispatch system, and in spite of ongoing efforts, the vendor continued to miss self-imposed deadlines, mainly caused by programming complications.

The dispatch system changes were eventually completed in January 2004, and incident reports can now be completed and transmitted via PDT. The new PCAD software not only interfaces with AIRA, but it provides new screens and functionality for field officers. The new

version is much more user-friendly and its Windows-type screens are easier to view than the outdated black and green no-frills version previously used. The new PCAD application prevents work-in-progress from disappearing from the screen when event updates appear, correcting a long-standing problem, and it allows officers to move back and forth between applications via a tool bar that remains visible at all times. Among the other new features are touch-screen technology for easy access to functions that formerly required typing of lengthy command lines; storage capacity for up to 100 sent and received messages; automatic 90-day event histories for dispatched addresses; and e-mail and enhanced car-to-car messaging.

Mobile AIRA was introduced in the pilot district via a “soft rollout,” meaning that the application was first introduced on one watch only. By April 2004 all three shifts had use of mobile AIRA; however, because of a number of problems – most of which resulted in very slow performance – no directive required that officers complete incident reports electronically. To avoid potentially alienating users, the AIRA project manager did not want to force officers to use the application when it was not working optimally. As a result, from May 2004 to the time this report was written, very few incident reports were done wirelessly.

In spite of this, officer interest in AIRA did not flag. Those who recognized the advantages of automated reporting found ways to circumvent the slowness of submitting a report. Many officers completed and saved their work on the PDTs and then went into the station to submit them to their supervisors for approval. And although officers were quite vocal with regard to their disappointment in AIRA’s performance, when surveyed collectively, they were considerably more positive: 72 percent of pilot district officers agree or strongly agree that AIRA is easy to use, though 80 percent agree or strongly agree that using LAN-based AIRA is easier. (Usage is described in a later section of this report.)

**Bandwidth.** The persistent and overriding challenge facing the successful implementation of AIRA has to do with the inability of the CPD’s current radio-frequency dispatching system to accommodate a large-scale wireless communication system such as AIRA. One AIRA team member explained the problem with the narrow-band system in very understandable terms: “home dial-up modems are 56K. What we’re dealing with is only 9K, and the pipe is small.” The development team devoted much attention to holding to a minimum the amount of data the system will be handling at any given time – for example, much planning went into determining the least amount of time that a report can effectively remain available via the PDTs before being transmitted to CLEAR.

A solution to the bandwidth limitations appears to be on the horizon. The City’s Office of Emergency Management and Communication, which operates the CPD’s dispatch system, has recently contracted with a major broadband carrier to provide a wireless network capable of transmitting incident-report-size packets of information. Testing of the system yielded promising results, and the wireless network is expected to be in use in one district in early 2005. In addition, new PDTs with wireless modems, larger screens and more powerful batteries have arrived, mitigating performance issues related to this equipment.

**Systemwide training.** Training the entire Patrol Division on a totally new system is a herculean feat. Nearly 10,000 people must learn to manipulate a new computer program to perform key functions with as little disruption as possible to the districts' daily operations – without overtime. Training has been cut back to a single day, but the limited training staff and the need to keep sufficient manpower on duty at all times will make the citywide introduction of the AIRA system a very lengthy process.

**Facilities.** As is the case any with initiative requiring new equipment or workstations for district personnel, facility limitations are readily apparent. The CPD's 25 district stations roughly fall into three categories: new, modern and very old. Accommodating needed wiring and workstations is not a problem for the Department's newest stations, and the modern facilities generally pose no major challenge. However, approximately one-third of the city's district station-houses are antiquated – some even unable to accommodate new wiring for additional fax lines.

There are plans to replace some of these old facilities; however some potentially will not be ready when it would be logical to launch AIRA at that site. There are both old and new stations in each Area, and a few old and new stations share radio zones, meaning that it may not be possible to execute an orderly deployment plan like introducing AIRA zone by zone.

Infrastructure surveys were conducted to gauge the preparedness of each facility for the upcoming deployments. Members of the AIRA team visited each district station, going room by room to assess its needs, checking for space for additional computers and to verify whether the stationhouse has adequate wiring and data port terminals (Internet conductivity ports). Not surprisingly, this effort revealed that the oldest stations would need a considerable amount of rewiring, data port installation and minor remodeling for housing new hardware. Each facility, old or new, needs additional computers.

## **The Future of AIRA**

As mentioned previously, both LAN-based AIRA and wireless AIRA have been in use in the pilot district since April 2004. LAN-based AIRA, the in-house system, continues to function well, and it is the standard way for incident reports to be completed within the stationhouse. Things are not going as smoothly with the wireless portion of AIRA. Few officers are using the PDTs to complete incident reports, for a variety of reasons. Because the broadband network is not yet in use, incident information transmits very slowly, creating a lot of frustration for officers. They report waiting up to three minutes to get RD numbers or notice that a report was successfully transmitted.

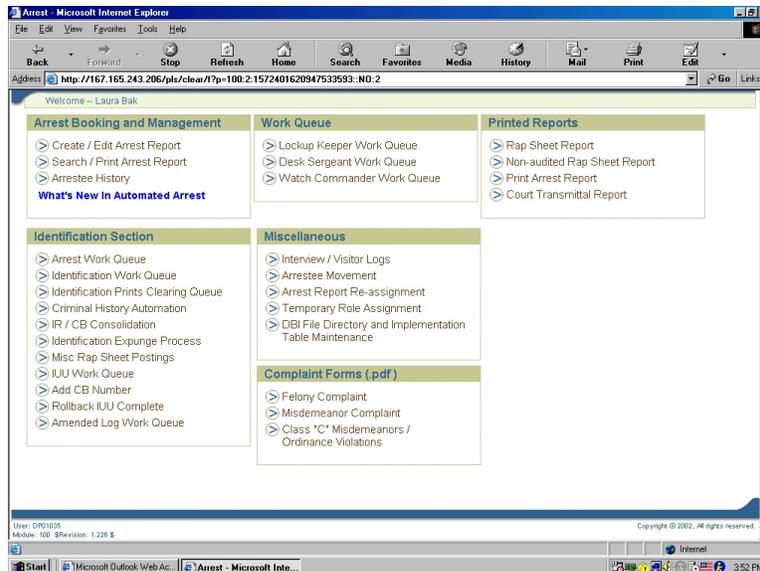
With LAN-based AIRA running smoothly and pilot testing of the mobile portion underway, the foundation for this groundbreaking application has been laid. However, the remaining challenges – bandwidth, battery life, stationhouse infrastructure and training logistics – loom large. If, however, these matters are systematically and satisfactorily resolved, the CPD should be in position to eventually provide its field personnel with the ability to relay pictures and sketches to other cars in the field; transmit fingerprints; access crime analysis information at a crime scene; and attend roll call remotely while patrolling the beat.

## Automated Arrest System Phase II

The first phase of the CPD's Automated Arrest System, launched in 1998, was a client-server application used by lockup personnel to enter prisoner information during intake. Phase II, which is currently being used in seven districts and two Area headquarters facilities, shifts this function to arresting officers, allowing them to process the arrest via bolted-down, ruggedized laptop computers in station interview rooms. Data entered by arresting officers interfaces with the Department's digital mugshot application and automated fingerprint identification system (AFIS), allowing lockup keepers to photograph arrestees as soon as they enter the lockup, resulting in real-time records. In addition, after lockup keepers post their bookings, desk sergeants and watch commanders can approve the bookings or subsequent releases online. The Automated Arrest system produces a two-part arrest report: the first contains the data entered by the arresting officer, while the second compiles information inputted by the lockup keeper, desk sergeant and watch commander as the arrest processing progresses. Information relating to the arrestee's positive identification is also added to this part of the report. These two reports constitute a complete arrest processing package.

Automated Arrest Phase II is web-enabled and provides a variety of functions, as illustrated by the menu shown in Figure 2. The application has electronic arrestee-detainment-tracking capability and can provide various reports for command staff on an immediate and per-request basis, such as listings of arrestees on hold at the time of the report generation. History reports can be generated by a host of parameters, including date ranges; officers requesting detentions; and number of detainees by detention facility for a given time period, to name a few. Numerous customized reports will be obtainable using available data captured through this process as well.

Figure 2  
Automated Arrest Menu



## **Development**

Development of this application predates the creation of the first phase of Automated Arrest, the conceptual base of this system. More than 11 formal JAD sessions composed of representatives from 10 internal CPD units and several outside agencies were held from July through December 2002. Ongoing input was provided by assistant state's attorneys and members of the Department's Legal Affairs Unit.

Some of the functions that resulted from these sessions are as follows:

- arrest reports and rap sheets include arrestee mugshots
- a criminal history report can be created showing all previous convictions, bond forfeitures, and arrests with open court dispositions to help watch commanders and state's attorneys make decisions about upgrading or downgrading arrestee charges
- watch commanders can upgrade or downgrade charges on-line prior to final approval
- desk sergeants can add court or bond information directly to arrestees' record when an arrestee is bonding out or is being sent to court.
- lockup keepers can add booking information to arrest reports before posting the booking
- detectives can request arrestee holds electronically.
- arrestee interviews, arrestee visitors, and arrestee movement between CPD facilities and outside agencies can be logged electronically.
- notations can be made about decisions to release arrestees without charges
- spell check is available for reviewing narratives

Throughout 2003, policy-making sessions were held at least monthly to deal with issues affecting general orders and procedures that emerged as testing progressed.

## **Implementation**

In late July 2003, pilot testing of the web-enabled Automated Arrest application began in one Chicago police district. A considerable amount of preparation was needed prior to the implementing the system. A facilities assessment was done to ensure that all infrastructure upgrades would be completed by the deployment date. New furniture and computer equipment was ordered, as interview rooms have historically been quite barren. Everything added to these rooms needed to be bolted down – furniture and computer hardware – for the safety of interview room occupants. Because disparate factors needed to come together at the same time, the pilot district implementation date was pushed back several times. Rewiring was completed in sufficient time, but furniture and hardware procurement delays were encountered. As each problem arose, however, it was addressed and resolved. When it was finally launched, the Automated Arrest application worked remarkably smoothly. Members of the training team were at the station 24 hours a day from the moment the application was implemented, and they remained there for several weeks. Interestingly, the first arrest processed – characterized as “historic” by CLEAR's

executive administrator – was a very complicated one, allowing the application’s manager and developers to observe the program processing a high number of variables. A glitch that emerged at the watch-commander-approval level was easily amended once its cause was identified. The next problem that surfaced in a later arrest was found to be caused by “operator error,” and the importance of clicking on “apply” rather than “save” before inputting warrant information became a training point.

Though the application experienced a minimum of technical problems, those that did arise often necessitated convening policy decision-makers to determine the best way to circumvent the difficulty. For example, transmittal of court packages (paperwork related to a case) went smoothly, however state’s attorneys were somewhat dismayed when they realized that the new computer-generated forms necessitated a signature on each sheet, while the manual multi-part forms required that they sign only once. At a subsequent meeting administrators agreed that photocopies of a signed original would suffice. Network connectivity problems with the laptop computers also cropped up, and the vendor was contacted to rectify them.

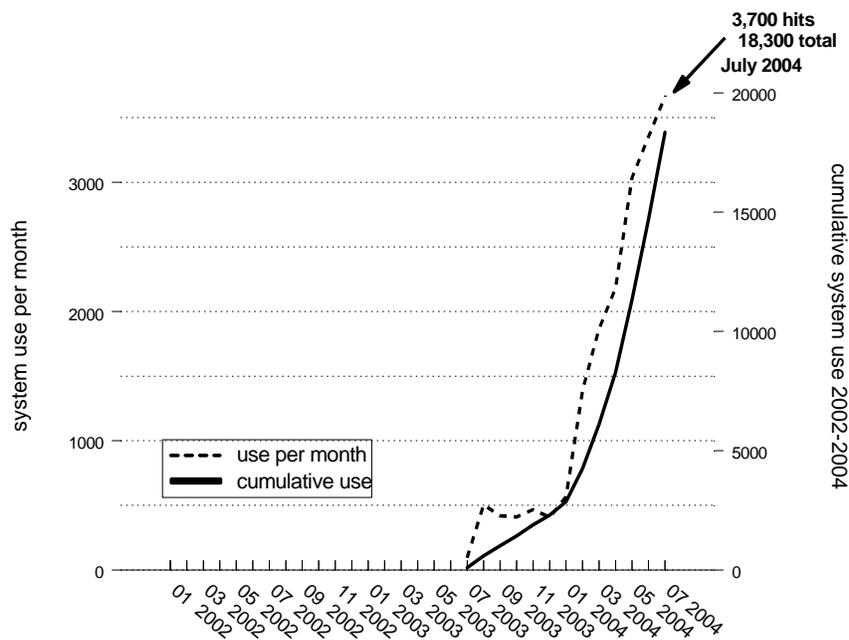
As district personnel became increasingly knowledgeable and comfortable, training support staff gradually cut back their onsite presence and eventually turned that responsibility over to the recently trained Help Desk. When Automated Arrest Phase II had been in use in the pilot district for nearly a month, a debriefing meeting was held with key users of the system, the Automated Arrest project team, representatives of Patrol Administration and the pilot district commander. A small delegation from the Illinois State Police sat in to gain insights as potential future users. At this meeting a few aspects of the application that needed enhancement or further development were suggested by the commander, based on user feedback. The tone of the meeting was quite positive, with the pilot district commander giving “a B+ to the application itself and an A to training and support.” The commander also had a concern after observing district personnel actually processing arrests via the laptops in the interview rooms: officers – especially those with large hands – had a tendency to use ball point pens on the computers’ touch screens. This practice would predictably puncture the laptop screens in short order. The decision was then made to order a generous supply of plastic styluses.

Ongoing meetings such as those discussed above and others that identified highly desired enhancements resulted in an upgraded version that provided new functionality. This version was launched in November 2003. Additional hardware needs also became apparent during the initial pilot period, and by November a new server was brought in to speed up printing of lengthy arrest reports, which were taking up to 35 minutes to produce.

Two months after the Automated Arrest pilot launch, the application was deemed to be functioning sufficiently well for it to be introduced in a nearby district. Tasks were assigned to meet the various infrastructure, furniture and hardware requirements. Though the application was amply tested for implementation in the next district, procurement delays and complications routinely postponed the launch date.

During this evaluation period, Automated Arrest was implemented and in use in seven districts, two Area headquarters facilities and Central Detention. To date approximately 2,000 officers have been trained and are processing arrests electronically, resulting in steady upward usage, as shown in Figure 3. The application is working well and has been deemed sufficiently stable to be launched citywide. However, equipment needs and training requirements, as described below, dictate that it can be introduced in one additional facility every two months. At this rate, citywide use of Automated Arrest is anticipated in 18 to 24 months. The plan is to first launch the application to each Area headquarters and the district station sharing the facility. This strategy delivers the application first to the potentially heavy users – gang and tactical officers – and including the district station capitalizes on the infrastructure upgrades already taking place in the facility. When all of the Area headquarters have use of Automated Arrest, the order in which it will be introduced in the remaining districts will be decided based on a number of factors, not the least of which involve how busy a particular district is and the magnitude of infrastructure upgrading needed.

Figure 3  
Volume of Automated Arrest Cases



Since its deployment in the pilot district, several enhancements have been made to the application, two of which notably provide the Department with increased efficiency. The first is referred to as “the paper queue,” which enables the Identification Section to transmit stamped release forms to watch commanders for prisoners without outstanding warrants. Before this feature was developed, Identification Section personnel faxed the forms back to the station, often creating a wait time of many hours. The paper queue gets the arresting officer back out on

the street faster and allows for more timely release of eligible arrestees. Another new feature is the automated generation of gang information cards. Until recently, officers processing the arrest of a self-described gang member were required to complete a separate form that gathered information about the arrestee's affiliation. The Automated Arrest enhancement populates the fields of the gang information card with information entered into the arrest report, also resulting in a time and materials savings for the Department.

**Training.** In-depth training is required for Phase II of the Automated Arrest application. Because supervisors must learn the arrest process as well as the approval procedures that pertain to their position, they undergo two days of training, while officers require only one. For each training session, the first day's instruction is composed of both groups. Supervisors return the following day to complete their curriculum.

Approximately 15 people comprise a training class, which is held in a computer lab at the academy. The room has two sections of four rows of tables, with three PCs on each table. A screen at the front of the room displays the various Automated Arrest screens, and trainers use a laser pointer to clarify certain concepts. The session begins with basics, including how to log on. A "Quick Guide" and another "cheat-sheet" packet are distributed to trainees to aid them when using the system back at the station. In addition, officers at training are introduced to a new paper arrest form that must be used if the Automated Arrest application becomes unavailable because of maintenance or a system shut-down.

### ***Personnel Suite***

The Chicago Police Department is automating human resource functions in five of the Department's units: Finance, Internal Affairs (IAD), Office of Professional Standards (OPS), Medical and Personnel. The Department has three main goals for the Personnel Suite:

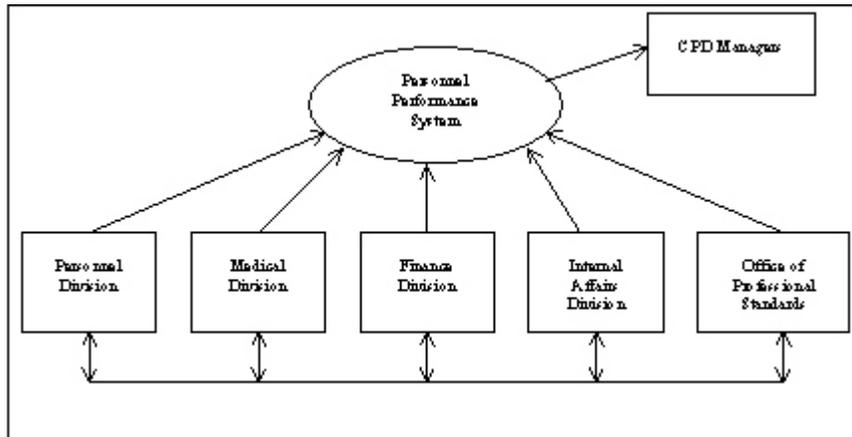
- to maintain comprehensive personnel files while eliminating redundant data entry
- to enable employees to initiate and complete many of their own personnel-related tasks – requesting days off and furlough, tuition reimbursement requests and the like
- to provide managers with rich personnel-related data to help them review performance and monitor behavior

The Department is also institutionalizing accountability by developing a module known as the Personnel Performance System (PPS), which will identify problem behavior before it results in an unfavorable outcome. Data pertaining to behavior monitoring and performance will be collected in the Personnel Performance System, as shown in Figure 4.

The availability of this type of real-time performance-related data can facilitate meaningful and effective personnel management at the CPD. When PPS is fully operational, the Department will be in a position to begin systematically rewarding high achievers as well as provide early intervention to help problem employees improve their job performance when

possible, or begin progressive discipline when it is not. Implementing such a system, which could result in termination, would represent a major cultural shift in the Department's approach to problem employees.

Figure 4  
Personnel Suite Overview



Because the Personnel Suite consists of a variety of modules, development is proceeding one step at a time, with the order being determined by a range of factors. Development of some modules has been impelled by unit need, others by availability of personnel and funding, and still others by the realization that information from an as-yet-unbuilt application is essential for another module to function optimally. We emphasize that while applications can be developed individually, they are each an integral part of the Personnel Performance System.

Personnel Suite development is divided into three phases. The first focused on automating the Medical Services Section's functions and included a few less-complicated modules, such as the Emergency Notification system, which stores information on names of individuals to be contacted in the case of an officer emergency. Phase II concentrated mainly on the automation of IAD and OPS duties, resulting in an application that is expected to be launched in March 2005. The successful deployment of the IAD/OPS module will mark the onset of the third phase, during which the functions of the Personnel and Finance Divisions will be computerized.

### Automating the Units

**Finance Division.** A few of this division's functions are currently automated through CHIPPS, which is a stand-alone system used by City Hall's Department of Personnel, but tracking of time and attendance – one of the Finance Division's core functions – is not. The Personnel Suite will computerize time and attendance tracking, which is now maintained

individually by unit. Currently, time and attendance records are transferred to the Finance Division, with data eventually ending up at City Hall for payroll functions. Because this information is not automated, the Department is unable to obtain real-time information about manpower strength which, under any circumstance, is essential. In the present climate of ongoing terrorism threats, real-time information that is immediately accessible is considered absolutely necessary to ensure effective deployment in the event of an incident. In addition, the system will automate basic timekeeping tasks, such as transmitting time slips electronically. Managers will benefit by having data available to help them approve vacation and time-off requests based on anticipated manpower levels, and officers will be able to track their vacation, furlough, sick time and overtime allotments.

**Internal Affairs Division (IAD) and Office of Professional Standards (OPS).** A soon-to-be launched Personnel Suite module will enable these units to easily access information for complaint investigations. IAD and OPS each have been using its own investigation assignment and tracking system. The Personnel Suite application will eliminate redundant processes of these two units and ensure that duplicate complaints are not filed. In addition, the application will provide access to time and attendance records – which are essential for verifying whether an officer was on duty when the incident in question took place, and it will provide access to arrest and case reports relevant to the consequent investigations.

The IAD/OPS application is composed of a number of automated functions, beginning with the actual logging of the complaint and ending with the officer's acknowledgment of the complaint disposition and a notice being sent to the city's Department of Finance when a penalty results in a suspension. Intermediate functions such as generating notification letters to persons filing complaints, documenting investigations and penalty recommendation approvals are also handled by the application. Investigation-related documents that are not computer-generated will be scanned and attached to each electronic complaint file.

**Medical Section.** This unit's myriad functions related to medical leave and injured-on-duty (IOD) status are now directed by the Personnel Suite. The CPD's once complex and laborious manual process for tracking and regulating this massive set of procedures is now automated, providing real-time force-level numbers.

**Personnel Division.** Some of this unit's functions are handled through City Hall's Chicago Integrated Personnel and Payroll System (CHIPPS). CHIPPS will continue to handle its current CPD functions, such as generating payroll, and will not become a part of CLEAR. However, other Personnel Division systems such as Star Management, Tuition Reimbursement, Applicant Investigations (background checks) and numerous hiring functions will be automated and managed within the Personnel Suite.

**Personnel Performance System (PPS).** This portion of the Personnel Suite will be a repository for all data related to officer behavior and performance. It will assist management in the interpretation of information provided by the various modules comprising the Personnel Suite,

thus allowing for the early identification of officers whose performance indicates potential problems as a result of recurrent citizen complaints, pursuits and traffic accidents, firearm-discharge incidents and the like. Officers so identified are provided with intervention (counseling or training) designed to improve the problematic behavior. While this is currently done on a manual basis, the Personnel Suite will widen the scope of the data employed and systematize the problem-identification process. Development of the CPD's performance monitoring system is not the result of a consent decree; however, U.S. Department of Justice recommendations for jurisdictions so mandated will anchor Chicago's program.

## **Development and Implementation**

Development of Personnel Suite of applications continued during this evaluation period. At the time of this report's writing, applications were being developed for all of the above-mentioned units except Finance, and three applications had been launched. In addition, work began on web-enabling recordkeeping applications known as Office Automation, used by district personnel. Progress on Personnel Suite applications is as follows:

**Finance's** JAD sessions were held in early autumn 2002, and the process description document was completed at the end of October 2002. This segment of the Personnel Suite is not expected to be as complex as some of the others; further work will be done in the suite's third developmental stage, as mentioned above.

**OPS and IAD's** portions of the Personnel Suite are being developed and built in tandem, as many of their processes share a number of similarities. Since the release of our last report, screens have been designed and users have participated in testing the system for flaws – the last step before deploying it. A related application that was developed and launched is the automated Tactical Response Report (TRR). This report documents incidents in which force is used or resistance encountered. While this report is not part of the OPS/IAD portion of the Personnel Suite, TRR was developed in conjunction with it because sworn personnel will use this application to create, review, approve and track TRRs. Data relating to use-of-force events will be available in the Personnel Performance Suite. The TRR application was developed in five months and introduced citywide by April 2004.

**Medical Services Section** applications were the first Personnel Suite modules to be developed because automating manual processes (as all Medical Services Section procedures had been) is less complicated than replacing legacy systems. Two such systems were launched in July 2003. The first was Medical Absence Reporting, which is a role-based system for tasks performed by district personnel at all levels. General users, such as those working at the district front desk, can create a medical absence report (shown in Figure 5) for co-workers calling in to report an illness-related day off, while lieutenants have approval and return-to-duty information access. In addition, through this

system lieutenants and watch commanders can view officers' work status, create furlough requests and view information about officers' medical absence history. Also automated is the supervisors' request for another supervisor to make a home visit to verify that an officer is there when unable to work due to illness.

Figure 5  
Create Medical Absence Report Screen

The screenshot shows a web browser window titled "Medical Absence Report - Microsoft Internet Explorer". The address bar shows the URL: [http://167.165.43.101:7777/pls/DEV/www\\_flow.accept](http://167.165.43.101:7777/pls/DEV/www_flow.accept). The page header includes "Training & Development" and "Medical Absence Report". The main content area displays the following information:

**Steps:** 1. Create Medical Absence Report (selected) | Go | Cancel | Next >

**Category:**  Sickness |  Watch |  Injured |  Injured On Duty |  Recurrence Of I.O.D.

**Employee Information:**

Name	STEPHENS, JENNIFER L.	Assigned Unit	145	Emp No.	304774
Watch	2	Detailed Unit	153	Star No.	4109
Address	45435 S ASHLAND AVE #405	Day Off Group	6	Position	POLICE OFFICER
CHICAGO IL 60624		Furlough Period	N/A	District of Residence	025
Phone No.	(312) 555-2345				

\* Last Day of Assigned Duty: 26-MAR-2003  
\* First Day on Medical Roll: 27-MAR-2003  
\* Received Date and Time: 27-MAR-2003 08:53  
Received by: BURKHART, JANET | Star No N/A

TIP The dates must be entered in the format DD-MON-YYYY.

TIP \* = Required field

User: JANET | Copyright © 2002. All rights reserved.

Another facet of the application is used by Medical Services Section staff to schedule appointments, record progress notes (shown in Figure 6) and capture all information needed for medical records. Some data inputted by Medical Services staff, such as information about when an officer is able to return to duty, is available to unit supervisors. Sworn users at all levels also use the Medical Services application to acknowledge a status change (for example, returning to duty or going from medical leave to light duty) before they leave the Medical Services unit. Non-medical-condition-related information that is gathered via these systems can be tracked for managers by the Personnel Performance System.

The Medical Absence Report system was launched as a pilot-test in two districts. The speed with which the system was implemented citywide was constrained only by the limited training staff available – one officer. The application was in use in all CPD facilities by November 2003. The Medical Services Section is the only unit that uses this portion of the application; that launch was accomplished in one day.

Figure 6  
Medical Progress Notes Screen

Progress Notes - Details - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://167.165.43.101:7778/pls/DEV/www\_flow.accept

Training & Development

Home » Medical / Timekeeping » Progress Notes

Name: STEPHENS, JENNIFER L Emp No: 779103

Cancel Next >

Progress Notes - Details

\* Contact Method In-Person Hospital BARCLAY

\* Cause Fell Down Address 4700 N CLARENDON AVE

\* Case Manager BAPAT, VIKAS CHICAGO IL 60640

Phone No (773) 728-7100

Medical Absence Report Sickness From 08-MAY-2003 to 09-MAY-2003

\* Malady Add Delete

\* Body Part Add Delete

• 719-PAIN OR SWELLING OF A JOINT

• 71-ANKLE L

Officer Description/Date of Illness/Injury/Body Part

ER/MD Tx - Who, What, Where, When

Diagnosis

Meds

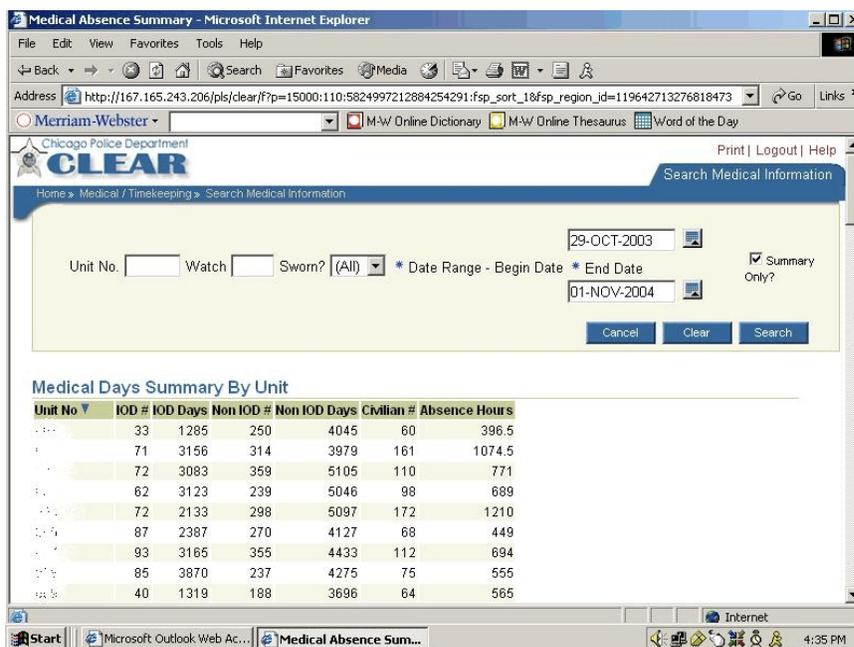
Tx Plan

Referral

The decision to make the Medical Absence Reporting system the flagship Personnel Suite launch was fortuitous. Local news coverage had publicized the generous allotment of CPD officers' paid sick days as well as the apparent abuse of the policy by a small percentage of officers. This application produces on-demand analytical data that is a powerful tool in contract negotiations, and it also sends a clear message to the taxpayers and police officers that such excess and abuse will not be tolerated. In addition, on-demand reports like the one shown in Figure 7, provide administrators with up-to-date information on trends and patterns of medical leave usage.

One part of **Personnel's** segment of the Personnel Suite – Emergency Notification – was launched during this evaluation period. This application enables all personnel to update records on individuals whom they would like to be contacted in an emergency and clearly works toward a Personnel Suite goal: enabling employees to initiate and complete many of their own personnel-related tasks. To date, 81 percent of all sworn personnel have updated their information, and of the 19 percent who have not, some are on extended medical leave and do not have access to the system. The 12,487 individuals who have updated their records not only ensured the accuracy of the information supplied, but their efforts have saved considerable man-hours previously required of Personnel Division employees.

Figure 7  
Medical Usage Report



Two other Personnel modules are actively under development and fast approaching the launch stage. The first is the Awards application, which automates the process of nominating officers for honorable mentions and awards, and generates notifications to winners. This module is an example of an application whose development was put on the fast track because information from it will optimize the IAD/OPS applications: officers' awards histories are taken into consideration when consequences are meted out for infractions. This application should also assist CPD management in its desire to recognize officers more frequently for exceptional performance on the job. The other soon-to-be-launched application is Star Management, which manages and tracks the Department's inventory of stars, badges and shields. It will also enable the department to keep a historical record of star/badge/shield assignments. While the inventory management and tracking features of this application are used only by a few individuals, all sworn personnel will be able to see the availability of star numbers, as members of multi-generation police families often like to have the same number that was assigned to their now-retired relative. Other units such as IAD or OPS may also eventually have access to this system to ascertain to whom a particular star number was assigned on any given date. The Star Management system was actually launched previously, but an unanticipated complication arose shortly after the application was deployed: officers from outside agencies that accessed the I-CLEAR data warehouse were being identified in Star Management queries as CPD employees if their star numbers were identical to those assigned to CPD officers. Unique agency identifier were eventually created and entered, and the system was scheduled to be relaunched in early November 2004.

The Tuition Reimbursement system is also under active development. This application automates requests for tuition reimbursement, supervisory review and approval of tuition reimbursement requests. In addition, it allows for entry of financial aid information and grades earned. Tuition Reimbursement is scheduled to be launched in early spring 2005.

The focus of 2005 Personnel Suite development will be on automating personnel-related functions such as hiring, drug testing, leave of absence, position openings, etc.

The **Personnel Performance System** remains in the conceptual stage. One fundamental reason is that other applications from which essential personnel data are extracted for PPS must be developed first. Another is that the oversight committee, whose responsibility it was to make recommendations and help guide the direction and development of PPS, has lost several members due to retirements and job changes, including that of the CLEAR executive administrator, who chaired the committee. It was composed of 11 key administrators and chaired by the CLEAR project manager. The panel, charged with guiding the institutionalization of new personnel-related policies and procedures, is currently in the process of being reassembled.

Development costs for this multi-dimensional system are substantial, and grant-seeking is an ongoing process. Fortunately, because there will be no hardware expenses associated with the Personnel Suite, there will be no “bottlenecks” related to identifying vendors, seeking proposals and engaging in the bidding process.

**Training.** Training for the Personnel Suite applications currently in operation was conducted in similar ways. Instruction is generally carried out by two sworn members of the development team and is usually held at the various facilities where the application is being introduced. Streaming videos also provide instruction to general users whose online tasks are fairly simple, and trainers are usually available for ongoing support during the first few weeks of use. In addition, this small training team provides instruction at the academy to new recruits and recently promoted supervisors as needed.

### **The Future of the Personnel Suite**

The Personnel Suite can almost be considered the future of the CPD. While it is only a part of CLEAR, it is a vital system that will help the Department strategically deploy personnel; create and reinforce accountability standards; identify problems early within the ranks and offer immediate intervention and assistance; and remain poised to effectively address terrorism threats.

A by-product of automating the organization’s human resource functions will be the ongoing need to address policy issues related to the collection, use and dissemination of data. The demanding task of developing and establishing sensitive, ethical policies is providing the Department with the opportunity to incorporate its “best practices” findings and policy-making experiences into a document that can serve as a model for other jurisdictions planning to implement automated personnel systems and performance monitoring programs.

## *eTrack*

The Chicago Police Department has automated evidence and recovered property inventory and tracking, one of its core activities, with the multi-phased deployment of eTrack. The first phase, launched in summer 2002, provides electronic data capture. The second phase, implemented in June 2003, replaced the Criminal Evidence Recovered Tracking System (CERTS), the Department's legacy inventory application. eTrack's third phase will incorporate functions for numerous key activities of the Forensics Services Section and integrate upgrades to enhance current features.

**Phase I.** Phase I enables officers and evidence technicians to record new inventories and specify their destination. The application is available via any computer with access to the CPD intranet. After logging on, officers input the same information on evidence or property that was captured on the previously used five-part handwritten form. Supervisors approve the inventory electronically after the officer submits it electronically, and a bar-coded label is printed and attached to the package. eTrack also enables electronic manifesting, with couriers scanning the bar-coded label of each package to be transported. In addition to creating a manifest document, this process provides a cross-check that ensures that all evidence or property approved for transport is picked up. When evidence or property arrives at the Forensics Services Section (crime lab) or the Evidence and Recovered Property Section (the evidence room), the receiving officer rescans the package to acknowledge its arrival. Thus, with the completion of phase I, all handwriting has been eliminated from the inventorying process. In addition, inventories can be queried by any number of variables.

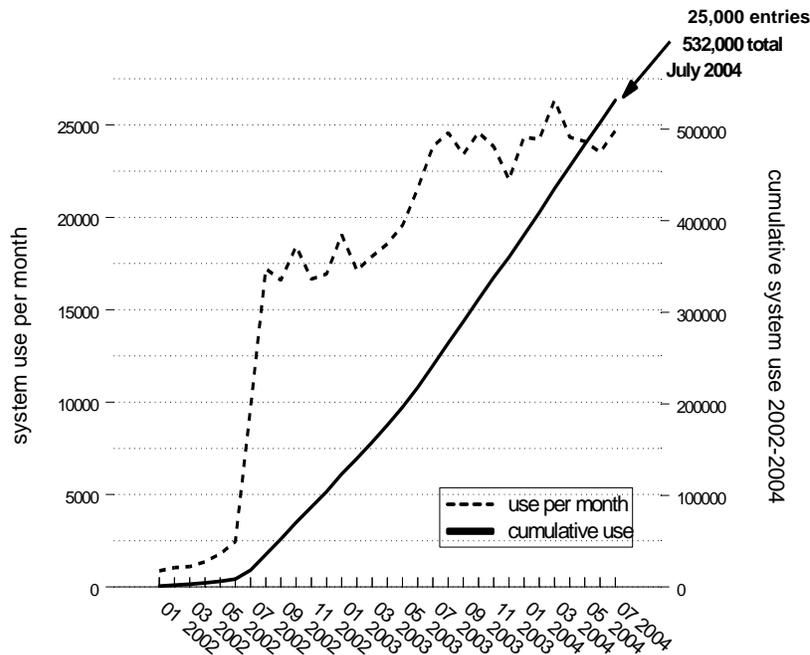
The impact of eTrack's first phase is substantial on many dimensions. From a sheer breadth standpoint, eTrack impacts every individual who might need to inventory evidence – essentially every sworn member of the Department. In addition, electronic inventorying offers improvements in officer time-management, legibility and integrity of data, accuracy of disposition and courier accountability. As officers have become quite familiar with eTrack, they are able to quickly input inventories in less time than it took to fill out the old written form, and the volume of automated entries has climbed steadily, as shown in Figure 8.

Additionally, prior to the launch of eTrack, each “intake unit” had only one inventory collection book. Therefore, officers needing to record a piece of evidence or recovered property often would spend a considerable amount of time in the station either tracking down the inventory book or waiting until other officers completed their work and supervisors approved it. The inventory book could also be lost, and along with it, the only record of inventoried property. In addition, correcting and inventorying electronically is likewise more efficient. Rather than having to white out changes on a five-part written form, officers need only log on to an edit page, and the correction is quickly and neatly accomplished. What all of this means is that officers should be able to return to their street assignments more quickly than in the past.

Legibility issues no longer exist, because nothing is handwritten. The advent of electronically entering evidence data enhanced accuracy because all data fields must be filled before the report can be submitted to a supervisor; incident numbers are validated against 911 calls; and addresses correspond to the city's geocode file

The disposition of evidence and recovered property is accurately recorded and traceable with eTrack, because all inventories require that an “action” field be filled. Officers must specify what will be done with the property and how it will be transported to the appropriate destination (crime lab, Evidence and Recovered Property Section). The location of the property or evidence can be determined at any time by querying the system.

Figure 8  
Volume of eTrack Entries



**Phase II.** As mentioned earlier, eTrack Phase II was launched in June 2003. Phase II is completely invisible to all of the CPD except those who work in the Evidence and Recovered Property Section (ERPS) or Forensics Services. ETrack II enables ERPS and Forensics personnel to easily locate property within the facility, track its movement from one individual to another and provide an accurate and complete snapshot of evidence in custody at any time. In addition to replacing the CERTS system, Phase II provides a data feed to the Illinois State Police Forensics Lab, where all evidence is eventually sent. Data from eTrack resides within the CLEAR database.

**Phase III.** This eTrack release will encompass a number of major features that will automate the functions of units within the Forensics Services Section. In addition to providing technical and scientific expertise for the collection and analysis of physical evidence, the Forensic Services Section is responsible for submitting evidence to the Illinois State Police Laboratory. When Phase III is completed, electronic crime scene processing and digital crime scene photo capture capabilities will be available. DUI kits will also be processed automatically, and detailed information about seized guns will be captured within the database. Quantities of confiscated narcotics will be electronically documented, and Forensics personnel will be able to

automatically generate associated statistical reports. Tasks related to the submission of evidence to the ISP lab and retrieval of test results will be handled through this application as well. The system will also have document scanning capabilities, enabling users to attach and store ancillary documents and pictures.

A number of enhancements will also be included in this eTrack launch. Based on JAD session input from current and future users, administrative management and personnel summaries will be accessible for the Office of Crime Strategy and Accountability, the Evidence and Recovered Property Section, the Forensics Services Section and Asset Forfeiture Unit. Other features from JAD sessions that are under consideration are the inclusion of additional events in the chain-of-custody tracking feature; financial and accounting controls on currency and deposited funds and several DNA capture-related elements.

### **Implementation and Impact**

Phase I of eTrack was implemented with no significant obstacles on the “front end data capture” side and has been well received by users. However, this represents only part of Phase I of eTrack. The receivers of data captured by eTrack – the Forensics Services Section and Evidence and Recovered Property Section – represent the other. Interviews with receivers produced somewhat mixed reviews.

On the whole, there was enthusiasm for the Phase I application. However, there were occasional problems with the interface between eTrack and CERTS. Once in a while, automatic data transmission from eTrack to CERTS was not smooth, resulting in a situation in which evidence arrives at its destination, but the corresponding eTrack information is not accessible. Because a printed list was generated for all such transmission difficulties, there was no loss of data. The degree to which this was troublesome seemed related to informants’ technical expertise: those with more sophisticated computer backgrounds viewed interface problems as something requiring extra troubleshooting to resolve, but nothing that diminished the application’s value. Others with more basic knowledge indicated that considerable effort goes into the resolution, opining that creating the eTrack system in phases was ill-advised. However, the application’s harshest critic admitted that eTrack Phase I solved several problems even though it created a few new ones.

Phase II also met with some criticism, though the majority of the complaints had to do with the slowness of the network rather than the application itself. A watch commander felt that even the most vocal critics of the new system would not want to go back to working without it. Supervisors mentioned that the ability to do a wider range of queries and generate additional types of reports would be very helpful, and some of this report-generating capability will be included in Phase III. Users also mentioned that it seems like there were redundancies in the protocol. Despite these criticisms there was universal praise for the chain-of-custody tracking capabilities of the application, the importance of which cannot be overstated.

## **The Future of eTrack**

At this time, development of eTrack Phase III is not funded, but it appears that there will be financial support for it in the coming months. It will take approximately five to eight months to design and implement Phase III.

## **Use and Impact of CLEAR**

This section presents findings from 1,486 officer surveys administered between June and November 2004, in both training and station-house roll call settings. In the training setting, officers are asked to complete a 10-minute survey at the beginning of Automated Arrest training. They are assured that the survey is strictly confidential; that the findings will only be presented in aggregate form by the evaluation team from Northwestern University; and that their participation is voluntary. The roll call survey was administered at police station houses but used the same questionnaire; it is explained in more detail below. The surveys probed the frequency with which officers use the various CLEAR applications available to them, their purposes for using each system and attitudes about ways in which computers have impacted policing. It also collected background demographic information such as rank, age, location and assignment.

### **CLEAR Use in the Field and Office**

The first question is: How are officers using the various systems that are available to them? To assess this we examined self-reported use of various CLEAR components by CPD employees. In doing so, we found two distinct clusters of use, which we dubbed “field automation” and “administrative use.” The field automation cluster, composed of the data warehouse, mug shots, LEADS (Law Enforcement Agencies Data System, a telecommunications network that enables state, county and local police throughout Illinois to share a wide variety of information), eTrack and PDTs, was used predominately by the 1,146 officers who reported they worked primarily in the field, as patrol officers, in tactical and gang units, and as detectives or narcotics investigators. The administrative cluster consists of the data warehouse, CHRIS, LEADS, the district automation system and PCAD, and was more used by district administrative personnel. A total of 490 employees with district administrative assignments were surveyed from June through November 2004 as well. Table 1, which shows the percentage of officers using each automated system at least several times a week, indicates that LEADS is used most often by field personnel (84 percent), followed closely by the data warehouse (82 percent), PDTs (77 percent), the mug shot system (62 percent) and eTrack (55 percent). Officers using the administrative cluster of CLEAR functions at least several times a week utilize the data warehouse most (63 percent), followed by CHRIS (60 percent), LEADS (51 percent), district automation (48 percent) and PCAD (48 percent).

Finally, we looked at how computers have changed the way officers conduct their daily business; how they have impacted the way district personnel work together; and how computers have changed police work. For all three of these measures, field officers were, on the whole, quite

positive. More than 90 percent of the officers reported that computers allowed them to work more effectively; made their work easier; improved the quality of information; and increased computer literacy among police. Another positive sign is that more than 80 percent of respondents believe that computer technology has led to increased and improved information sharing among members of the CPD; has increased their effectiveness on the job; has improved police response to crime; and has improved police service to the public. The largest concern – among 46 percent of those surveyed – is that automation requires them to follow unnecessary steps to get things done; however, this still represents the minority of field officers surveyed.

Table 1  
Frequency of System Use by Field and Administrative Personnel

System	Field Personnel			Administrative Personnel		
	every day	several times per week	total	every day	several times per week	total
CHRIS	36	29	65	44	16	60
ICAM Mapping	2	8	10	3	4	8
ICAM Reports	8	11	20	6	7	13
Mug Shots	30	33	62	21	17	38
PDTs	71	6	77	30	10	40
data warehouse	60	22	82	36	28	63
LEADS	62	22	84	33	18	51
Internet to other gov. web sites, IDOC, etc.	12	11	23	8	14	22
District Automation System	14	16	30	32	16	48
PCAD	15	12	27	34	15	48
AFIS (fingerprints)	1	2	4	9	1	10
e-Track (evidence)	22	33	55	19	13	32
Juvenile Arrest	8	13	21	9	8	17

Note: Officers with other assignments are excluded; see text. The other response categories included “once or twice a week,” “very rarely” and “never.”

We also queried officers about their specific uses for the CPD’s various computer technologies. The survey listed many job-related uses for computers, and respondents were asked about their recent use. As shown in Table 2, 96 percent of field officers reported having used computers in the previous month for checking a license or name/address. Eighty-seven percent did so to do a warrant check and 77 percent to communicate with other officers. Fewer field officers,

68 percent, had entered evidence electronically in that time frame, while 64 percent retrieved information for a mission, with almost the same number (62 percent) checking for investigative alerts. Checking on liquor licenses and preparing information for beat community meetings were the least commonly done, with only 5 percent of respondents having done either in the month before they were surveyed.

Table 2  
Reasons for Field Officers to use CLEAR

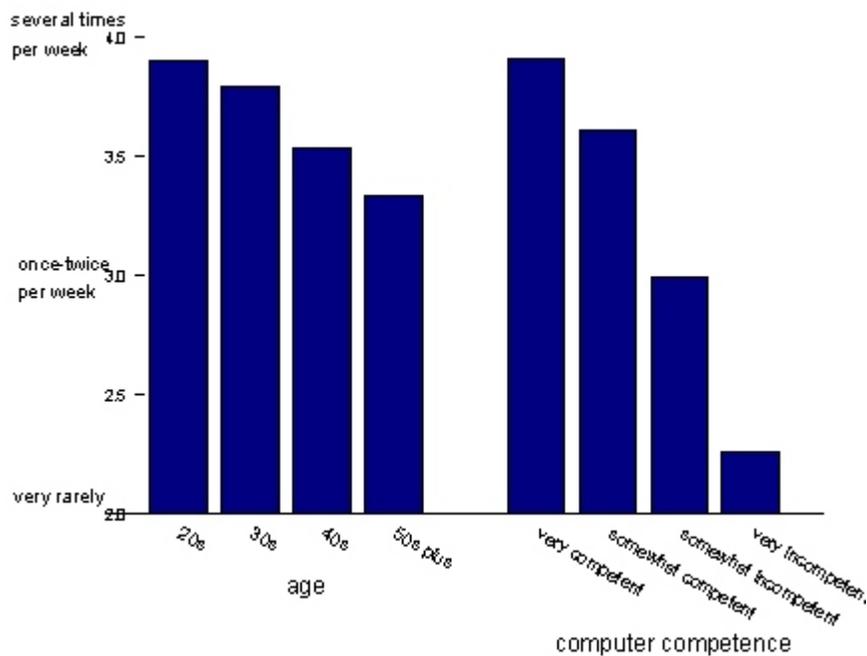
Reason for using a computer:	during the past week	during the past month	Total	Reason for using a computer:	during the past week	during the past month	Total
To check license or hot car	90	6	96	To communicate with other officers	67	10	77
To check name or address	91	5	96	For management or administrative purposes	23	14	37
To retrieve information for a mission	39	24	63	To retrieve information for analysis of a beat crime	14	25	39
To make an investigative alert check	37	26	63	To prepare information for beat community meetings	5	12	17
To do a warrant check	68	23	88	To enter evidence	46	22	68
To check a penitentiary release	12	18	30	To check juvenile arrest status	21	19	40
To check a registered sex offender	11	19	30	To check the status of a liquor license	2	3	5
Do reports on operational matters	26	15	41				

Note: Officers with other assignments are excluded; see text. The other response categories were “Further back” and “Not at all.”

We also examined what characteristics were most likely to suggest computer use among officers. Figure 9 examines the impact of two factors that influenced the extent to which officers working in the field were using CLEAR’s field automation capabilities. One factor was age. Older

officers were less likely to make extensive use of the data warehouse, mug shots, LEADS, eTrack and the juvenile arrest module, while those under the age of 40 were more likely to do so. In addition, officers who defined themselves as “computer literate” were more likely to use field automation. As the rightmost panel of Figure 9 illustrates, system use was much lower among officers who were less confident in their computer skills. There also were differences between officers reporting to have a computer at home (suggesting that they have a greater comfort and ability level) and those who did not; the difference was of about the same magnitude as the difference between officers in their 30s and those in their 40s, as depicted in Figure 9.

Figure 9  
Age, Computer Competence and Field Automation



While the feeling that they were personally not very competent at using computers was strongly linked to CLEAR use, most Chicago police are not in that category. Overall, 94 percent of all field officers surveyed felt either “very competent” (46 percent) or “somewhat competent” (48 percent) about their use of the computer systems that are now a part of their job. It is also interesting to note that 86 percent reported having a computer at home, and 83 percent of all field officers had a home computer that was linked to the Internet.

### The Pilot District Field Test

As part of the CLEAR development plan, the CPD tested several components in the field before beginning department-wide implementation and officer training. The CLEAR evaluation used this as an opportunity to examine the spread of awareness, knowledge and frequency of use

of specific elements of CLEAR in the pilot district and a matched comparison district. The comparison district shared many of the pilot district's problems and crime patterns. We first surveyed these districts in spring 2002, before these new components of CLEAR were introduced to gain baseline information about sworn and civilian personnel computer use and their attitudes about computers. The questionnaire also probed about ways in which computer technology has affected their jobs and their interactions with others in the department. Demographic data gathered on the survey included rank, assignment, time on the job and whether those surveyed had home computers as well as access to the Internet. As part of the second wave of surveys, which were administered in both districts in autumn 2004, we included an additional page of CLEAR-related questions for test-district personnel, to gauge the extent of use and impact of the various applications. We were particularly interested in learning about their experiences with AIRA, Automated Arrest, Personnel Suite and eTrack.

Our research design involved re-surveying all sworn and civilian personnel in the pilot district as well as the comparison district. To reach the maximum number of respondents, we conducted around-the-clock surveys in the stations on three occasions that spanned two police-calendar periods in order to capture data from those on furlough, special assignments and missions and to accommodate the days-off rotation schedule that officers work on. Between roll calls we moved through the station house to distribute surveys to officers and civilians who worked in various offices, to ensure that we also made contact with supervisors, desk and lockup personnel, the timekeeper, review and front office personnel and members of the Community Policing unit. Data collection began in August 2004 and was completed in October 2004. These efforts resulted in the collection of more than 400 surveys, with a completion rate of 87 percent in each district. A senior member of the evaluation staff was present at each visit to manage the complexities of data collection in a roll call setting.

In addition to collecting survey data, we spent considerable time in the district itself, watching automated incident reports being created at the front desk at the pilot district, interviewing AIRA training and support staff, conducting interviews and conducting ride-alongs to observe AIRA in action. This section of the report examines how opinions in the pilot district changed over time, as CLEAR applications were implemented in the district, and compares trends there with those in the comparison district.

The pilot district received new computer applications, additional equipment and additional training that the comparison district did not. The new applications which were made available to the pilot district were AIRA (automated incident reporting application) and Automated Arrest. The AIRA system was available in the station house and in police cars. Upgrades were made to the PDTs in the cars to run the AIRA application. The entire station house received new PCs throughout and the hardware required to run the Automated Arrest application was installed in the interview rooms. The pilot district received one day of AIRA training and one day of Automated Arrest training at the Academy, as well as being provided on-site support. Supervisors in the pilot district received two days of training on the AIRA application.

The survey responses of pilot and comparison district employees revealed that they had similar views about how computers were changing the ways in which they work; how computers have impacted the ways in which they interact with others in their districts; and how computers have changed police work. Those surveyed also owned home computers with Internet access in equal numbers. However, answers from the two groups differed in interesting ways.

Pilot district employees were more frequent users of the CLEAR applications and associated hardware available in both districts. For example, the data warehouse, which is accessible by officers and civilian staff working in every district, is currently used daily by 52 percent in the pilot district versus 32 percent in the comparison area. During our first wave of interviewing, only 18 percent of the pilot district personnel reported using the data warehouse on a daily basis. Thus, the pilot district reported a 34 percent increase in its daily usage of the data warehouse during our study, whereas the comparison district increased usage by 22 percent.

Similarly, 10 percent of pilot district staff reported daily use of eTrack, the CPD's evidence inventorying system, whereas 4 percent of those in the comparison district described themselves as everyday users. Another large leap in usage in the pilot district was the use of PCAD, the department's computer-assisted dispatch system. During our first wave of interviewing 9 percent of test district employees reported daily use of PCAD while at the comparison district 11 percent did so. At time two, use of PCAD had jumped to 42 percent in the pilot district, while the comparison district remained at 11 percent. This increase in use is due in large part to PCAD's interdependence with AIRA, another new CLEAR application that was being piloted in the district. Furthermore, pilot district members reported a greater increase in use of applications available to both districts. While employees in both districts essentially used CLEAR for the same purposes, pilot district officers used CLEAR applications for missions (80 percent vs 75 percent), to communicate with other officers (95 percent vs 90 percent) and for operational matters (75 percent vs 50 percent) somewhat more often than did those in the comparison district.

Respondents in the pilot district considered themselves much more competent in using the computer systems necessary for their work: 55 percent of the pilot group described themselves as "very competent," while only 35 percent of the comparison group characterized themselves that way. Of interest is that when interviewed two years ago, the differences were not as great as they became later. At that time, about one-third of those in both districts described themselves as "very competent" in using work-related applications.

Over time it appears that both perceived competence, as well as system usage, increased for the pilot district. However, both districts remained quite similar over time in terms of their attitudes regarding how computers impact their work environment.

## The AIRA Field Test

The pilot district was the first to have access to AIRA, the CPD’s new automated incident reporting system. When pilot district officers were polled about their use of and opinions about the automated incident reporting system during the fall of 2004, 88 percent reported that they had used AIRA. Given the difficulties associated with using the wireless version, it was not surprising to see that more officers had used LAN-based AIRA (93 percent compared to 68 percent having used wireless AIRA), and they used it more often. Fifty-seven percent reported using the station-house version at least several times a week, while 48 percent used the mobile system that often.

However, in spite of the ongoing complaints we heard about the wireless version, opinions about the two systems did not vary significantly. As shown in Table 3, 76 percent of LAN-based AIRA users reported that AIRA is easy to use, while 72 percent felt the same way about the mobile version. This is somewhat surprising because, while the screens are identical in both versions, there are ergonomic impediments related to using AIRA in the squad car, some of which were mentioned in an earlier section. In addition to the reduced screen visibility in daylight, the PDT keyboard is smaller than that of the computers used inside the station, and the mount used to hold the unit securely in the vehicle places it at an awkward angle for data input.

Table 3  
Attitudes about using AIRA

	LAN-Based AIRA				Wireless AIRA			
	Strongly Agree	Agree	Disagree	Strongly Disagree	Strongly Agree	Agree	Disagree	Strongly Disagree
AIRA is easy to use.	39	37	12	9	32	40	13	15
Completing an AIRA report is faster than doing it on paper.	13	18	29	40	6	11	29	59
Fewer AIRA reports are sent back with errors compared to paper reports.	15	30	33	21	10	30	36	23

Two of the Department’s stated goals for AIRA – simplifying the reporting process and improving reporting accuracy – have not yet been realized, according to users who were surveyed. As is illustrated in Table 3, AIRA users do not believe that electronic incident reporting saves time, regardless of whether it is done wirelessly or over the LAN-based system. Only 31 percent of station-based users perceived any increases in efficiency in completing automated incident reports, and a mere 17 percent of wireless users deemed it faster. The fact that more robust information is sought on the electronic reports combined with the relative newness of the online process may increase the amount of time officers take to complete the paperwork; however, they may complete the task with increasing speed as it becomes more routine. And, if the planned wireless network delivers on its promise to speed up the submission process, the entire task may be perceived as more streamlined. The same might be said for improvements in accuracy, because as users become

more familiar with AIRA and the requirements for completing errorless reports, they may find that a greater percentage of their reports are being approved on the initial submission.

The difference in the reliability of the AIRA systems did not go unnoticed by the officers: 75 percent of users reported that when they tried to use the LAN-based system it was usually or always “up and running,” while only 45 percent experienced this with wireless AIRA. This conforms with researchers’ observations during ride-alongs, as it was not until our third outing that we were able to see the system in operation. (In fairness it must be noted that in one instance, the only call on that particularly quiet morning resulted in a missing person report, which is not yet automated.) When we were finally able to see officers completing an AIRA-generated report in the squad car, the system moved without hesitation. The AIRA project manager expressed delight and surprise to hear of the quick transmission, characterizing it as an isolated example.

Our interactions with pilot district officers during ride-alongs and at roll calls revealed a number of attitudes about AIRA. Many seized the opportunity to voice their frustration about the slowness of wireless AIRA. That being said, most younger officers were optimistic about the system’s potential, with several saying that they currently think it to be great. A number of veteran officers were not as positive, each citing different reasons for their lack of enthusiasm. There were two common threads, however. They all mentioned having heard (or experienced, in some cases) that mobile AIRA is slow, and most admitted to having limited computer competence. One memorable officer spoke proudly about his award-winning handwriting and the commendably legible reports for which he has been recognized throughout his career; the officer cited this as his reason for not liking AIRA.

## **Use and Impact on Management and the Organization**

This section examines CLEAR’s role in managing the Chicago Police Department. One aspect of this is the Department’s “management accountability” process. This system, which was inaugurated in 2000, utilizes crime and operations data to monitor and evaluate the effectiveness of the Department’s many units. Management accountability – which our 2003 report<sup>3</sup> on community policing dubbed “Compstat Chicago-style” – focuses new responsibilities on managers of the city’s 25 police districts. CLEAR plays a role at all three levels of accountability management in Chicago – in district-level planning efforts, area-level management oversight and headquarters review of district and area effectiveness. The section then turns to uses of CLEAR in directing operations at the tactical level. This includes an “abbreviated” version of the accountability process that focuses solely on the district’s most recent crime-control efforts. These are run in close conjunction with the efforts of an analysis unit that uses small-area crime data and gang intelligence to recommend rapid responses to emerging crime trends.

We emphasize that this strategic direction was decided on prior to CLEAR’s inception and that the units using CLEAR reflect existing Departmental priorities. Data and analytic tools

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<sup>3</sup>“Community Policing in Chicago, Years Eight and Nine” is accessible at [http://www.northwestern.edu/ipr/publications/policing\\_papers/years8&9.pdf](http://www.northwestern.edu/ipr/publications/policing_papers/years8&9.pdf)

provided by CLEAR truly support the organization's core mission, but they do not determine it. One reason for the Department's enthusiastic embrace of CLEAR is that it helps managers work toward meeting their institutional goals. This said, CLEAR imposes some limitations on doing so, and in a concluding section we examine some of the issues surrounding data-driven policing and police management.

## **Accountability Management**

In February 2000, the Chicago Police Department established what is now known as the Bureau of Crime Strategy and Accountability (BCSA). In the words of its mission statement, the unit was established to provide "the necessary authority and the appropriate organizational purview to bring about an overall improvement in the management of the Chicago Police Department and to intensify the city's community policing strategy in all organizational bureaus of the Chicago Police Department." Directed by a deputy superintendent, the unit works to ensure that all CPD personnel and resources "are linked to strategies developed to address crime and disorder jointly identified by the community and police at the beat and district level." In Chicago's plan for managerial accountability, the 25 police districts are responsible for identifying local priorities, planning strategies to address them and executing their plans efficiently. The role of BCSA is to oversee their effectiveness in carrying out this process. The key participants in this process are district commanders and their immediate superiors, area deputy chiefs. It is their ability to identify, analyze, and effectively counter crime trends in their districts that is under scrutiny, and CLEAR provides the tools for doing so.

At the district level, members of the management team meet monthly to carry out their planning and implementation duties; these are called "Level One" meetings. The five districts comprising each police area participate less frequently in "Level Two" meetings. At these sessions their plans and accomplishments are reviewed, and area deputy chiefs have the authority to reallocate some of their officers to respond to pressing needs in the districts under their direction. "Level Three" meetings are held at police headquarters. At these, the Department's senior executives assess the effectiveness with which the Department's core missions are being addressed.

At the second and third level meetings, district managers are held accountable for their effectiveness in four areas: 1) reducing chronic crime and disorder in their districts; 2) identifying and containing emerging crime trends; 3) organizing community involvement and responding to community priority concerns; and 4) managing personnel and other resources efficiently. Their effectiveness is primarily judged on their ability to "make their numbers" on a wide array of performance indicators. At district level meetings management teams commit themselves, on the basis of their own analysis and planning, to the numbers by which they will be held accountable.

The data and analytic tools offered by CLEAR play a fundamental role at all three levels of planning and evaluation. Creating, implementing and evaluating the effectiveness of strategic operational plans (SOPs) lie at the heart of Department management, and this takes place at the district level. SOPs identify the priority crime and disorder problems facing the community and

describe the actions that district management teams plan to take to counter them. At any given time districts have three to four active SOPs. Typically, one might focus on burglaries in a few beats, street drug sales in a few others and street prostitution in a beat or two. Having identified and prioritized these problems and having described in their plan the resources they would allocate to solve them, at the headquarters sessions commanders face an analysis of how well they executed their plan and how effective they were in resolving their priority problems.

These district priorities are identified and their responses are crafted largely using data extracted from CLEAR. They use the data warehouse and its analytic tools to identify offenders, victims and locations that constitute the core of each problem. In their plan management teams must specify goals for themselves, such as a 25 percent reduction in the frequency of a problem. This is a difficult matter, for problems that are elevated to the level of a district priority present tough targets that have already resisted repeated (if routine) efforts to solve them, so the districts need to consider what they realistically can hope to accomplish. In any event, as the management process unfolds, superiors hold management teams responsible for making progress on their priority problems, but do not hold them to any specific number. At any given time districts are working on about three SOPs, so they also have to make hard decisions about the level of resources they can direct at any of them. The plan they send to headquarters documents the assignment of responsibility for executing specific components of the plan, and there is a worksheet for recording monthly data evaluating progress on the problem.

At district meetings, the local management team (composed of the commander, three watch commanders, a tactical lieutenant, the CAPS management team leader and the Community Policing sergeant) assesses current SOPs, makes new plans and tackles management issues. Our observations indicate that there is a great deal of variation in how the meetings are conducted. Sometimes they resemble mini-headquarters sessions, with formal presentations, PowerPoint slides and structured discussions of the four elements of the department's problem-solving process. At effective district SOP meetings there is discussion of both the success of strategies and why some of the things they have been trying may not be working, along with proposals for new strategies.

Area-level meetings tend to be more formal, featuring a PowerPoint presentation of data and a small audience on the sidelines. Area detectives are likely to be quizzed about how they are assisting district efforts. The area chief may ask for updates about what the district has been working on. Some active problem solving occurs here as well. Community concerns are often fleshed out and given more discussion time here than at headquarters sessions. In addition, it is common to see a CAPS Implementation Office representative called on to speak or be told what to do to help the district. Depending on the districts involved, the Special Operations Section (which provides extra plainclothes officers for special projects), the Public Housing Unit, the Public Transportation Section and Vice Control may have representatives at the table as well. The area planning process helps focus these special units on geographically defined missions that support district priorities.

At the apex of the planning and accountability process are the headquarters review sessions that began in February 2001. These are held to focus the attention of district and area managers and senior executives on managerial and performance issues. One district is showcased each time. Staff from BCSA conduct an extensive analytic review of district activities in advance of each meeting. Present at a typical session are the superintendent and most of the Department's most senior deputies, the three chiefs, commanding officers of special units, the area deputy chiefs responsible for the district under scrutiny, and many other police and city officials. All of the district's managers are seated in a row in front of them. The head of BCSA leads the discussion, while the staff displays PowerPoint presentations on huge LCD screens. A few examples of their slides, which document the findings of their analysis of district operations, are shown in this section. The CLEAR system and the data warehouse are primary sources of information for BCSA staff who prepare the material for these headquarter accountability meetings. The breadth and depth of data culled for these analyses are notable, especially because many BCSA staffers are laboring with dated computer equipment, and the bureau's input has not been routinely sought in the development of CLEAR applications, resulting the unit's need to manually generate reports vital to their function.

Assessing the effectiveness of the actions taken by districts against specific problems that they promised to take head-on in their SOPs is one of the most important issues segments of each headquarters session. BCSA staff prepare analyses of the issues identified by the districts. The figures presented here are taken from the presentations that flash at the front of the room in order to illustrate BCSA's findings. Those are presented in color; we have removed the color in order to make them more readable in this report.

## **Implementation of Strategies**

One of the most important uses of CLEAR is to analyze the extent to which districts actually implement their plans. When districts actually do what they said they would do, it is known as "punching the ticket," but at a surprising number of sessions, it is not clear that the districts have succeeded in doing so. CLEAR now gives BCSA access to a deep database of activity measures that previously could only be examined by digging through hundreds of pages of reports that were stored in boxes at the district stations. Analysts know how many vehicles were stopped for investigations that did not end up being ticketed, whether districts are seizing cars when they make narcotics arrests, how many people living in the district who are wanted on an arrest warrant have not been tracked down, etc. At one meeting we observed, someone announced that 98 percent of the district's tactical operations had been concentrated in the specific areas identified in their SOPs. The deputy superintendent in charge announced, "It's happening where management wants, and that's the key. You're providing supervision to make sure activities are performed at target locations. I congratulate you." As one unit commander put it in an interview, "90 percent of our problems result from supervisors not doing their job. If supervisors are out there insuring that troops are following the missions, you'll see results. They need to be evaluating their 'plan of attack' and making sure they're actually doing it." Under the present superintendent, we have observed greater pressure to increase street-level police activities and reduce the number of violent crimes.

At one headquarters session BCSA presented an analysis of a district’s efforts to close down an open-air drug market. Figure 10 presents an analysis of how well that district implemented its plan to “have beat and rapid response officers conduct street stops of suspicious individuals at identified locations.” BCSA staff used CLEAR to examine measures of the actions district officers actually took in and around the targeted beats. In this instance the increases in foot patrol activity, traffic stops and searches of vehicles suspected of being involved in drug transactions earned them a congratulation.

The same review meeting saw analyses of many measures of the district’s successes in implementing their SOP strategies. From the department’s various databases, BCSA extracted data on:

- vehicle impoundments (up 8 percent in the targeted areas)
- firearms seizures (up 58 percent over the previous year)
- arrests in the target areas
- dispersal orders issues at official gang and drug hotspots (up 100 percent)
- block club organizing (down 41 percent for the district as a whole)
- clean-ups by city service agencies
- building inspections by the Strategic Inspections Task Force

Figure 10  
Analysis of District Strategy Implementation

<b>District SOP Strategy</b> Have Beat and Rapid Response Officers conduct street stops of suspicious individuals at identified locations				
<b>Entire District</b>	<b>Mar 02 YTD</b>	<b>Mar 03 YTD</b>	<b>+/-</b>	<b>+/- % Change</b>
<b>Suspicious Person On-View</b>	<b>138</b>	<b>166</b>	<b>+28</b>	<b>+20.3%</b>
<b>Suspicious Auto w/Occupants</b>				
<b>Traffic Stops</b>	<b>3,638</b>	<b>4,893</b>	<b>+1,255</b>	<b>+34.5%</b>
<b>Gang Disturbances</b>	<b>95</b>	<b>83</b>	<b>-12</b>	<b>-12.6%</b>
<b>Foot Patrol</b>	<b>348</b>	<b>1,134</b>	<b>+786</b>	<b>+226%</b>

*PCAD query: SUSP, SUSAUW, TS, VEHSTO, and FOOT*

The clean-up efforts of other city agencies falls in the scope of the accountability process because the CAPS problem-solving model embraces a wide range of neighborhood conditions. To a remarkable degree the city has adopted the “broken windows” view of neighborhood conditions, leading to a commitment to using city services to respond to a broad range of problems. Many SOP strategies call for service delivery in support of police priorities. In the narcotics zones this district had identified, they promised in their SOP to “improve quality of life” through these clean-ups. Figure 11 presents a description of city service activity in the beats targeted in this district for narcotics sales. This illustrates the wide-ranging capability of CLEAR for evaluating coordinated city strategies for neighborhood improvement.

Figure 11  
Analysis of City Service Delivery

<b>District SOP Strategy</b>			
<b>Request major clean-up programs via City Service Requests for tree trimming and lighting on streets and alleys on targeted narcotics beats</b>			
<u>Tree Trim</u>			
City Service Requests	273		
City Service Requests Open	1		
Submitted by Police	10		
<u>Street Lights All Out</u>			
City Service Requests	121		
City Service Requests Open	0		
Submitted by Police	5		
<u>Abandoned Autos</u>			
City Service Requests	579		
City Service Requests Open	60		
Submitted by Police	88		
<u>Alley Lights Out</u>			
City Service Requests		28	
City Service Requests Open	3		
Submitted by Police		60	
<u>Graffiti</u>			
City Service Requests		395	
City Service Requests Open		1	
Submitted by Police		19	
<u>Abandoned Buildings</u>			
City Service Requests		23	
City Service Requests Open		4	
Submitted by Police		6	

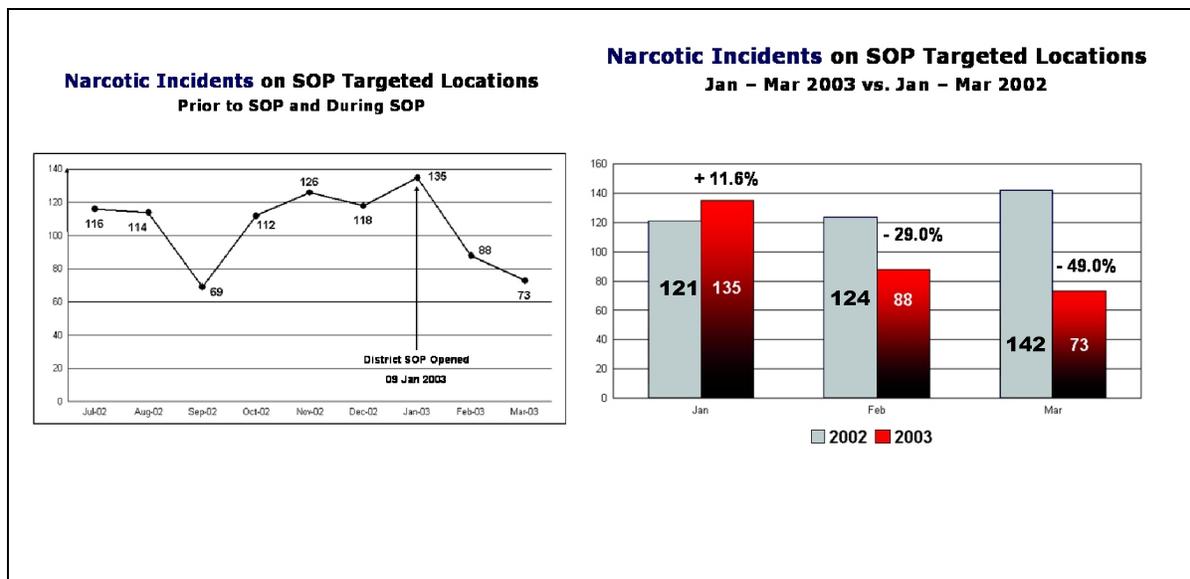
### Impact on Problems

Were these and other efforts successful? The review sessions always feature an analysis of the effectiveness of the district’s efforts to counter their priority problems. Did the problems go away, or at least decline in frequency, because of what the district did? At the same session, BCSA prepared the analyses presented in Figure 12. They examined changes in the frequency of drug-related incidents in the targeted areas. The left panel of Figure 12 plotted the district’s data by month. An arrow in the panel points to the date at which they began to implement their

strategies, and the ensuing trend line describes a very impressive drop in drug incidents. This kind of “before versus after” comparison of arrests, reported crimes, or 911 calls is one of the most commonly used analytic tools at accountability reviews and is now easier to perform because of the data warehouse.

However, how much of the decline was simply due to a change of seasons is another question – the problem was a street drug market in the middle of winter. Crime is extremely seasonal. For example, in February 2003 there were 984 robberies in Chicago; in August there were 1,714 and in December, 1,400. So another basic tool for BCSA is comparisons of “this year” versus “last year” for the same period. The right panel of Figure 12 controls for season by comparing incidents in four targeted locations for the 2003 period with the same months in 2002. This analysis also pointed to declining drug activity beginning in February, thus providing a more compelling case. At this session, these district trends were read as a record of positive accomplishment.

Figure 12  
Analysis of District Effectiveness



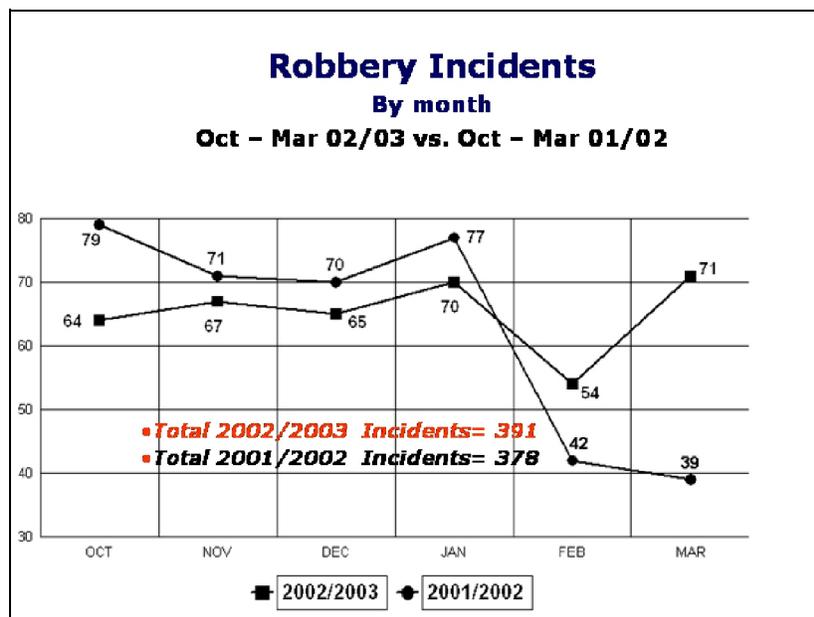
### Responding to Emerging Crime Trends

Another BCSA responsibility is to monitor the effectiveness with which the districts identify emerging crime trends. These may be new kinds of crime. For example, one that appeared during the 1990s was theft of air bags, which first broke out in a single police beat. Also, emerging trends may just represent an unanticipated uptick in district crime for which officers and residents should be on the alert. If these new crimes or shifting trends are attributable to only one or a few offenders it might be possible to “nip them in the bud” by devoting investigative

resources in solving them before they become widespread. Emerging crimes can also spawn numerous “copycat” offenses if they become widely known. An example of this from the 1990s included a wave of car burnings, when rival gangs first realized that they could set fire to each other’s vehicles while they were parked on the street in the small hours of the morning. More generically, CPD units are supposed to show managerial flexibility by adapting quickly to changes in their immediate environment, without waiting for orders from headquarters. CLEAR gives unit commanders the ability to identify and analyze emerging trends before they become big problems.

Figure 13 presents an analysis of an emerging robbery trend that was uncovered by BCSA analysts and displayed at a headquarters accountability session. In this district, the robbery trend during fall and early winter 2002 ran parallel to that of the previous year, but in February and March 2003 there was a notable upturn in robbery when compared to the expected pattern. Because CLEAR offers commanders continually updated online crime figures for their district, they are held responsible for detecting upticks like those depicted in Figure 13 and responding quickly. At the meeting, the district managers were asked whether they had spotted this and – more importantly – whether they had done anything about it.

Figure 13  
Identification of an Emerging Robbery Trend



### Involving the Public

BCSA also examines data relating to CAPS’ city partners. Among them is the CAPS Implementation Office, a civilian-staffed agency assigned to stimulate turnout at beat community meetings, organize block clubs, plan marches and rallies, and support problem-solving efforts by coordinating city services so that they support policing priorities.

Figure 14 is an analysis presented at a headquarters session documenting the efforts of the CAPS Implementation Office to support the district under review. The district’s SOP for a street drug market area had included involving community organizers to increase community participation in the area. Accessing online reports filed by Implementation Office workers, the city’s 311 Center and public events logs maintained by the districts, it recounts community-oriented activities in the district over a four-month period.

Figure 14  
Analysis of Citizen Involvement

<b>CAPS Implementation Office Activity</b>		
<i>JANUARY THROUGH APRIL 2003</i>		
<i>NUMBER</i>	<i>ACTIVITY</i>	<i>PARTICIPANTS</i>
25	MEETINGS, RALLIES, PRESENTATIONS, BLOCK CLEAN UPS	3,480
4	BEAT MARCHES/SMOKE OUTS/POSITIVE LOTTERING	39
37	ONE-ON-ONES	65
1,352	CITY SERVICES REQUESTED WITHIN THE DISTRICT	
609	CITY SERVICES REQUESTED ON TARGETED BEATS FOR NARCOTICS	
2	COMMUNITY ALERTS DISTRIBUTED TO ALL BEAT/COMMUNITY MEETINGS	
12	INFORMATION DROPS TOTALING 2,279 PIECES OF INFORMATION	

### Using Resources Effectively

The review sessions also examine management issues. There is always more police work to be done than there are officers available to do it, so commanders have to make choices about how to allocate their stretched resources. The accountability process holds them responsible for doing so wisely. The districts are pressed to reduce their reliance on overtime, an expensive item for the city, and to closely monitor officers who seem to be abusing the Department’s liberal sick-leave policy, as shown in Figure 15. The cost of repairing district vehicles is noted in “car crash” discussions. BCSA also monitors how much time district officers spend on various kinds of assignments, with an eye toward increasing efficiency by minimizing those minutes. There is always mention of positive or negative trends in complaints by the public against district officers for verbal abuse and use of excessive force. Failure by district officers to appear in court when

their cases are called also falls under the microscope. There is pressure to identify and counsel repeat targets of these complaints, and commanders describe things like roll-call training sessions they have held that emphasize officer restraint. CLEAR monitors unanswered 911 calls, and commanders are quickly called on the carpet regarding those.

Figure 15  
Analysis of Medical Leave

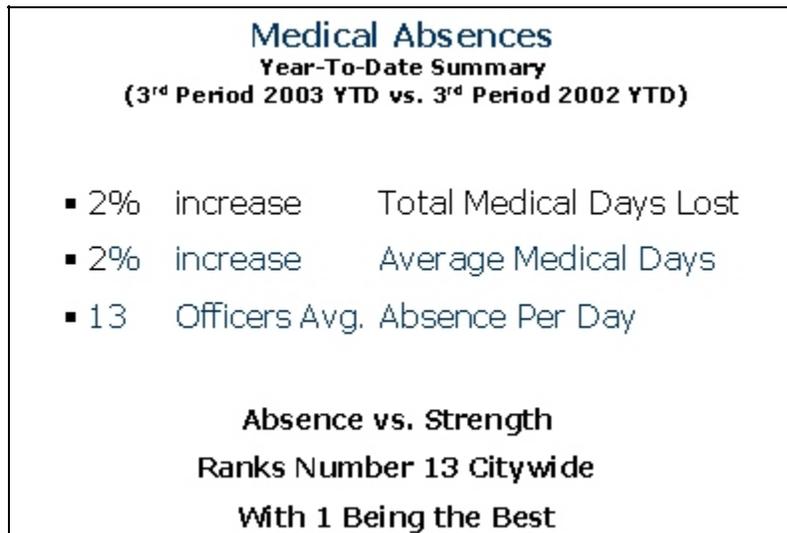
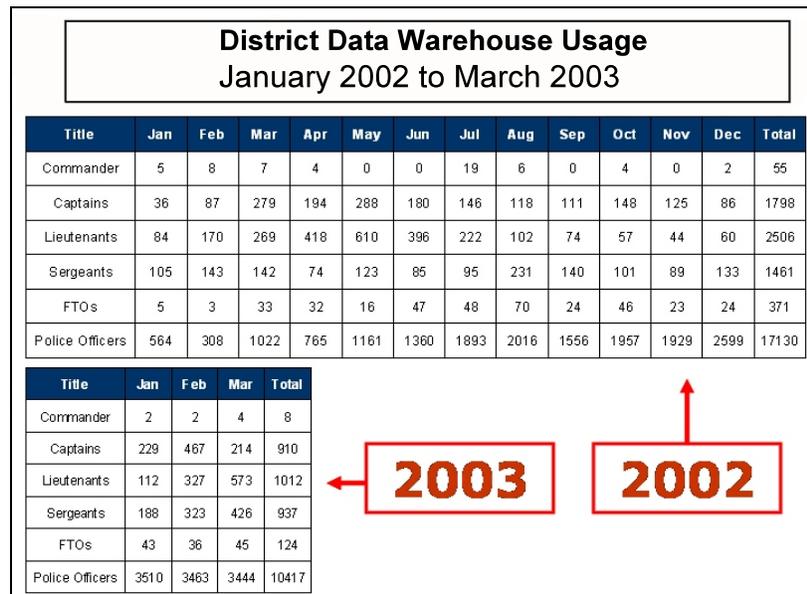


Figure 16  
Analysis of Data Warehouse Use

The accountability process even monitors the extent to which units are making use of the analytic tools presented by CLEAR. The Department expects district managers – commanders, watch commanders (“Captains,” in the figure below) and the lieutenants running operations in the field – to be extensive users of these tools. To examine this, BCSA staff routinely monitor system use. Because every individual must input his or her user number to begin a session,



BCSA can analyze patterns of system use. In Figure 16 it is apparent that in this district the commander was not making much use of CLEAR, but there was a positive trend among most other categories of employees. Patrol officers in particular were becoming heavy CLEAR users, and by 2003 the watch commanders were also logging on frequently.

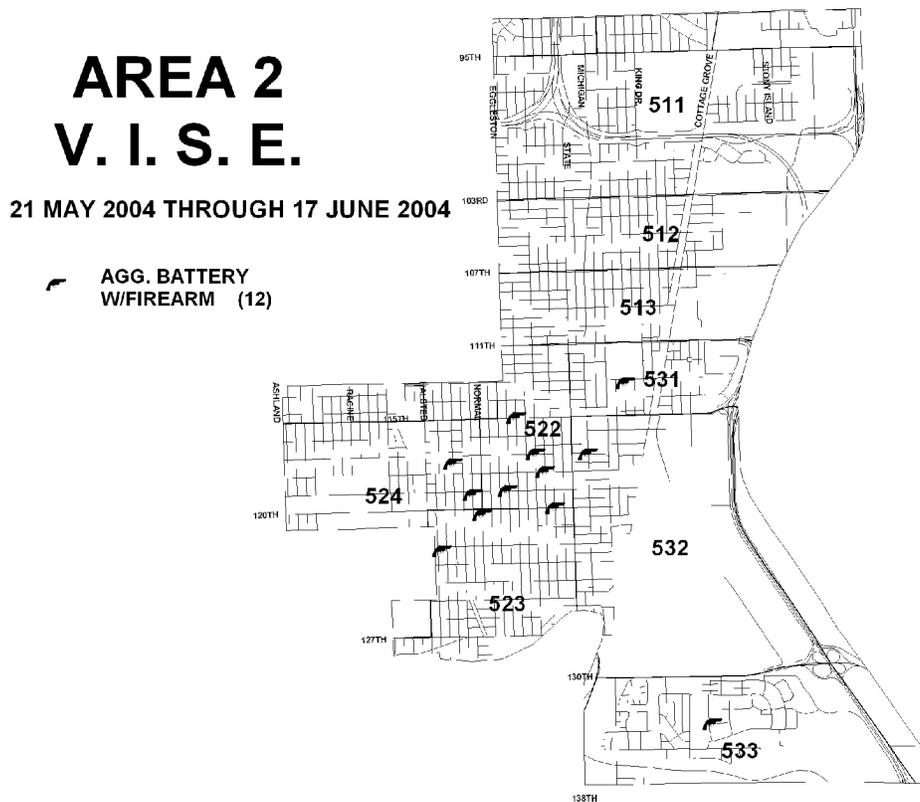
## **Managing Operations**

WISE (Violence Initiative Strategy Evaluation) is an abbreviated form of the management accountability process that focuses just on selected categories of violent crime. It operates in conjunction with the Deployment Operations Center, which is described below. WISE meetings involve the commanders of each of the five districts that make up a police area, plus their area deputy chief. These one-hour review sessions closely examine trends in specific crimes, including district homicides, aggravated battery with firearms, and other public violence involving the use of firearms. WISE's focus is short-term, typically confined to the four-week period prior to the meeting. The sessions review recent crime trends, and typically include a close examination of maps that identify violence hotspots. BCSA presents analyses of where district units are making arrests, and if their efforts are focused in the right parts of the district. The emphasis is on how quickly the districts can identify crime upticks and nimbly reallocate officers in response.

Figure 17 presents a crime map that was displayed during a WISE session held in mid-2004. The "pistol" icons illustrate the locations of the 12 aggravated batteries that occurred in that district during the preceding 28-day period. Eleven turned out to have been concentrated in one fairly compact area. The district commander was questioned closely about a possible link among the shootings and what he had been doing about them. Data is typically presented on the district's success in seizing guns, a high-priority goal. CLEAR data on dispersals from officially-designated drug and gang hotspots are superimposed over crime maps to determine whether officers are using their authority to clear the streets in high-priority areas. The contact cards that are completed when officers stop and question people but do not make an arrest are reviewed to see whether they are conducting field interrogations in the violent crime and drug areas that have been identified as district hotspots. Analysts also examine whether the districts have been mounting intensive seatbelt enforcement blitzes in high-priority areas. BCSA often presents data on recent parolees from Illinois state prisons who have returned to the districts.

In addition to district personnel, representatives of some of the Department's specialized units are typically quizzed about their contribution to solving the crime trends that are identified at a WISE session. These include area detectives, narcotics enforcement units, the vice unit (which focuses on prostitution, gambling and alcohol offenses), and the public housing and transportation units. Typically they have accessed CLEAR data in advance to prepare analyses of their operations in order to document that they have been effective partners in responding to district priorities. Representatives of the civilian CAPS Implementation Office are sometimes quizzed about their organizing efforts in high-crime zones. BCSA often prepares maps comparing the distribution of buildings targeted by the city's Strategic Inspections Task Force. The maps are also used to examine whether code enforcement efforts are being focused on the priorities of the police department. As in the accountability sessions described above, an important purpose of these meetings is to ensure that the various parts of the Department are focusing on the same set of priorities.

Figure 17  
Aggravated Battery with a Firearm Map



### Deployment Operations Center

*The Deployment Operations Center is the backbone of the efforts – analyzing crime incidents in real time and making deployment decisions based on data, intelligence, and information from the community (CPD press release, June 18, 2004).*

In June 2003, the Chicago Police Department's primary focus turned to violent crime, specifically homicides and aggravated batteries with a firearm. Given this imperative and the high number of gang- and narcotics-related homicides and shootings in Chicago, the CPD is concentrating new resources on targeting violent offenders and is trying to anticipate and quell intra- and inter-gang and narcotics conflicts using data-driven policing. The central actor in the CPD data-driven violence reduction imperative is the Deployment Operations Center (DOC). Weekly, the DOC is charged with analyzing violent crime and narcotic activities to establish patterns using CLEAR and combining CLEAR-derived data with informal street-level gang intelligence. In essence, the DOC attempts to predict geographic areas where violence is most likely to erupt. The locations selected by the DOC receive increased police presence and targeted enforcement activities.

The DOC is staffed by about 12 police officers and one commanding officer, many with backgrounds in gang intelligence. Typically, DOC officers, also known as analysts, spend most of their work week running CLEAR queries and soliciting gang and narcotics information from gang tactical, special unit and beat officers. There is no set protocol for how the analysts query CLEAR and establish deployment areas; each analyst approaches the task differently as they have to synthesize a wide variety of formal (CLEAR databases) and informal data (street intelligence from gang tactical officers) in order to decide which areas have high conflict propensity. DOC analysts report that initially it was difficult to get officers to candidly share intelligence information and they had to garner their sources' trust. As the DOC became more established, however, officers became more willing to volunteer intelligence information, perhaps understanding its usefulness to the DOC analysts and trusting the analysts' intentions.

Historically, day-to-day patrol has been the domain of the districts. The five police areas under which they fall were largely administrative, with limited resources and responsibilities, while headquarters focused on specialized operations and large-scale enforcement efforts. Now the five areas have become one of the principal organizing entities under which a bulk of the violence reduction efforts is organized. Deployment and enforcement activities that used to be solely district responsibility have been turned over to the areas. Deputy chiefs commanding the areas are responsible for deploying area- and city-level enforcement team and special units, including Tactical Response Units (TRUs) and the area narcotics enforcement teams. Deputy chiefs direct operations in areas selected by the DOC, based on their analyses. Ultimately, they are accountable for suppressing violence in the geographic "hot spots" identified by the DOC.

Each week the DOC selects one geographic target zone per Area that it deems as warranting enhanced police presence based on analyses of crime data from CLEAR as well as gang and narcotics intelligence. These zones are called Level 2 deployment areas. They may include 20 square blocks or run the length of a single troubled street. Level 2 deployments are described at weekly DOC meetings, and packets are distributed with more detailed analysis information. The packets are also available through CLEAR, so district officers can access the data. Districts that are not included in a weekly DOC target zone establish their own priorities, dubbed Level 1 deployment areas. Headquarters can establish Level 3 citywide priority areas.

Level 2 deployment areas can overlap official gang and drug hot spots. In 1998, the City of Chicago passed a gang and drug hot spot loitering ordinance that gave police the authority to order people to disperse in areas that are officially designated as gang and drug hot spots. The ordinance dictates police can arrest violators who are ordered to disperse but do not comply. Level 2 deployment areas and hot spots can overlap, but they are determined in a different manner. The Department's patrol division submits recommended hot spot locations quarterly; their determinations are based on an analysis of calls for service and levels of narcotic and gang activity. Hot spots are usually geographically smaller than Level 2 deployment areas, and at least one is found in each police district. According to DOC staff, DOC deployment is based on a "high propensity for violence in a geographic area," while hot spots are identified by patterns of drug sales and gang loitering.

Using data generated from CLEAR, combined with street-level gang intelligence, tactical response units (TRU), special operations (SOS), area narcotic enforcement teams (ANET) and gang teams are strategically deployed to geographic areas that the DOC anticipates will have conflicts and violence or areas that are already problematic and show evidence of escalation. Area deputy chiefs query CLEAR to determine the best location for each unit, and later use CLEAR to evaluate their impact on crime in the area. Oftentimes special unit deployment boundaries are adjusted to address changing crime patterns or displacement. Once dispatched, these units engage in proactive policing by aggressively patrolling and conducting activities deemed preventative. For example, TRU conducts seatbelt missions and impounds vehicles and ANET conducts buy busts and reverse stings. The main goal of these units is to aggressively disrupt and deter gang and drug activity.

DOC meetings are convened each Friday with two purposes: 1) to review deployment area homicides and shootings that occurred in the previous week and 2) to present new deployment areas for the following week. The area deputy chiefs, detectives and senior command staff discuss the homicides and shootings that occurred in deployment areas. Detectives and the area chiefs update the senior command staff on the progress of recent investigations and the actions taken to prevent violence. During this first part of the meeting, the deputy chiefs explain how they used the resources at their disposal to stem ongoing or anticipated tumult in their deployment area. The area deputy chiefs and representatives of various specialized units recount their activities in DOC deployment areas, covering many of the same issues that are discussed in VISE and even in Level 3 accountability sessions. The meetings are thus in part a forum for troubleshooting problems and describing successes. They also serve as an accountability tool. The senior command staff uses the DOC meeting to stress the importance of timely data entry and using the CLEAR system. Area deputy chiefs are asked to justify and explain how and why they used their resources, and to what end.

The second half of the DOC meeting includes an overall review of Chicago's standing compared to New York and Los Angeles, and then moves to the following week's deployments and the recent data analyses and intelligence assessment of the areas. Each area is reviewed and the most wanted violent offenders (often gang leaders or recent prison releases that threaten to upset the balance between area gangs) are identified. Oftentimes the weekly deployment areas remain the same or only shift a few blocks in one direction, but sometimes they change completely according to the DOC staff's read of the potential for conflict.

### **CLEAR and the DOC**

The DOC staff constantly uses CLEAR to conduct predictive analyses. CLEAR provides real data in real time so DOC analysts can quickly assess risks and identify geographic areas that could benefit from an enhanced police presence. Analysts combine street-level intelligence with information gleaned from CLEAR in order to identify possible violent trends and locations. According to DOC personnel, the CLEAR system allows them to be more "proactive and predictive." Ultimately, CLEAR provides DOC analysts with the majority of their decision-making data, from maps to crime numbers to prison releases.

DOC analysts can access an array of data that, prior to CLEAR's availability, would have required many visits to and cajoling of different units within the CPD. DOC staffers report that CLEAR has addressed many of the communication problems that can plague police departments and, in turn, data-driven policing. Historically, proprietary divisions within police department units limited access or timeliness of data. CLEAR centralizes data and allows for immediacy and democratization of data access. Under the auspices of data-driven policing and by the introduction of CLEAR, CPD units can no longer be proprietary about data.

A work in progress is a CLEAR module supporting the analysis of gang intelligence. Because the DOC staff collect and integrate streams of informal data about gang activity with data from CLEAR, they were given the responsibility of developing the Gang Module component of the CLEAR system. A trial version the CLEAR Gang Module was introduced in autumn 2004. DOC staff concedes that it is difficult to capture nuances of gang activity and conflicts between gangs with the module, but plan to include maps delineating gang boundaries and identifying major gang conflicts.

## **Conclusions**

CLEAR has played a major role in one success of the Department's management efforts: managers agree that they now know more intimately the problems facing their area. They are forced to use the technology tools they have been given in order to discover hot spots, crime spikes and new offending patterns. Far from considering it a burden, most commanders have welcomed the oversight capacity it gives them on a day-to-day basis. At headquarters sessions commanders are routinely quizzed about problems that are not on their priority list, including any identified in beat meeting logs and other indicators of resident concerns, and they need to know about those as well. BCSA is careful to not hold them responsible for information they cannot get through CLEAR, but that leaves them responsible for a great deal indeed.

CLEAR has also assisted in advancing the goal of holding the entire Department responsible for focusing on problems identified as district priorities. All of the specialized units that are involved in the accountability and VISE sessions have access to the same set of data and analytic tools. One of the CPD's goals is to ensure that all of its units are working on the same Department priorities, and CLEAR provides an important mechanism for ensuring that focus.

Police have always closely examined crime statistics, so one of CLEAR's biggest contributions to management has been the depth and breadth with which it lets them examine employees' activities. This enables managers at police headquarters to more effectively monitor the actual implementation of announced plans. Making sure that commanders have actually "punched the ticket" is one of the most important roles of BCSA, and CLEAR gives them the tools to determine whether this has been achieved.

There is always a downside to any new management system. We have observed management teams, for example, choose between district problems for their SOP because they were convinced that it would be easier to "make their stats" on one rather than the other.

Likewise, they strategize about their ability to make their numbers when they have to implement their plan. Some districts propose a checklist of strategies because they know they can get them done, rather than because they think they will be particularly effective or address the most important problems. Traditional enforcement tactics, such as issuing more moving violation citations and making more traffic stops in order to complete more contact cards, fall in this category; they are easily implemented and easily counted at BCSA, but they are no different than what the districts had been doing before.

CLEAR has been less useful in achieving the goal of fostering more innovative problem solving. The chronic crime and disorder problems that become SOPs earn that label because the usual routines of the organization have not (yet) alleviated them. Chicago has emphasized “thinking outside the box” about solutions to problems, rather than just repeating more strenuously what the Department has always done about them. Commanders are urged to attack problems through multiple and simultaneously executed strategies, concocting what one top manager described as “a witches’ brew” of solutions for them. But while CLEAR helps them a great deal when it comes to identifying problems and assessing their success in countering them, there is currently little in it that can help them craft their plans and deploy their resources (including the CAPS Implementation Office staff) in innovative ways. CLEAR can help with planning and evaluation, but it cannot tell CPD management what to do.

An important limitation of the present CLEAR applications is that much of what matters in policing is not measured by their data. The organization’s reliance on CLEAR has pushed it toward a renewed focus on statistics – numbers of incidents, arrests, guns seized and calls for service – to determine whether something is a problem; if anything is being done about it; and whether the problem is getting any better. As we noted in our 2002 report on community policing in Chicago, managers in the field report that CLEAR undervalues the “intangibles” that were community policing’s hallmark, including community satisfaction and the formation of police-community partnerships. One lamented “When CAPS started, it wasn’t supposed to be this numbers thing, and now it’s totally a numbers thing.” Another critic noted, “This is a left hand turn from CAPS. . . This is mission-oriented policing, more traditional. . . This is top-down management, stats driven.” The representation of community concerns in CLEAR is inadequate. There are few sources of information about these, and what can be found in CLEAR provides an unreliable guide to residents’ priorities.

An example of how reliance on CLEAR for evaluative information can turn the attention of the Department away from other organizational goals can be found in the city services component of CAPS. To a remarkable degree, CAPS harnessed the delivery of city services to community policing, both to support police problem solving projects and to respond effectively to the concerns of residents attending beat community meetings. In the early years this was one of the most successful components of CAPS. However, over time police have lost sight of this goal. This is illustrated by Figure 18, which was presented in a Level Three accountability session in early 2004.

Figure 18  
City Services Delivery

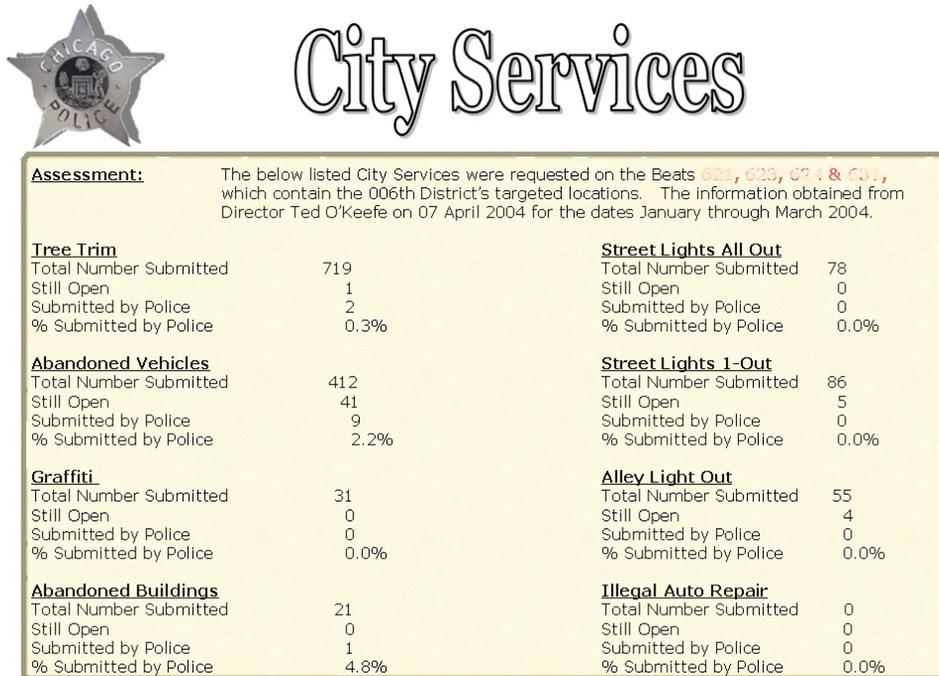


Figure 18 documents the painfully small percentage of city service requests that are being generated by officers. That percentage is zero in most categories. It is in danger of disappearing from the menu of tools that are available for problem solving in Chicago.

Finally, CLEAR has not yet played a role in facilitating external accountability by the Chicago Police Department. A possible use of the system is to increase the external transparency of the organization's activities. Currently, top administrators use the data and their management tools to hold mid-level managers accountable, leaving open the question of the extent to which the organization as a whole is accountable to anyone. If external actors were to establish clear, quantifiable goals for the Department, they may be able to use CLEAR – which is so user friendly that anyone with a bit of training can use it – to hold the organization as a whole accountable. The mayor, city council, the media and sophisticated community organizations come immediately to mind as entities with an interest in finding ways for holding the CPD as a whole accountable for its efficiency and effectiveness.

### Criminal Justice Integration

I-CLEAR's strategic plan includes extending the capabilities of Chicago's data warehouse beyond the city's borders, an endeavor referred to as criminal justice integration. If successful, this new initiative should, among other objectives, bring greater attention to the problems and priorities of local residents and provide an ongoing, transparent system for program evaluation

and geo-based external accountability. I-CLEAR is designed to support coordinated strategies to reduce crime by increasing the capacity of police to “police smarter.” I-CLEAR also has the potential to help eliminate bottlenecks in the criminal justice system by facilitating the flow of information via the data warehouse between agencies and by enhancing agency partnerships around the creation and use of that information. I-CLEAR potentially increases the accountability of criminal justice agencies because of the easy availability of integrated data. Everyone involved understands that these goals and the issues that underlie them are not confined to the boundaries of any city – Chicago’s decision to open their system to outside agencies reflects the view that “crime has no borders.”

Chicago’s data warehouse is an information repository that can produce a variety of relational reports using modern, flexible database-query software. It features an intuitive, web-like appearance that allows users to quickly search the CPD’s deep databases using “fill-in-the-blanks” forms on the screen. It can be accessed via high-speed Internet connections that already reach most justice agencies in Illinois. The warehouse includes an expanding list of data elements. Currently available to outside agencies are data on the criminal history of arrestees, outstanding arrest warrants, traffic violations, investigative alerts, suspect searches, property checks, mugshots and digitized fingerprints. The data warehouse also provides incident reports, victims reports, contact card searches and repeat offender information, but these reports are currently only available within the CPD. Participating agencies also have access to CPD directives, digital streaming training videos, and email addresses and directories. The CPD’s offer of access to the data warehouse includes training for participating agencies in how to use the system and followup technical assistance. Behind the scenes, Chicago created mechanisms to track usage of the system by outsiders and established procedures to ensure that I-CLEAR is used responsibly. The first outside users of the data warehouse were trained in October 2002. This section of the report traces system use by outside agencies of all kinds through the 24-month period ending September 2004.

### **Who Uses the Data Warehouse?**

Information on the actual utilization of the data warehouse can be extracted from the warehouse itself. The system is configured to log the agency of origin for each database query. In addition, we conducted a Fall 2003 survey of users and potential users of the data warehouse. The survey assessed why agencies decided to get involved, gathered descriptions of how they were using the data warehouse and identified obstacles to participation. Details about this and other methodological aspects of the study can be found at: [www.northwestern.edu/ipr/publications/policing\\_papers/caps28.pdf](http://www.northwestern.edu/ipr/publications/policing_papers/caps28.pdf).

Training sessions for new users have been conducted since October 2003. They are held at Chicago Police headquarters in a room equipped with computers and take about three hours to complete. The average police department sends two people to be trained – usually detectives or patrol officers. Agencies are encouraged to take responsibility for training other users in their own

departments, and hence, the data warehouse training follows a “train the trainers” model. In the user survey, 92 percent of local police departments indicated that they had already provided training to others within their agency, thus greatly multiplying the number of individuals with first-hand knowledge of the data warehouse.

Table 4 classifies data warehouse users by type of agency, and summarizes the average number of months each has been using the system and their average system use per month. Police departments make up the bulk of data warehouse users. This was especially true in the first months of the project, but over time the diversity of the user base has grown. By September 2004, 17 county sheriffs agencies had begun to use the system. Many are located in Northeast Illinois, but sheriffs using the system ranged as far away as Rock Island County, Tazewell County and Champaign County. The 11 federal agencies using the warehouse included the U. S. Marshal’s office, the Department of Homeland Security, the Internal Revenue Service and the Secret Service. The Illinois Attorney General and five state’s attorney’s offices were using the system, along with six county probation offices, two regional 911 communication centers and the Illinois State Police.

Table 4  
Average Monthly Warehouse Use, by Type of Agency

type of agency	number of agencies	queries per month <sup>a</sup>
municipal police	204	172
specialized police	8	101
county sheriffs	17	338
federal agencies	11	337
prosecutors, probation and parole	12	210
other	13	302
total	265	205

<sup>a</sup> For agencies using the system for at least three months.

Figures 19 and 20 track the expansion of data warehouse use by these agencies. Figure 19 illustrates how many agencies of all types began to use the system by September 2004. Both monthly sign-on figures and the cumulative total number of agencies involved are presented there. A total of 28 agencies had been trained and were using the system within three months of the start up date. At the time, they were all concentrated in Cook County. Within six months, 64 agencies were involved, and data warehouse usage had begun to diffuse more widely. In its peak month to date, June 2003, 21 agencies signed on to use the data warehouse for the first time. As late as the third quarter of 2004 an average of 10 new users were appearing each month. By September 2004, a total 265 agencies had signed on and were actively using the system. At this date, more police officers outside of Chicago had been issued log-on IDs than there were members of the Chicago Police Department.

Figure 19  
Trends in the Number of Participating Agencies

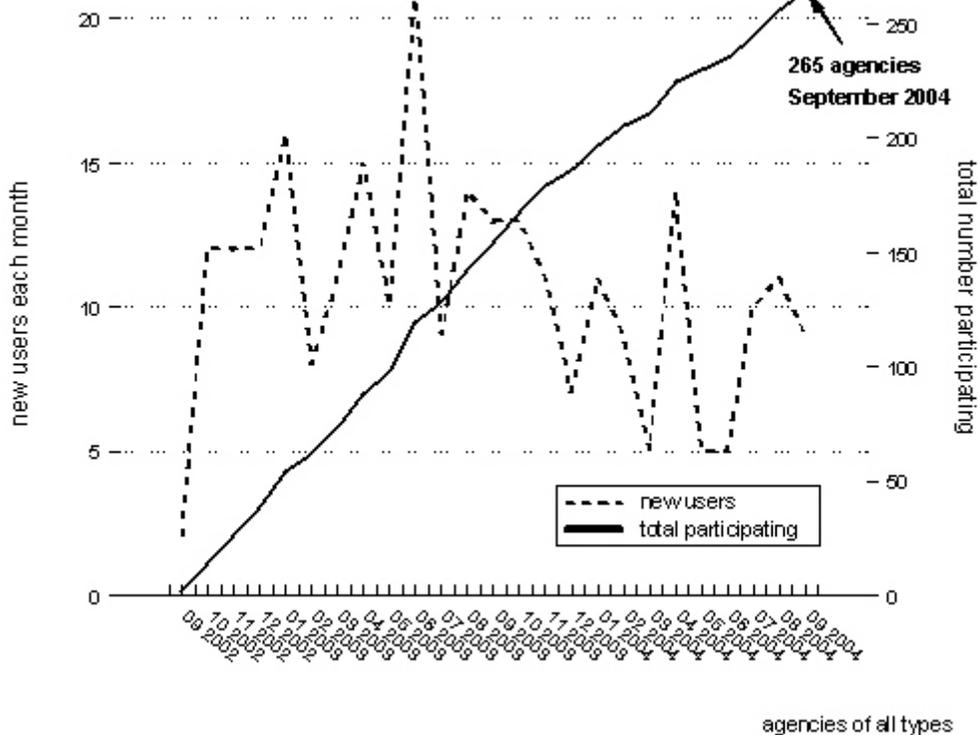
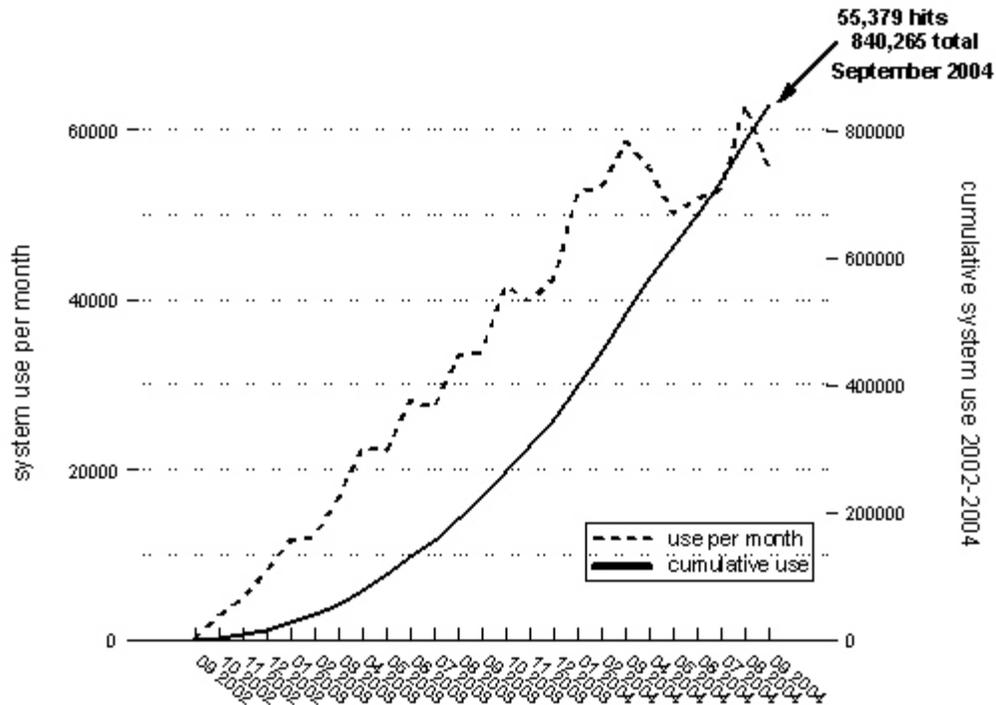


Figure 20 tracks trends in data warehouse participation by the volume of system use. System usage is measured by the monthly number of database queries made by participating agencies. For example, users might start an investigation by typing in the nickname of a possible suspect. They could follow up on the response by requesting a mugshot, which can be accomplished by simply clicking on the name of any of the individuals identified by the nickname search. This would be counted as two queries by the system. Figure 20 tracks both monthly system use and the cumulative volume use of the system by partner agencies of all kinds. In the first three months a relatively small number of new users had “hit” the system a total of almost 8,000 times, in contrast to more than 100,000 hits by 87 agencies at the nine-month mark, or more than a ten-fold increase. The peak month of use was August 2004, when almost 63,000 queries were issued by 256 partner agencies. By September 2004 the total volume of system use had grown to more than 840,000 queries.

Who are the heavy users? To learn what kinds of agencies are making the most use of the system we focused on a relatively uniform set of potential users, police departments in the suburbs surrounding Chicago. This subset of data warehouse users were selected because they share a common mission and organization, and they serve specific geographical areas for which census data, information on municipal expenditures and crime rates can be collected. Our study sample included all of the suburban municipal departments in Cook County, a total of 145 agencies. These

Figure 20  
Trends in the Volume of System Use



were the agencies included in the survey of potential data warehouse users. Of the 145 suburban departments, 130, or 90 percent, had sent officers to be trained and were using the data warehouse. The departments varied widely in how intensively they were using the data warehouse, and these differences in system use were one of the focal points of the study.

### Uses of the System

What uses are being made of the data warehouse? To examine this, the user survey presented respondents with a check list of potential uses. Table 5 presents the percentage of agencies that reported using various features of the data warehouse. The most frequent uses were to check mugshots (83 percent of agencies), to run name and address checks (81 percent) or to check suspects' criminal histories (79 percent). Many fewer agencies reported using the system to check penitentiary releases or to analyze crime patterns.

The length of time they had been using the system influenced the variety of ways that agencies found it useful: the more recently they had sent someone for data warehouse training, the fewer the number of different uses they were making of the system. One reason is that early adopters had more time to conduct local training on the use of the system, a factor that is related to broader use of the warehouse. Agencies with a higher percentage of officers with college degrees also use the system in more varied ways. In addition, agencies that sent detectives for training found more ways to make use of it afterward.

Table 5  
Use of the Data Warehouse

Uses of the data warehouse	Percent of Agencies		Percent of Agencies
Checking names or addresses?	81	Checking criminal history of an arrestee or suspect?	79
Checking for outstanding warrants?	68	Checking mugshots?	83
Checking for penitentiary releases?	34	Checking fingerprints?	40
Checking juvenile arrest status?	49	Analyzing a crime pattern?	27

Near the end of the survey we asked each respondent if they had a specific “success story” related to their use of the data warehouse. The examples we gave them were “to solve a particular crime pattern or make an important arrest.” Twenty-three percent indicated that they did. We later conducted follow-up interviews with a number of these agencies. They described a total of 46 cases in some detail. Almost all were felonies, and most involved violence. The most commonly discussed offenses were armed robbery and homicide. Check forgery, car-jacking, auto theft, street drug sales, sexual assault, battery, kidnapping, missing person, home invasion, property damage, concealing a death and identity theft were also discussed. The officers identified a number of data warehouse functions they used in their investigations. These include entering names, nicknames, demographics, addresses, cities or types of crime. The most common action was to check mugshots – a response that was utilized in 44 of the 46 investigations. Checking suspect’s names and addresses was also popular. In a typical case an investigator searched the data warehouse for all individuals who were arrested previously for the same type of crime and matched the physical description given by witnesses. This narrowed the pool of suspects. Others also searched by nickname, usually one provided by an informant. In at least four cases, other databases, such as LEADS or AFIS, were used as primary resources that, in turn, provided data to be plugged into Chicago’s data warehouse. A popular LEADS feature is the bulletin system that allows agencies to send out electronic notices on an offender who is either wanted or who has been arrested. Thirty-three of the 46 cases examined in this survey resulted in arrests of the suspects. Sometimes the system was used to identify suspects that were already in custody. For example, one arrestee who refused to disclose his identity was quickly matched to a mugshot in the data warehouse after officers entered a description of his tattoos. Identifying suspects with mugshots was also frequently mentioned as being helpful to officers who are going to a home to serve an arrest warrant, emphasizing the importance of “knowing who you’re looking for.”

Overall, the most valuable features of Chicago’s data warehouse, as described by survey participants, are its time-saving capabilities and its ability to produce leads not available through

other systems. It saves officers time by immediately providing information such as arrest records and mugshots that was typically obtained by driving to another jurisdiction – assuming that investigators know which jurisdiction the offender has had previous contact with – and filling out paperwork. The benefits of more quickly identifying offenders are many, including locating offenders at an address before they flee and showing mugshots to witnesses and victims for identification while the event is still fresh in their mind. The data warehouse was also employed by a number of departments as a monitoring or tracking tool. One investigator reported that he entered a suspect's name weekly to see if he had been picked up by any other department. Another case involved a mother filing a missing-persons report for her son. After running his name through the data warehouse, the police found that the young man had been arrested in Chicago during a drug sweep the day before.

A number of cases exemplified how the speed of the investigation can make or break a case. One particular case involved a vehicular homicide by a drunk driver. While the driver was hospitalized he would not provide any information about his identity or the accident. None of the victims in the other car survived. When other databases did not provide enough information on the suspect, investigators turned to the data warehouse, which provided mugshots that revealed the man's identity as well as a previous history of alcohol-related arrests. This was sufficient information for obtaining a warrant and arresting the man before he was discharged from the hospital.

Another case in which the data warehouse played a leading role involved a home invasion and attempted homicide. Two offenders had entered a drug dealer's home, gagged and shot the dealer and several family members, and escaped with drugs and money. A neighbor provided a lead on two individuals from Chicago who hung around the neighborhood. Using these names, the data warehouse provided mugshots of the suspects, who previously had been arrested in Chicago for attempted homicide. Only two days after the incident a photo line-up was created and the still-hospitalized victims were able to positively identify the offenders. Both suspects were immediately arrested at addresses provided by the data warehouse, and at the time of this survey, they were in custody awaiting trial. The investigator who described this case believed that it would not have been solved as quickly, if at all, without Chicago's data warehouse at his disposal.

The data warehouse also holds information not available in other databases. As one detective noted, it points him in the right direction and provides a "hit list" of suspects. Information and features commonly noted as not being available in other databases include addresses of previous arrests, more recent mugshots and the availability of detailed narratives that allow investigators to search by nicknames, tattoos, type of car and associates of the suspect. It also has data on individuals that may not typically appear in other systems, such as undocumented immigrants who do not have a state ID or vehicle registration. A number of officers specifically noted that they could not have solved certain cases without data warehouse access. This was typically cited when they only had a nickname or physical description of the offender.

## Why Did They Sign On?

The user survey asked about the perceived advantages of getting involved with the data warehouse. Respondents were presented with a list of possible reasons for gaining access to Chicago's data warehouse, and they were asked "how influential" each was in making the decision. Table 6 presents the results. Looking at the "very influential" category, the most important reason cited was that gaining access was inexpensive. Fully 80 percent of agencies cited this as a very influential reason to get involved. Other important influences were the perception that the system would help identify offenders from Chicago (74 percent), the opportunity to improve their officers' skills (68 percent) and enthusiasm among the staff about participating (66 percent). Reading about this kind of technology in publications (8 percent) or hearing about it at professional meetings (36 percent) were among the least important factors influencing the decision to get involved in I-CLEAR.

One advantage for participating agencies is that I-CLEAR should greatly reduce the frequency with which they have to request mugshots, arrest reports or other information from Chicago and then send someone downtown to pick them up. Asked how difficult it was to get information from the Chicago police prior to the data warehouse, only 18 percent of agencies rated it "not very difficult." Another 59 percent rated it "somewhat difficult" and 23 percent "very difficult."

What factors are associated with the decision to use the data warehouse? An important one was networking. Among suburban police departments, being linked to policing networks that promulgate innovative ideas was one of the factors linked to the adoption of information technology. This included membership in the Police Executive Research Forum (PERF) and the International Association of Law Enforcement Planners, involvement in the Illinois Association of Police Chiefs and being a CALEA-certified agency. Another factor affecting adoption was the experience agencies could draw on when choosing to participate. Adopters were much more likely to already be users of databases and data-sharing arrangements. They were more likely to be a "NIBRS-compliant" agency and participate in the Cook County Sheriff's Criminal Apprehension and Booking System (CABS). Agencies that signed up were also already better equipped with computer hardware, including portable data terminals (PDTs) and laptop computers. Adopting departments regularly conducted training for their officers in how to use computers, and a higher percentage of their officers had a college degree. Community factors were also related to the adoption of innovation. The communities that did not get involved in I-CLEAR were home to people of modest means. Many were relatively poor, predominately African-American in composition, or had large Hispanic populations. Non-adopting departments were generally small, but they all had high crime rates.

Table 6  
Reasons for Using in the Data Warehouse

Reasons for participating in the data warehouse	Percent of Agencies Rating This:		
	Very Influential	Somewhat Influential	Not Very Influential
It was available with little or no extra cost?	88	8	4
Your agency heard favorable things about it from other suburban agencies?	52	16	32
Your agency expected to make fewer calls or visits to other jurisdictions in order to get information?	46	42	12
Your agency expected to identify offenders from the City committing crimes in your community?	74	24	2
Someone at your agency had read about this kind of technology in professional publications?	8	22	70
There was enthusiasm among your staff about participating?	66	22	12
Someone at your agency had heard about it at a professional meeting?	36	28	36
Using technology seemed to be the thing to do these days?	59	26	15
It was an opportunity to improve your officers' skills?	68	28	3
It was an opportunity to improve your department's standing among other agencies?	34	30	36

What factors were related to how frequently participants used the system? The data warehouse yields a direct measure of the extent of adoption among participants. There was tremendous variation in the extent of “operational” adoption of the data warehouse. Among the adopting agencies in our 2003 study, average monthly use ranged from two to more than 3,500 queries. The bottom 20 percent of agencies used the data warehouse an average of 45 times per month, while the top 20 percent averaged 220 times per month. The heaviest users were larger departments with greater resources. Data warehouse use was higher among agencies with a larger number of officers per capita and a higher expenditure per capita. High-volume users also had more crime to contend with: the Part I crime rate was positively correlated with the extent of system use.

Experience using the system was also a good predictor of frequency of use. The longer departments used it, the more they made use of it each month. In November 2002 (the third month of its availability to outside agencies) the 23 participating agencies made an average of 113 queries each. By March 2004, the 108 participating agencies made an average of 275 queries each. At the end of our data collection period, departments that had been using the data warehouse less than six months made an average of just 86 queries each month, while those who had been using it more than a year were making more than 230 queries each month. The agency-level correlation between the average number of queries they were issuing per month and their months of experience with using the data warehouse was +.45.

Why did so many agencies sign up so quickly for this access? An important reason for the rapid early diffusion of data warehouse usage was that it had an “evangelist.” As it turns out, marketing matters in the public sector as well as in the private sector. The Chicago Police Department employs a staff member who continually contacts agencies to describe this new, free resource, and he visits jurisdictions to give demonstrations, distribute materials and answer questions. He is able to describe a system that is easy to access using a web browser and other familiar Internet tools. As noted above, the CPD also offers free training for representatives of each participating agency. The credibility of the “evangelist” is greater because he is employed by a nearby law enforcement agency and is not selling a product or asking for user fees. As a retired Chicago police officer still working for his department, he has high “source legitimacy” in describing his wares and their potential utility. In the 1970s and 1980s, American police departments were convinced by computer vendors to spend hundreds of millions of dollars on real-time mainframe databases, hyper-cube resource allocation models, automatic vehicle locators and other high-tech tools that never lived up to their promise. But by the beginning of the 21<sup>st</sup> century the hardware for this project was cheap, the database software resided on the Warehouse, and the data itself was already being used by Chicago police officers. Participating departments just had to sign on.

### **Data Warehouse Issues**

A continuing issue in the interagency partnership emerging around data warehouse access is governance. To get the process underway, the Chicago Police Department moved ahead on its own, simply opening access to other agencies, who could sign on without any out-of-pocket costs. One drawback, however, is that participants had to accept the system “as is,” without modification. Other actors in the criminal justice system are now pressing for input and oversight of this information-sharing process by some formal governing body. Some actually have resources to contribute, and many want a say in the system’s evolution. To assess the current views of users, the survey asked, “Are you comfortable with the Chicago Police Department spearheading this integrated criminal justice information project, rather than the county or the State of Illinois?” In total, 97 percent of agencies indicated that they were. But keep in mind that the sample was comprised of nearby law enforcement agencies, so a different response might be expected if other types of criminal justice agencies were queried.

The cost of the system was, undoubtedly, an important factor in the adoption decision, for “free” is an attractive price point. Our survey of system users presented a checklist of reasons that they might have considered when deciding to get involved, and cost was cited as the number one reason. Fully 88 percent of participating agencies reported this was “very influential” and another 8 percent that it was “somewhat influential” in their decision. Money is not everything in policing; the adoption of management systems similar to Compstat in New York City is sweeping American policing even though it is not being subsidized externally. However, whether participation in the system can continue to be free (for example, paid for by someone else) once it becomes part of the routine operation of Illinois’ criminal justice system remains an open question.

Another important issue is security. The system is configured to identify individual users, but what they search for and they do with the findings is only under the control of their home agency. In the survey, only 8 percent of the police chiefs we interviewed expressed a concern about the potential misuse of the system. They were mostly concerned about the unauthorized release or private use of information available through the data warehouse. When asked for details, they indicated that they were worried information might “leak out,” be “used for a personal reason” or “disseminated beyond the agency.” Some noted that this is “always a concern,” and that it is “nothing new.” A few agencies volunteered that they have had bad experiences like this in the past, and one limited access to the data warehouse only to unit commanders because of an earlier problem. Generally, the security issue was seen as a management and training issue, rather than a fundamental problem with I-CLEAR.

Finally, although it represents an important innovation, the data warehouse is, arguably, a tool that facilitates traditional policing, and thus its adoption is not a threat to current operations. An important feature of the data warehouse is that participation by an agency does not call for any difficult and risky organizational changes. A serious community policing program, as another example, is potentially destabilizing. Community policing calls for adopting departments to change their relationships with the general public, take responsibility for a host of new community problems, and rethink the relationship between police headquarters and rank-and-file officers. The data warehouse is not destabilizing; to the contrary, it turns out that the most intensive users of the data warehouse are detectives, who already enjoy a privileged place in policing agencies. In this sense, the use of investigative technology is like New York City’s Compstat process. It too has spread quickly through the policing world, due in part to the fact that it focuses energy on the most traditional goal of police organizations – crime fighting – and works through its traditional command-and-control hierarchy. It is a stabilizing rather than destabilizing force, and it may help preserve a traditional model of policing that had been under attack by reformers for several decades. The only sense in which information technology might be destabilizing is that it is expected to democratize access to information, thus changing the opportunities for success (defined as number of arrests and property seizures) among various units and individuals.

## **The CPD and ISP Partnership: The Development of I-CASE**

### **Background History**

As noted in the introduction, the Illinois governor and Chicago mayor made a commitment to criminal justice integration by their announcement of I-CLEAR at a press conference in January 2004. I-CLEAR seeks to leverage the existing financial, technological, and human resources of the CPD and the ISP to develop a system for the collection, maintenance and dissemination of criminal justice data in Illinois. The flagship I-CLEAR application is a common incident/case report called I-Case. The long-term goal is to make I-Case available to all police departments and sheriff's offices in Illinois over the next two years. This section provides a brief history of data sharing efforts among law enforcement agencies in Illinois, followed by a description of the development of I-CLEAR and I-Case in the state.

Law enforcement data sharing in Illinois began in 1969, when the Illinois State Police introduced the LEADS network, which connects state, county and local police throughout Illinois. A few years later, the Illinois Criminal Justice Information Authority (ICJIA) developed the Police Information Management System (PIMS), an automated police records and information package that comprises several modules, including arrest, incident and crime analysis. PIMS provides network-sharing among subscribing agencies, as well as training and 24-hour support. Participating agencies were also given a voice in the ongoing evolution of the system. Subsequently ICJIA developed its Area-wide Law Enforcement Radio Terminal System (ALERTS), which is a fee-based, in-car data communications system for police. ICJIA develops, operates and maintains the central computer hardware and telecommunications equipment for ALERTS. It also provides funding to support new information technology initiatives and applications in Illinois, including the CLEAR and I-CLEAR systems. In addition, in 1997, the Illinois State Police, with cooperation from ICJIA, sought solutions for a statewide mobile network infrastructure, resulting in the Illinois Wireless Information Network (I-WIN), which became fully operational three years later. I-WIN provides fast, secure wireless connectivity to a variety of state and local public safety agencies, enabling them to access a variety of mission critical database applications from virtually anywhere in Illinois. Since I-WIN provides users with access to LEADS, particular emphasis is placed on restrictions regarding dissemination of LEADS information. Also, due to the ability to access LEADS through mobile data computers, emphasis is placed on the security of the equipment to eliminate unauthorized use.

In 1999 the Cook County Sheriff's office launched a high-tech system to quickly and accurately identify criminal suspects. Known as the Criminal Apprehension and Booking System (CABS), the system provides a uniform booking system and statewide digital mugshot database. A U.S. Department of Justice grant funded the creation of the system, and Cook County agencies were encouraged to participate. The initiative brought 108 Cook County jurisdictions into CABS. Arrest data from these agencies were merged with CPD arrest records, allowing for a robust database and easy access for those who had a need for the arrest data. This became a model for data sharing across jurisdictional borders without concern for data "ownership."

In 2002 the CPD developed its CLEAR data warehouse, which facilitates the sorting and analysis of vast data elements. Also that year, the CPD moved toward changing its information systems from a mainframe, client-based environment to a web-based platform. It also began to market the data warehouse to local jurisdictions. Interest was widespread, and by October 2004, more than 284 organizations were tapping into the data warehouse – local, statewide and federal agencies among them. Under I-CLEAR, the CPD and the ISP are developing a common incident report that will ultimately be shared with other jurisdictions in Illinois, as was done with data warehouse access.

So how will two agencies that differ dramatically in their physical, organizational and business structure accomplish such a task? Not easily, and not as quickly as public officials might like. However, one of the strongest indicators of this integration effort's success is that senior management at the CPD and ISP have a strong belief in the partnership and equally strong leadership within their organizations. The working group that is tasked with developing I-Case meets regularly and works long days, despite the geographic distance between these two organizations.

### **I-Case Application**

I-Case creates a single automated case reporting system for the entire state, consolidating incident reports and detective follow-up reports. I-Case's importance goes beyond the creation of a single statewide automated case reporting system. For example, using I-Case will enable Illinois to join the handful of states that have become NIBRS-compliant. I-Case is also a critical tool that facilitates regional integration by gathering and sharing information across borders – a tool that may be critical in addressing terrorism.

### **Funding**

Funding for the development of I-Case comes from a variety of sources. Because one of the anticipated outcomes of I-Case is that it will facilitate NIBRS compliance in Illinois, the ISP received a federal grant to support development of the system. ISP was able to support I-Case development with \$639,000 from this pool of money. The largest source by far involves a \$4 million contract between the ISP and Oracle Corporation. Under this agreement, Oracle will provide consulting services and products to the ISP, and in turn the ISP will make Oracle the sole source provider of such services. Oracle has signed the contract and is awaiting ISP approval. Another \$2 million was received from the COPS office in Washington, D.C. Other funding sources may materialize from grant proposals that have been submitted. The uneven funding flow has contributed to several stops and starts in the development process, but with the Oracle contract nearing completion, the I-Case project should have adequate funding through the next year.

### **Organizational Structure of the I-Case Project**

The I-Case project has a rather complex organizational structure because the application itself impacts so many different areas within the two agencies involved. Eleven subgroups support

the development and implementation processes, each representing a functional area impacted by I-Case development and implementation. Figure 21 illustrates the organizational layout of the groups, indicating the complexity and detail involved. Each group is composed of members from of the CPD, ISP and Oracle.

Working meetings take place at the CPD, and for this reason, ISP personnel were given offices at CPD headquarters. Some group members relocated to the CPD facility on a semi-permanent basis, while others travel between Springfield and Chicago, meeting at least three days a week, most weeks of the year. While many of the subgroups met during our evaluation period, our focus was on the I-Case Application Development group, whose accomplishments served as the driving force behind the work of the other groups. As JAD sessions progressed, issues were identified that would impact the various other groups, such as the Network, Code Table, Security or Policy groups.

### **Application Development**

The development process of the I-Case application looks much like the development process for CLEAR applications. I-Case will pass through many, if not all, of the following stages before being launched: 1) conceptual development, 2) joint application development (JAD) sessions, 3) subcontracting, 4) design/build, 5) pilot-testing, 6) training and 7) implementation. During the past year the I-Case development progressed through the conceptual stage and is now primarily in JAD session stage. The focus of the Application Development team thus far has been to identify critical tasks in the development of the I-Case system and then hold JAD sessions to flesh them out. During the next year the development will move through the design/build stage, pilot-testing, training and implementation beyond the pilot-test groups.

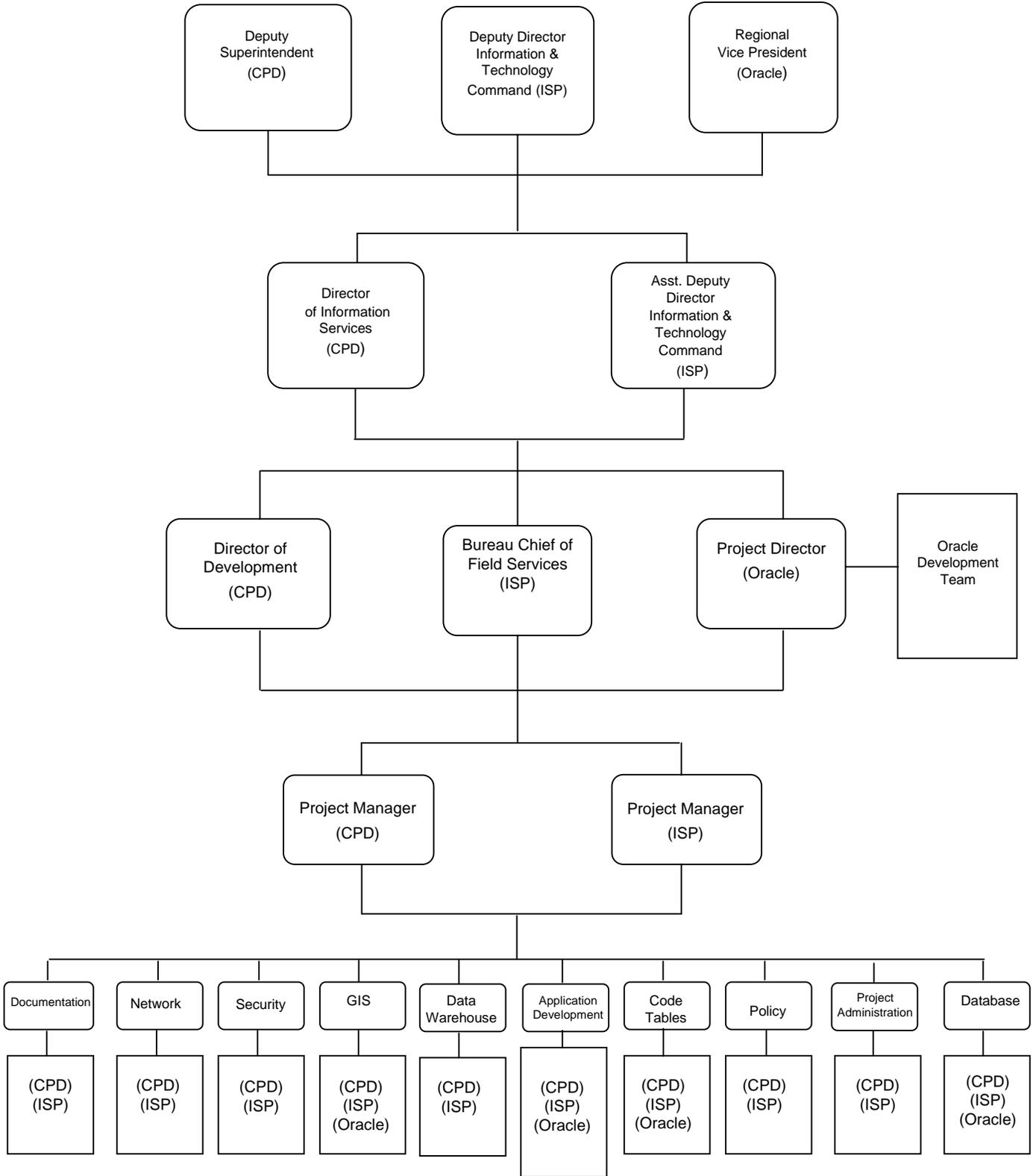
### **Critical Tasks**

The group began meeting in January 2004, usually convening weekly. There were some weeks when meetings were not conducted due to development team furloughs or travel budgets that were awaiting approval. During the summer months, progress was stalled as the group waited for NIBRS funding to be transferred.

Some of the Application Development team's early tasks were:

- identifying the core members of the group
- understanding the geographical boundaries of each organization
- understanding the individual units within each organization
- understanding the organizational command structure within each organization
- understanding the various reporting systems utilized within each organization
- identifying working groups and membership
- understanding the databases used within each organization
- developing the Phase I scope for I-Case
- providing high-level design and budgetary estimates for I-Case

Figure 21  
I-CLEAR/I-Case Organizational Structure



While this list appears clear-cut, it is important to understand the complexity and time required for each task. For example, understanding the various reporting systems within each organization may appear to be a straightforward task. Each organization, however, has multiple reporting systems from multiple departments and units within its own structure. Making changes to a reporting system often means calling in users of the systems to see whether proposed changes will serve their needs appropriately and, further, do not invalidate some other function presently carried out by another system. The process often involves contacting the various subgroups in the I-Case project and coordinating changes with them. Some of the main subgroups that are involved in reporting systems include Network, Security, GIS, Code Tables, Policy and Database. Often legal expertise is required to address privacy issues and ensure that the changes fall within the laws governing the two organizations. Furthermore, each time a subsequent change is made, perhaps based on user feedback, all subgroups must be recontacted to make certain that the change is carried through systemwide. The level of detail and communication on this project has been enormous and, at times, arduous for the participants. It is difficult to anticipate the domino effect of a decision to change something that, on the surface, appears to be relatively straightforward. Decisions also can have unexpected cost implications, which either send the working group back to the drawing board or in search of additional funding.

## **Conflict Resolution**

As can be expected when two distinct organizations set about to create a single shared system, issues arise. To deal with this, the group set up a conflict-resolution process, with resolution within the group as the first step. If necessary, technical or field experts will be brought in to provide input in the decision-making process. If issues still remain, a three-level graduated decision-making structure is in place. First-level resolutions are made by the CPD's director of Information Services Division and the ISP's assistant deputy director of Information and Technology Command. If further escalation is needed, the issue goes to the level of the project's executive director (a CPD deputy superintendent) and the ISP's deputy director. If the issue remains unresolved after passing through these levels, it is referred to the top level, with the final decision made jointly by the Chicago Police Department's superintendent and the director of the Illinois State Police. To date, the problem resolution process has only gone to the first level of the graduated decision-making structure. An outstanding issue is currently in the decision-making process, and it will most likely be resolved at the second level of the structure.

## **Issues**

Below are some examples of key issues that the Application Development working group has grappled with and the current thinking about how these issues should be resolved.

**GIS Mapping.** The CPD incident locations are geocoded on a street grid basis, while the ISP uses XY coordinates, as much of their work is conducted on highways and in vast farming areas. Neither system was workable for either organization. The current thinking is that I-Case will use the XY coordinate system and an ancillary program will identify exact addresses for the CPD – a solution that will accommodate both organizations.

**Supervisor Approval.** Both CPD and ISP require a multi-level supervisor approval process; however, the ISP approval structure necessitates that users have the ability to select the supervisor to whom the report is to be forward. This function also provides adequate flexibility for those officers working outside their home district on special assignments. The likely compromise on this matter is to build in a bypass feature to accommodate the ISP's approval structure while providing for the multi-tiered approval process used at the CPD.

**I-Case Platform.** There has been much discussion about whether I-CASE will be built on a client-server or web-enabled platform. A web-enabled platform requires a reliable wireless network which, to date, is unavailable due to the limited bandwidth of Chicago's radio frequency dispatch system. ISP's wireless infrastructure (IWIN) currently provides a 19.2 bandwidth compared with CPD's 9.6. Due to logistical and technical complexities, a joint decision was made to limit the initial launch of I-CASE to the non-wireless environment. All requirements, design and development will be done with wireless technology in mind.

**Detective Follow-up Reports.** When CPD detectives access a report for their follow-up investigations (known as a "supplemental report" in CPD parlance) all of the data elements related to the case appear on the report. But because ISP officers are accountable for all information contained within a report regardless of whether the report is an original or supplemental report, the ISP requires I-CASE to provide functionality to allow officers to re-use existing information only if officers deem the information to be relevant and germane to their contribution. The recommendation provided by the JAD team on this accommodation will result in substantial changes to the transaction and warehouse database; the impact of these modifications is currently under review.

## **Governance**

In the summer of 2003, the governor of Illinois signed an executive order to form the Illinois Integrated Justice Information System (IIJIS) board. The IIJIS board, chaired by the Illinois Criminal Justice Information Authority's director, provides oversight of criminal justice integration efforts in Illinois, and meets on a regular basis. Their relationship to the I-CLEAR enterprise system is unclear at this point in time. An I-CLEAR-specific governance body was also formed within the CPD and ISP, spearheaded by top members of both organizations. There were some initial meetings of this group, known as the Inter-Governmental Agreement (IGA), but substantial personnel changes halted its development. At present, the development of I-Case is on hold until the IGA has been formalized. Governance is currently one of the top issues looming in the development of I-CLEAR, for it is important not only for resolving conflicts among the developers, the Chicago Police Department and the Illinois State Police, but such a body will be critical for understanding and accommodating the needs and wishes of potential future users of the system. If I-CLEAR is to be responsive to the needs of all law enforcement agencies in Illinois, input from agencies other than the founders will become increasingly important.

## **Observations**

The research team is in the midst of conducting a process evaluation of the I-Case system. We are documenting the application development process and the eventual application implementation. Future work would follow this application into the field and provide findings on the extent and quality of implementation as well as its impact on the two primary organizations and beyond.

The process evaluation findings to date suggest that members of the Application Development team – CPD, ISP and Oracle workers alike – are capable, cooperative and open-minded. The group appears to share a belief in the product. Team members possess skills and a knowledge base that is extensive and appears to be well-suited to their tasks and complementary to the skills of others on the team. The Oracle members have demonstrated a remarkable knowledge of CPD policies and procedures and are showing the same growing understanding of those of the ISP. We observed meetings where team members painfully grappled with minutiae and ensuing potential policy and procedural conflicts emerging from two vastly different organizations. While there were disagreements, they did not seem personal in nature, and team members continue to make use of a problem resolution process that has worked to date, evidenced by the flexible and creative solutions that have been reached.

Continued funding is essential to keep I-CLEAR moving ahead. As noted previously, while not all of the potential funding sources have been realized, several sizable grants have been awarded, and there is great optimism about future funding. This being said, recent funding delays may be a significant factor in the I-Case launch not meeting its current target date.

Finally, we originally observed a disconnect between the high-level I-Case decision-makers and the working groups in terms of setting realistic timelines for product development and implementation. This likely is due, in part, to the fact that the early deployment date was publicly announced by state and city leaders who have limited knowledge of the complexity of developing and implementing such a system. However, under the new administration, timelines appear to be more realistic. The law enforcement community has learned from past experience that launching an unreliable product on an arbitrary date is far worse than introducing a well-crafted product at a somewhat later date. The challenge for this group will be to develop and deploy its best product amid pressures to produce whatever it can to meet the financial and political constraints in their environment.

### **Community/Business Partnership: Testing the Feasibility Study of a Web-Based Survey System**

## **Background**

The Chicago Police Department proposed the Community/Business Partnership as a component of the CLEAR initiative in order to 1) enhance problem-solving capacity, 2) improve community needs assessment, 3) make information sharing easier and more convenient, and 4)

gather more intelligence through community sources. The Community/Business component of CLEAR has not received the same level of attention nor funding as that afforded to the Management and Integration components. Nonetheless, a few applications that fall under the Community/Business Partnership umbrella are under development: Automated Pawnshop, which is in the conceptual stage; Auto Theft Recovery, which is developed, but awaiting contract approvals; and Traffic Crash Report, which is partially implemented, but awaiting more funding.

A fundamental problem in Chicago and elsewhere around the nation is that the police do not collect systematic data on residents' primary concerns and perceptions about their neighborhood with respect to crime, disorder, anti-violence programs, community crime prevention behaviors, police performance and other matters. The question, then, is how to build a new system that can measure, on a geographic basis, what matters to the public.

The CPD expressed a commitment to move ahead with the planning phase for a web-based survey. If a demonstration in three police beats was judged to be successful, then this knowledge and the lessons learned could be applied to a large-scale implementation. The UIC researchers worked with the CPD, beginning in 2002, to develop a comprehensive community Internet survey for measuring public perceptions and behaviors. The Internet survey was intended to assist the CPD (and someday other law enforcement agencies) in achieving the above-stated objectives, as well as to provide support for achieving other management objectives under CLEAR, especially in the areas of accountability and strategic planning. In theory, the systematic collection, analysis and dissemination of new community-based survey data, reported via the Internet, holds the promise of empowering both police officers and local residents involved in the process of proactive problem solving and community crime-prevention at the beat level.

The CPD and the research team engaged in several tasks. First, they conceptualized some key information components that should be considered for inclusion in a police-community web-based system (see Rosenbaum, forthcoming). Second, the evaluation team engaged in a formative assessment of a web-based survey component by exploring community interest and readiness for Internet communication with the CPD. This task included gathering information about residents' access to the Internet, usage of the current CPD web page and reactions to a preliminary web-based survey. Third, the CPD and research team proposed a "demonstration and evaluation" plan for field-testing this new initiative. Each of these research activities and corresponding results is discussed below.

In 2002, a formative assessment was conducted to determine community readiness for Internet communication (Skogan et al, 2002). A survey of 3,455 CAPS participants indicated that 68 percent had access to a personal computer, and 80 percent of this group also had access to the Internet. These data, when combined, suggest that slightly more than half of all CAPS participants are able to communicate with the CPD via the Internet at minimal inconvenience. A preliminary feasibility test for web-based surveys was equally promising. The results of several focus groups indicated that CAPS participants were receptive to the concept of measuring community perceptions about public safety issues via web-based surveys. Finally, a small field test of a web-based survey instrument demonstrated successful participation by residents.

Based on these findings, a second more extensive feasibility test was planned that had two primary objectives. The first objective was to field test a web-based survey methodology that included monthly feedback sessions of survey results at CAPS beat meetings. In addition to testing the practicality of this approach, it was examined for its ability to strengthen community interaction, feelings of efficacy, police-citizen communication and joint problem-solving activities. The second objective was to develop and field test a comprehensive multi-component survey instrument for measuring a wide range of variables.

### **Planning for the Three-Beat Field Test**

An advisory committee was created to guide the development and implementation of the feasibility study. Composed of CPD administrators, CAPS Implementation Office personnel and researchers from UIC and Northwestern University, the advisory committee met on several occasions to plan the three-beat demonstration.

**Survey Development.** During autumn 2003, the UIC research team worked on the Internet survey in three primary areas of development:

- *Instrument Development.* Measures were compiled for use in the Internet survey, including newly created measures as well as questions from existing public safety surveys with established content validity and reliability, such as prior CAPS evaluation surveys. This ensured the creation of a comprehensive instrument for data collection on issues important to community and problem-oriented policing, including areas of measurement that focus group participants had previously indicated should be included (e.g. police visibility).
- *Technological Development.* The necessary technology to post and manage web surveys was put in place. A website was created through the UIC server to house multiple surveys for CAPS participants during the course of the study. Perseus Survey Solutions software was purchased to convert the survey instrument into a web-based format for future publication to the website.

Pilot testing of the web survey was carried out to test accessibility to the website, proper functioning of skip patterns, clarity of questions and ease of use. All respondents found the web survey easy to access, understand and complete. Testing of the original instrument revealed that its length was a potential obstacle to completion. Consequently, the instrument was divided into three sections, each of which required approximately 10 minutes to complete. The Internet survey instruments represented the following three general domains of inquiry, although some overlap was inevitable:

- *Neighborhood Conditions and Community Processes.* This survey component focuses on community, household and individual characteristics as they relate to public safety. It includes questions about neighborhood problems, ranging from social and physical disorder to criminal activity. It also measures community processes, including individual

and household crime prevention behaviors, social cohesion, feelings of fear and safety, and the availability of resources to address problems.

- *Police-Citizen Collaboration and Activities.* This survey component explores multiple dimensions of the police-citizen partnerships. It includes questions about the quality and effectiveness of police-community problem-solving activities and questions about communication at CAPS beat meetings. It also has evaluations of specific CPD initiatives and self-reports of participation in CAPS and community activities.
- *Police Services.* This domain provides an opportunity to assess police performance in terms of the quantity and quality of services provided by both officers in the neighborhood and the CPD as a whole. Specific measures range from awareness of routine police activities to assessments of police knowledge and skill in performing specific functions. It also looks at citizen satisfaction with police encounters and attitudes toward the police.

Based on survey data, police beats with moderately high rates of meeting attendance and Internet access were identified. Three beats representing predominately African-American, Latino and white communities, and having district commanders who support innovation, were selected for field-testing the new methodology.

### **Implementation of the Field Test**

The project was formally introduced to CAPS participants in the three target beats during their beat meetings in February and March 2004. At the meetings, members of the UIC research team explained the purpose of the project, including the fact that residents were invited to complete the web survey from a personal computer, the results of which would be presented at the next beat meeting. Residents were then given the information necessary to complete the first section of the web survey. From March to July, a protocol was followed with three defining features:

- *Rotation of Survey Instruments.* Each month, one of the three survey instruments was made available on the UIC website for CAPS participants to complete. After all three surveys had been provided once, surveys were repeated based on previous completion rates and the utility of the particular survey content for the beat's needs. In the Latino beat, meetings were only held every other month. For this reason, each survey was provided to CAPS participants only once during the course of the project.
- *Handouts.* At each meeting, residents were given handouts containing information for accessing and completing that month's web survey. This information included the website address, a password that would allow them access to the survey and the dates between which the survey could be completed. Informed consent procedures approved by the UIC Institutional Review Board were also included in these materials and discussed at the beat meeting. Beginning with the date of the meeting, residents were given approximately two weeks to complete each survey. Handouts also provided the addresses and telephone numbers for several branches of the Chicago Public Library in or near their beats at which

free Internet access was available. A telephone number and email address for the UIC research team were included in case problems or questions arose. This information was also made available on each screen of the web survey.

- *Feedback Presentation.* Beginning in March 2004, results of the survey completed by CAPS participants during the previous month were presented by a UIC team member to citizens and police during the beat community meeting. Feedback typically included either a Power Point presentation or handouts displaying the results. (See Figures 22 and 23 for examples of findings presented to one of the beats.) Both during and after presentations, residents and police were encouraged to ask questions, offer comments and otherwise discuss the results. Presentations were not given during months in which it was deemed that an insufficient number of residents had completed the previous month's featured survey.

**Testing with Other Samples.** In July and August 2004, the web survey methodology was tested using random samples of residents in each of the three target beats to explore their responses outside the CAPS environment. Samples of 500 households drawn from a reverse directory were invited by mail to complete a single abridged version of all three web surveys during July. A special presentation was made at beat meetings in August, in which results from the random sample were compared to results from CAPS participants. This test was only possible in the African-American beat (N=21) and white beat (N=37). Only eight residents in the Latino beat accepted our invitation.

In the course of the study, we discovered another possible outlet for testing the web surveys: a citywide LISTSERV of persons affiliated with CAPS who had signed up to receive public safety notifications and general information from the CPD. The city and CPD allowed us to use this list to invite a broader sample of residents to complete the web survey. Two surveys were administered. In all, 456 residents completed Part I of the citywide survey and 240 residents completed Part II (from a list of approximately 4,000 email addresses). Most respondents were not regular beat meeting attendees (more than 60 percent reported they had not attended a meeting in the six months prior to the survey). This field test was very successful and demonstrated that a diverse citywide sample completed the web surveys and also expressed satisfaction with the content and format. Although the response rates were relatively low, we were nonetheless able to test the methodology with a moderately diverse sample of city residents. For example, the Part I citywide survey included variability by gender (40 percent male), age (18 percent under age 30 and 20 percent over age 50), race/ethnicity (17 percent African American, 9 percent Hispanic and 63 percent white), education (37 percent with less than a four-year college degree), home ownership (22 percent renters) and police beat (more than 100 different police beats). None of the respondent groups reported problems completing the Internet survey, and virtually all gave it high marks.

**Beat Team Meeting Presentations.** During March 2004, results of a paper questionnaire (pretest baseline) completed by CAPS participants at the first community meeting were presented to the beat team sergeant and beat officers at their beat team meeting. This was intended to provide an opportunity for the beat team and the UIC research team to begin discussing survey results, talk about issues facing the beats, reflect on their partnership building and problem-solving activities,

Figure 22  
 Sample Internet Survey Results Presentation

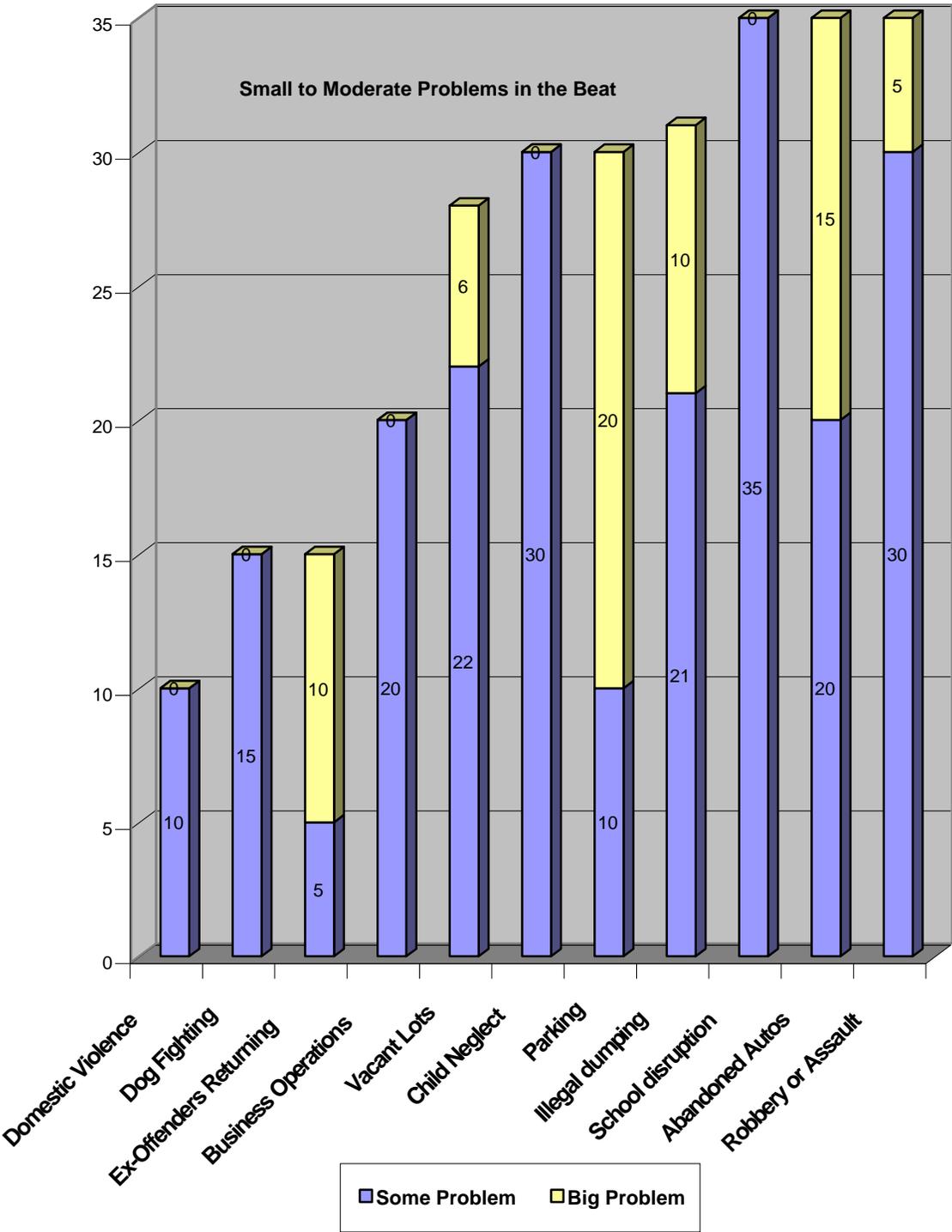
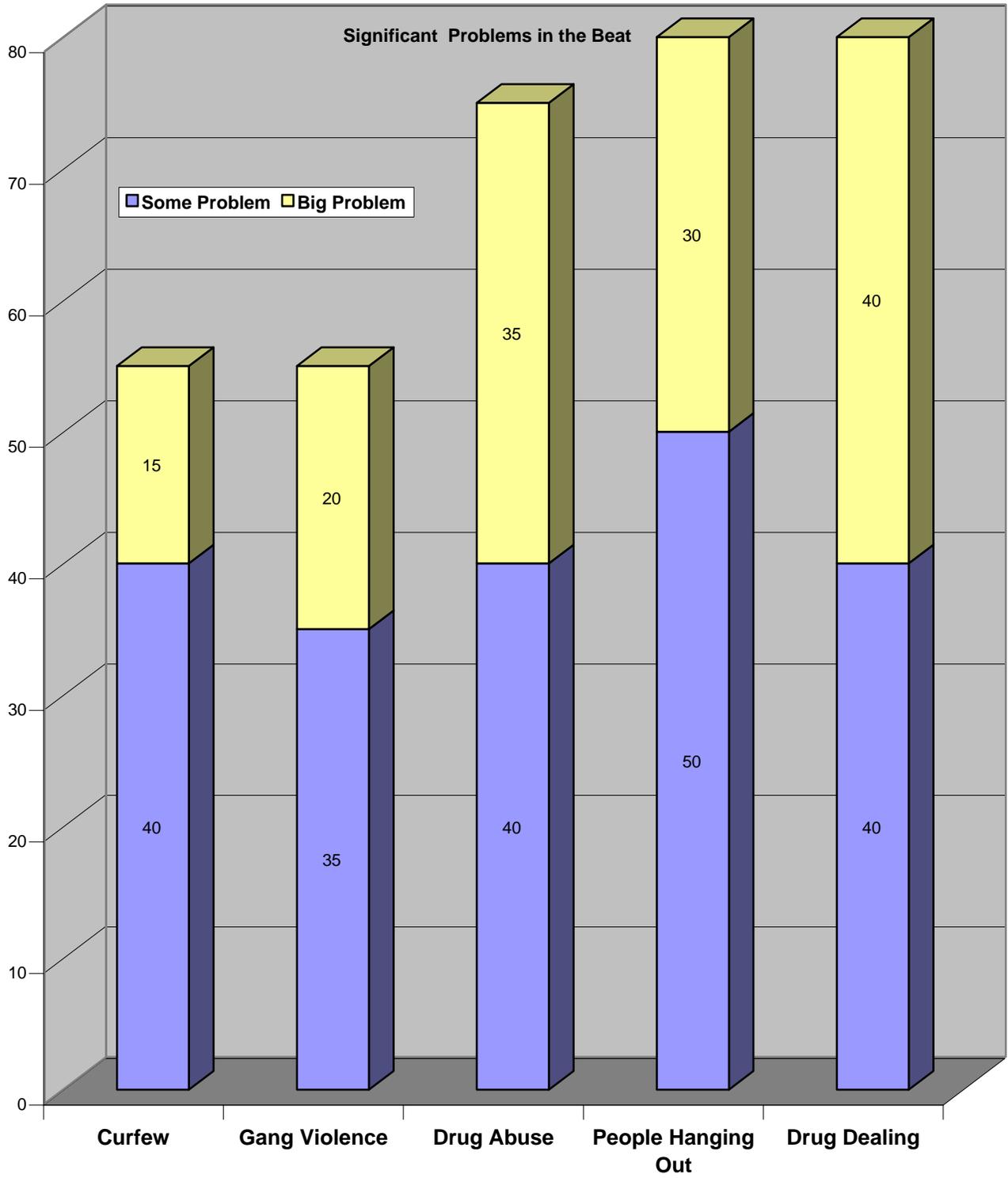


Figure 23  
Sample Internet Survey Results



and plan for the next CAPS meeting. Meeting regularly with the beat teams was part of the original plan, but scheduling conflicts existed that could not be resolved, so this strategy was discontinued after the first month. Whenever possible, the research and beat teams met for a half hour prior to the start of the beat community meeting to discuss issues related to the project.

**Training on Problem Solving.** Observation of meetings that took place early in the study indicated that each beat was displaying a pattern similar to what had been reported in previous CAPS evaluations (see Skogan et al., 2004). While citizens played some role in identifying problems within the beat, the planning of strategic responses to problems and the subsequent reporting of efforts to enact these strategies were responsibilities that fell primarily to attending officers. CPD personnel invariably controlled and directed the discussions and often did not respond directly to the issues that citizens raised in conjunction with the presentation of survey results. In essence, the problem-solving skills exhibited during meetings were weak for both police and citizens. This conclusion led to a meeting of the Advisory Committee in May 2004 to plan a two-part training session on problem solving for the beat teams and interested citizens. The CPD agreed to use overtime funds to allow CPD personnel in the three target beats to attend the training. A decision was also made that training would be provided primarily by the Institute of Public Safety Partnerships (IPSP), a regional community policing institute at UIC, and would be supplemented by Professor Rosenbaum. Along with the UIC research team, trainers from IPSP attended early beat meetings to assess problem-solving skills and familiarize themselves with specific beat problems, meeting formats and so on.

In August and September 2004, separate training sessions were held for each of the three participating beats. Participating were the beat team sergeant, beat officers, community policing officers, citizen facilitators and residents. In both the African-American and Latino beats, invitations were also extended to citizen facilitators of neighboring beats confronting the same problems as the study beats. Training sessions covered an array of interrelated topics considered necessary to promote problem-solving skills, including:

- Characteristics of an effective partnership
- How to facilitate group discussion
- Techniques for organizing/structuring meetings
- The problem-solving model and key steps in the process
- Use of data sources as a basis for problem-solving activities

**Web Survey Participation.** In all, 92 web surveys were completed by CAPS participants in the three beats. Meetings in the African-American and white beats produced relatively high attendance rates: an average of 46 citizens per meeting in the African-American beat and 55 citizens in the white beat. CAPS attendees in the white beat completed surveys at twice the rate of attendees in the African-American beat (57 surveys versus 26 surveys). Attendance rates in the Latino beat were far lower, with an average of 10 citizens per meeting. Because meetings in the Latino beat were only held every other month, citizens had the opportunity to complete each survey once, with only nine surveys being completed in all.

Eighty-eight of the 92 web survey respondents provided demographic information. Individuals who participated were typical of regular beat meeting attendees in terms of gender and age. Female residents constituted 65 percent of all web survey respondents, while 66 percent of respondents in the African-American and white beats were 50 years of age or older. Most respondents in the Latino beat were 40 years old or younger. The majority of respondents had at least some education beyond high school and were homeowners. Participants from the white beat, however, reported somewhat higher levels of education than participants of the African-American and Latino beats. Similarly, participants in the white beat also reported higher household incomes than participants in the other two beats with a reported average income between \$60,000 and \$79,000. African-American and Latino participants reported an average income of only between \$20,000 and \$39,999, although participants in the African-American beat reported a slightly higher average income than Latinos.

Over half of all respondents reported that they spend no more than three hours a week online, with participants from the African-American beat reporting a slightly higher average for time spent online weekly than participants in either the Latino or white beats. Nearly 60 percent of all respondents indicated that their primary location for accessing the Internet was from their homes, while 20 percent reported mainly accessing the Internet from their workplace.

**Technical Problems.** Given the nature of the project, relatively few technical problems were encountered. One problem was that individuals were unable to access the website when using MSN Explorer. This occurred approximately six times during the course of the study. The UIC research team responded by sending an email to each individual in which a direct link to the survey was provided, thus circumventing the problem. In May 2004, the UIC server on which the website was located experienced a brief power outage, during which featured surveys could not be accessed. It also caused the loss of a function notifying respondents that their surveys had been successfully submitted. Instead, respondents received a message that an error had occurred in the submission of their surveys. Alerted to this problem by several concerned individuals, a member of the research team immediately responded to the situation by restoring the function and contacting each individual to advise them that their surveys had indeed been received. The only other problems that were experienced related to the capacity of an individual's personal computer. On three occasions citizens complained that their computer screens "froze" on a certain page of the survey or when they attempted to submit the survey. This problem was determined to be beyond the control of the research team and attributable to the limited capabilities of the computer from which the individuals had accessed the survey.

**Respondent Feedback.** As a means to receive immediate feedback from respondents, each survey included questions about the utility of survey results and how easy it was to complete the survey. The feedback respondents supplied was overwhelmingly positive. Sixty percent of all respondents felt the survey results could help to improve communication between residents and police, while 40 percent thought it was at least possible for communication to improve due to the survey results. Respondents were even more positive about the ability of survey results to help improve police-resident problem solving at beat meetings, with 69 percent of respondents agreeing the results would be useful in this capacity. Respondents also found the surveys easy to complete; only two of the 88 respondents who answered this question experienced any difficulty in completing a survey.

Respondents were also provided the opportunity to offer their own suggestions for the surveys. They were first asked, “In your own words, would you please tell us what questions or issues you feel should be included in future surveys that were missed by this survey?” A number of respondents believed that the surveys had been quite comprehensive and offered no suggestions. As one resident wrote, “I think you covered all the issues.” The issues suggested for inclusion primarily followed three themes:

- *Specific Neighborhood Issues.* Respondents requested more questions that specifically pertained to their neighborhood. As one citizen wrote, “More input on what the needs of the community are.” In response to this concern, for example, traffic-related questions were added to the web survey during the course of the study to reflect the emphasis residents placed on such problems.
- *Police-Citizen Relationship.* Several respondents requested additional measures of the police-citizen relationship, although numerous questions in the surveys already covered this subject. Suggested questions included visibility of police in the area, “how comfortable people are in telling the police information about a crime” and “the level of trust between the residents and the police.”
- *Increased Involvement in CAPS.* One respondent wrote, “The main objective that I can see is to get more of the community involved with the CAPS organization.” This included seeking suggestions from citizens on “how to get more of the younger crowds involved with CAPS,” as well as what police could do to increase community awareness of the CAPS meetings.

Respondents were then asked, “Do you have any other suggestions for improving this web survey?” Again, most respondents felt the survey was “very good” and offered no suggestions. “The questions are direct and to the point. Keep up the good work,” wrote one citizen. Suggestions routinely stemmed from a sense of dissatisfaction with quantitative, closed-ended questions as a vehicle to fully express their opinions on certain subjects. In this vein, a typical response was “I would have liked to make a comment about some of my choices” and “Some questions were difficult to give a proper answer to as stated.” One respondent suggested that the surveys offer “an area like this one [so] that we could clear up a question in our minds at the bottom of each ‘series’ of questions.”

## **Field Study Effects**

**Impact on Participants.** To determine whether this small field demonstration had any impact on participants, a pretest and posttest questionnaire was administered to 354 CAPS participants in the three target beats and six comparison beats. We hypothesized that the web feasibility test, although limited in scope and intensity, might influence participants’ perceptions and behaviors with regard to social interaction, problem solving and police-community relations.

Both target and comparison groups were similarly distributed among African-American, Latin and white residents, with almost half of participating residents being white. While more female residents were represented in the target group (70 percent versus 55 percent), both groups were similar in age (80 percent were 40 years or older), home ownership (86 percent homeowners) and education (70 percent without a college degree). Residents in the target group had lived in their beat for an average of 28 years, while residents in the comparison group reported a slightly lower average of 24 years. Roughly half of all citizens in each group reported that they had Internet access from their homes.

We hypothesized that community interaction and feelings of efficacy would increase as a result of participation in the project. The measures we used did not indicate significant changes in either outcome. More than 80 percent of citizens in both groups reported seeing other participants around the beat, yet more than 60 percent had not worked on beat problems with fellow participants or even spoken with them on the telephone. Residents who were homeowners reported significantly lower rates of interaction with other participants. Feelings of efficacy as to what residents could accomplish and ability to solve neighborhood problems were consistently high for both target and comparison groups.

We also hypothesized that the police-resident relationship would be strengthened through participation in this project. The measures that we used did not register significant changes in either residents' attitudes towards police or the quality of the police-resident partnership. General attitudes toward police were quite positive for both target and comparison groups. More than 90 percent of residents in both groups thought police were at least somewhat responsive to community concerns, while roughly 75 percent believed police were doing at least a good job in dealing with problems that concerned residents.

Residents also rated police quite favorably as a partner; more than 90 percent of residents in both the target and comparison groups felt that police were open to input and suggestions from residents. Residents in the target group were more likely to report that they were satisfied with their neighborhood's partnership with the police (85 percent versus 76 percent).

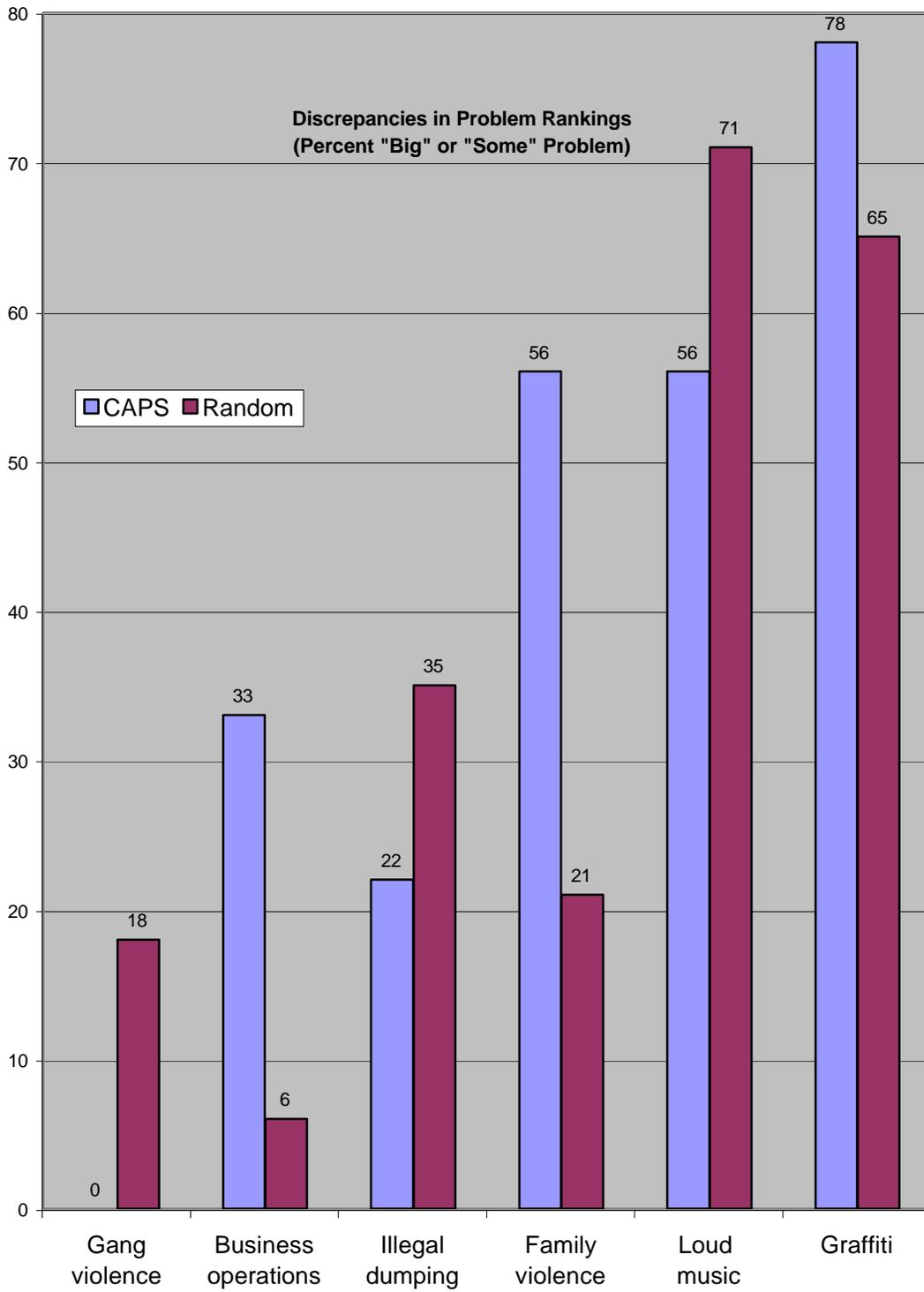
Finally, we hypothesized that problem-solving capacity would strengthen as a result of participation in this project. No significant changes were measured in the quality of problem-solving activities exhibited at beat meetings. Over 75 percent of residents in both groups felt that police and citizens should be reporting more on what they had been doing to solve problems. While 80 percent of residents in each group indicated a need for more discussion about what police should be doing before the next meeting, 84 percent felt there was an equal need for more discussion about citizen action. The measures we used to examine the strength of the problem-solving partnership were found to be significantly lower after the intervention. The focused attention on survey data about the CAPS partnership may have induced a heightened awareness of the need for improvement in this area.

Because the main objectives of our feasibility study were to field test a new methodology and refine our survey instrumentation, we did not expect intervention effects and were not surprised by these findings. The small sample size meant the statistical power of our tests was limited so that only large differences in scores would have achieved significance. However, we were pleased with the few effects that were unexpectedly achieved. The fact that residents in the target beats reported a greater need for improved problem-solving activities than the comparison beats suggests that a process of change may have been stimulated. This heightened awareness of partnership dynamics may reflect a greater understanding of the components required for effective problem solving. Based on the promise of this feasibility study, a major randomized experiment allowing a more rigorous test of the methodology has been funded by the National Institute of Justice and is scheduled for implementation in 2005.

**Differences between CAPS and Random Samples.** One potential benefit of the web survey methodology is its capacity to serve as a vehicle for democratizing policing and problem solving. By reaching beyond CAPS participants (who represent, on average, only 0.5 percent of the beat population) to the “silent majority” of residents who do not regularly participate in public meetings, a broader cross-section of the public can have input into the assessment of neighborhood problems, police services, and problem solving. Unfortunately, a limited number of residents accepted our mailed invitation to participate in the online survey (N=37 whites, 21 African-Americans, and 8 Latinos). But with these data we were able to perform a preliminary comparison of responses from the CAPS sample with the random sample to illustrate the potential differences when evaluating the same geographic area. Take, for example, residents’ perceptions of the severity of neighborhood problems in the predominately white beat – an area with a relatively low rate of serious crime. When asked whether something is a “big problem, some problem, or no problem in your neighborhood,” the two samples were in strong agreement on some problems, such as burglary, theft of autos, vandalism of autos, and youth disruption around schools. For other problems, however, they expressed substantial differences of opinion. As shown in Figure 24, the random sample was more inclined to view gang violence, abandoned autos, illegal dumping and loud music as a problem in the beat, while the CAPS sample ranked graffiti, family violence and local business practices as more serious problems.

These differences within the same police beat may be due to measurement error associated with small sample sizes but, alternatively, they may be due to differences between the respondents in terms of who they are (for example, income level, homeownership), where they live in the beat (for example, streets with low or moderate levels of disorder), or where they get their information (for example, CAPS meetings versus other sources). In this particular case, the CAPS attendees come from homogeneous single-family sections of the beat (where graffiti on garages is one of the bigger problems) and often discuss a specific problem business at CAPS meetings, while the random sample is more likely to include residents from a more diverse section of the beat, with some multifamily units and more visible social disorder. Future research with larger samples will yield better estimates of residents’ opinions and help to untangle the causes of any differences observed between samples. For now, this preliminary analysis suggests that random samples of residents will bring new information to the problem-solving process and help to democratize it.

Figure 24  
Sample Survey Findings



## Lessons Learned

The findings of this feasibility test are quite encouraging. The viability of web-based surveys as a method for the collection of important data from local residents for problem solving was clearly established. Residents demonstrated that they can and would complete surveys from their personal computers on a regular basis. They experienced few technical difficulties in doing so and the availability of technical support was a helpful element for sustaining participation. Interviews with residents who had participated in completing the surveys indicated that they were amenable to this particular method for seeking their input and had no complaints about the process. Similarly, monthly presentation of results was easily accomplished by the research team with the automatic creation of files for responses through the survey software.

Valuable lessons were also learned regarding use of such a methodology to facilitate problem-solving activities at beat meetings. One key lesson is that beat meeting attendees (both police and civilians) will need a certain level of problem-solving knowledge and skill in order to receive maximum benefit from the survey results. While the three target beats in this study may not be representative of problem-solving abilities citywide, the need for improvement was readily apparent. Because training on problem solving for CPD personnel and resident attendees in these beats could not be arranged until the final months of the study, its benefit to the web survey methodology was only partially realized. Assessing problem-solving skills and providing appropriate CAPS training must be regarded as a necessary component of a larger field test.

Another related lesson concerns adherence to the generic agenda provided by CAPS during beat community meetings. While this agenda is designed to encourage police and residents to engage in problem-solving activities, ironically, it was used in such a manner that restricted the amount of time available for a real discussion and analysis of problems and possible solutions. One resident summed up the problem this way: "In general, they are too structured. The CAPS officers won't allow anybody to speak out of place." Another resident felt that discussions were regularly cut short by the police who claimed they had "to get back to the agenda." Sufficient time was often not available to explore issues raised by survey results for this very reason. Beat meeting agendas must display a certain amount of flexibility and creativity if beat meetings are to be a forum for problem-solving activities. As an IPSP trainer said, "The agenda is not intended to be handcuffs."

The obstacle to participation most frequently cited by residents and police in interviews was the age of CAPS participants. Consistent with prior findings on beat meetings, attendees were mostly older residents. Age was seen as the greatest obstacle for several reasons. First, respondents felt that senior citizens are "stubborn" about learning new skills and "don't like computers." As one senior said, "We've learned to live without it." Second, many felt seniors did not have what was commonly referred to as "computer literacy." As one resident said, they "don't have any idea what to do with that kind of stuff." Third, seniors were described as "suspicious" about communicating through the Internet because of concerns the government might be monitoring them: "You know, Big Brother is watching." Despite this perception, it should be noted that 44 percent of all participants in the web surveys were 61 years of age or older. This would seem to indicate that age is not the primary agent for non-participation.

As computers continue to become more firmly established as a part of everyday life, we feel the age factor will become less of an obstacle to web survey participation. The issue of computer literacy at any age, however, represents a real obstacle that must be addressed if web surveys are to become a good mechanism for representing community views. In the African-American beat, for instance, free computer classes were held at the elementary school where the beat meetings took place; residents were regularly encouraged to attend these classes. In this regard, community centers and local schools that offer such courses represent an important resource for residents. These resources should be promoted and trainers should be encouraged to incorporate instruction for residents interested in interacting with the CPD and UIC on public safety issues, including the use of online surveys and other CAPS-related activities.

Our inability to reach the Latino beat highlights one of the limitations of this field test and underscores the importance of finding innovative outreach strategies in the future. Printing materials in Spanish is hardly sufficient. First, we acknowledge that a big part of the problem is the “digital divide,” where persons of lower income have less access to computers and the Internet. This was certainly true in the beat we selected. Hopefully, this larger societal problem will be resolved over time through government and private sector partnerships and through the increased affordability of these services in the marketplace. But other problems contributed to the low participation rates in the Latino community, including language barriers, a cultural history of poor police-community relations in Mexico, concerns about immigration and deportation, and cultural differences in whether local problems should be handled in the private or public arena. For these reasons, several community members suggested that the web survey would receive a better response if it were not linked so closely to the CPD, making it perceivable as a police program. In any event, weak Latino participation in CAPS has been documented in previous evaluations (Skogan et al., 2004) and will require special attention in the future.

Two methodological issues were raised during the implementation of the study that can also be considered obstacles. First, some residents indicated they had not completed a survey because they had simply forgotten or missed the two-week deadline that was provided for completion. Because success of this methodology is based on the ability of residents to complete surveys on their own time, maintenance of participant email addresses and the development of a notification system would help to insure participation. Second, the length of the web survey instruments was cited as another problem. Several participants described the survey as too long. While pilot tests of each survey indicated an average completion time of only 10 minutes, different levels of computer and reading skills no doubt accounted for longer completion rates for some residents. In some cases, weak computer and reading skills may have prevented them from completing their first survey or discouraged them from participating in a second or third wave. Through statistical and conceptual analyses, the UIC research team is working to shorten the web survey instruments in preparation for a larger field test in 60 Chicago police beats.

The lessons learned from this field test laid the foundation for a larger Internet experiment in Chicago. Called the “Chicago Internet Project,” the National Institute of Justice has funded a randomized trial in 60 Chicago police beats beginning in 2005. CAPS civilian participants, police officers and random samples of residents in the beat will take part in this multi-faceted demonstration and evaluation project.

## **Conclusions and Recommendations**

In 2004, the Chicago Police Department continued to make significant progress in the development and implementation of the CLEAR initiative. Several key applications were deployed in the field, giving us a closer look at implementation issues and response of end users. During this year, CPD managers and executives also had the opportunity to test the power of CLEAR to influence deployment decisions and contribute to the accountability process at the individual and unit levels. CLEAR has now reached beyond the walls of the CPD. Information-sharing using the CPD's data warehouse has expanded to hundreds of law enforcement agencies in Illinois, thus providing another opportunity to explore user satisfaction with the system and the utility of this information for practice. With this early success, CLEAR has also evolved into I-CLEAR, as the Illinois governor and Chicago mayor joined forces to realize an ambitious initiative to integrate criminal justice information throughout the state. Finally, the CPD has reached outside to seek community input in beat-level problem solving and accountability through an experimental web survey of local residents.

This report provides a summary and assessment of progress in each of these areas. Our analysis suggests that Chicago is on the cutting edge of information technology applications in the law enforcement community, but being in this position, the Chicago Police Department and Illinois State Police are cutting a previously untraveled path, and unforeseen obstacles abound. This report identifies some of these obstacles and challenges, among which are technical difficulties, time constraints, officer buy-in, governance, partnership issues, politics and, above all, cost. Nonetheless, the tone here is one of optimism. The future of law enforcement in the United States will be, in large part, about information collection, sharing, analysis, interpretation and utilization. Smarter policing will mean data-guided, evidence-based decision-making and performance evaluation that is responsive to violent crime, disorder, and community concerns for efficient, effective and equitable policing. Chicago and the State of Illinois are uniquely positioned to achieve this level of policing if information technology remains a priority for government and funding agencies.

### **Progress with Key CLEAR Applications**

By the close of 2004, the Chicago Police Department had made significant progress with its four key CLEAR applications – Automated Incident Reporting Application (AIRA), Automated Arrest, Personnel Suite and e-Track. Progress and key issues that have arisen are summarized below.

AIRA enables officers to complete case reports via portable data terminals or LAN-based work stations in any CPD facility. LAN-based AIRA has been deployed in three districts and is well-regarded by users. Wireless AIRA, which must interact with a number of complex computer systems and transmit large packets of information, has encountered some obstacles, but it has been deployed in the pilot district and is being used with variable reliability. Significant headway has been made in resolving some major obstacles to the wireless application – limited bandwidth, dispatch system upgrades and outdated hardware – all of which have been dependent on outside entities to resolve. The bandwidth challenge will be handled by a new wireless network that is expected to be deployed by February 2005; dispatch system upgrades are completed and 2,000

new portable data terminals (PDTs) are on order. If these matters move along as expected, a completion date for the wireless pilot can be specified, and the other districts using LAN-based AIRA can begin completing incident reports in their squad cars and perhaps have wireless access to other CLEAR applications as well. The enormity of the training effort, however, will continue to determine the pace at which AIRA is deployed in the city's other 24 policing districts. Also, the unexpected costs of implementing these system upgrades can be substantial, especially during times of economic downturns and budget shortfalls. Again, these investments must be viewed as a priority if Illinois and Chicago are to keep these developments moving ahead.

With the Automated Arrest application, the function of recording arrestee intake information has shifted from lockup personnel to arresting officers, thus giving the department near real-time access to arrest data throughout the city. Automated Arrest is up and running in three of five Area headquarters facilities as well as two other district stations. The application is considered "solid" at this point and any work being done to it involves enhancements ranging from miscellaneous error fixes to programming the system to extract information from the report to populate the fields of a card that was formerly completed manually. Two things prevent the application from being rolled out citywide immediately: the need to train users systematically and the procurement and installation of hardware.

The Personnel Suite automates and integrates the human resource functions from five Departmental units to assist individual employees and managers in monitoring personnel matters. The Personnel Suite is expected to improve efficiency in the daily functions of these units, to help monitor performance data, to identify problem behaviors before they result in unfavorable outcomes and to pave the way for intervention and assistance when needed. Advances in the Personnel Suite have been made on individual modules. The Medical Section's application is working dependably, and users have come to appreciate the value of the automated system, evidenced by the fact that they have requested some enhancements that were previously unimaginable to them. Other systems that computerize some vital personnel recordkeeping functions of law enforcement agencies – such as star (badge) management, family members to be contacted in case of emergency, awards bestowed on officers and use of force tracking – have been launched or are in the final stages of testing. One very complex system that automates the labyrinthine processes of the Internal Affairs Division and Office of Professional Standards is soon to be deployed, and in the numerous JAD sessions and other meetings related to this application, future users seem quite optimistic about its utility. A number of management changes have slowed the progress of the oversight committee charged with developing the Personnel Performance System, which will make use of the personnel data gathered by the numerous applications of the Personnel Suite. What is accomplished on this system in the next year will depend on whether the project is properly staffed, funded and assigned a high priority.

E-Track is a system designed to improve the recording and tracking of evidence and property, thus improving efficiency and accountability in this domain. This application, introduced in two phases, has been in use for quite some time. The first phase, used by police officers to inventory evidence and property, as well as by couriers to record the movements of the evidence and property from intake to inventory, is working well and has remained essentially as

it was when deployed more than two years ago. Phase II, used by personnel at the Evidence and Recovered Property Section, is undergoing some enhancements under the guidance of the Department's general counsel. While users agree that the automated system is an improvement over the manual procedures formerly carried out, they are hoping that the next phase of e-Track will make the system queriable, thus improving the reliability of the complicated process of tracking evidence and property. Whether e-Track will result in greater accountability remains to be seen, but we have little reason to doubt that it can achieve this objective.

### **CLEAR Usage and Impact on the Street: The Pilot District Field Test**

The CPD tested several applications in the field before beginning departmentwide implementation and officer training. The research team used this opportunity to gauge the efficacy of specific CLEAR applications in a single district. The research team gave special attention to the effects of these applications on the day-to-day functions of district personnel and their attitudes toward this new way of doing business. Another district served as a control group and did not have access to the full complement of applications being used by the pilot district.

On the whole we found that the majority of officers in both the pilot and control districts are using the automated systems available to them. Officers in the pilot district, however, are more likely to use the data warehouse several times a week (88 percent versus 57 percent) and more likely to use it daily (52 percent versus 32 percent), which is a very positive sign. Smaller percentages of personnel in the control district reported using each of the 12 applications.

Attitudes about the CPD's new technology were also very positive, as both groups responded that computers make their work easier, improve their response, increase information sharing, allow them to work more effectively and enhance the professional status of police. These findings are encouraging because in the pilot district, the wireless version of the automated incident reporting application has been less than reliable. This has not discouraged officers or dampened their attitude about the importance of computers to their work. One of the most common complaints officers have about new programs of any sort is that they create more paperwork. It is encouraging to note that 58 percent of the officers in the pilot district, where many of the applications are tested, believe that these applications have reduced the amount of paperwork in their jobs.

### **CLEAR Usage and Impact on Management and the Organization**

CLEAR has played a major role in helping district and area managers become intimately familiar with the crime problems they face in their jurisdictions. Because of increased accountability, they are compelled to use these new technology tools to discover hot spots, crime spikes and new offending patterns. Far from considering it a burden, most commanders have welcomed the oversight capacity it gives them on a day-to-day basis.

CLEAR has also assisted in advancing the goal of holding the entire Department responsible for focusing on problems identified as priorities for the districts and headquarters. All of the specialized units that are involved in the accountability and VISE sessions have access to the same set of data and analytic tools. One of the superintendent's goals is to ensure that all units are working on the same Department priorities, and CLEAR provides an important mechanism for meeting that end. Over the past year, for example, the top priority has been reducing violent crime and CLEAR has been an essential tool for the Deployment Operations Center's efforts to direct CPD resources to locations where violence has recently occurred or is expected to occur.

Police have always closely examined crime statistics, so one of CLEAR's biggest contributions to management has been the depth and breadth with which it permits managers at police headquarters to effectively monitor the actual implementation of announced plans by examining employees' activities. Making sure that commanders have actually "punched the ticket" is one of the most important roles of the accountability bureau, and CLEAR gives them some tools to determine whether this has been achieved. To reach its maximum utility, however, CLEAR will need to produce additional management reports that are tailored to the needs of the accountability managers. At present, the system is geared primarily toward the investigation of individual incidents rather than aggregate summaries for management review. Consequently, the accountability bureau and other units must sometimes generate their own statistical routines or hand tallies to produce the data they need. In future refinements and development, the definition of "CLEAR user" must be expanded, with input sought from a wide variety of potential users to ensure that the needs of personnel at all levels are met.

Along these same lines, the true power of CLEAR will only be realized when data analysis moves beyond tracking down individual suspects to a sweeping emphasis on crime analysis that includes patterns of offending, patterns of victimization, environmental correlates of crime, predicted crime trends, and the like. We cannot emphasize enough the importance for Chicago becoming the first large city to achieve NIBRS (National Incident Based Reporting System) compliance, which is an outcome of CLEAR. NIBRS is a relational database that will someday replace the Uniform Crime Report (UCR) nationwide and give police managers the opportunity to understand their crime problems at a much deeper level. If patrol officers on the street are willing to take the time to collect this additional data, the Department should exploit it fully.

Although CLEAR has many positive attributes, as with any new management system, the behavior of employees is sometimes shaped in ways that were not intended.. At the district level, we have observed management teams, for example, choose between district problems for their operating plans (SOPs) because they were convinced that it would be easier to "make their stats" on one rather than another. Likewise, management teams strategize about their ability to make their numbers when they have to implement their plan. Some districts propose a checklist of strategies (traditional enforcement tactics, for example) because they know they can get them done, rather than because they think they will be particularly effective or address the most important problems. These activities are easily implemented and easily counted by the headquarters accountability team.

CLEAR has yet to demonstrate that it can achieve the goal of fostering more innovative problem solving, and yet problem solving at the neighborhood level is one of the most important functions of policing. Although violent crime has been reduced dramatically, the chronic crime and disorder problems that become SOPs earn that label because the usual routines of the organization have not (yet) alleviated them. Over the past decade, Chicago has emphasized “thinking outside the box” about solutions to problems, rather than just repeating more strenuously what the Department has always done about them. While CLEAR helps them a great deal when it comes to identifying certain problems and assessing their success in countering them, there is currently little in it that can help them craft their plans and deploy their resources in innovative ways. CLEAR can help with planning and evaluation, but it cannot not tell CPD management what to do. Designing new and more effective responses will continue to be the responsibility of creative personnel at all levels of the organization.

Creative problem solving may be left to individual ingenuity, but “necessity is the mother of invention” and, therefore, organizational emphasis on neighborhood problem solving via the accountability process will be critical for spurring creativity. In the past, at headquarters sessions commanders were routinely quizzed about problems that are not on their priority list, including any identified in beat meeting logs, SOPs and other indicators of resident concerns. Finding vehicles for integrating information from the CAPS process into CLEAR and into the level-three accountability meetings should go a long way toward enhanced problem-solving success.

Although it represents an important innovation that is widely used internally and externally, the data warehouse is, arguably, a tool that facilitates traditional policing. As it turns out, the most intensive users of the data warehouse are detectives, who embody traditional police tactics. We have already suggested that innovative data analysis could have potential benefits in shaping strategic and tactical responses. There is another way this information technology can be viewed as “shaking up” the status quo within the organization – CLEAR has the capacity to democratize access to information, thus changing the opportunities for success (defined as number of arrests and property seizures) among various units and individuals. Historically, only detectives had access to details about crime incidents. Today, officers at all levels can obtain this information. How this will affect the organization in the long run remains to be seen, but it may generate more productivity in more diverse ways.

An important limitation of the present CLEAR applications is that much of what matters in policing is not captured in these data. The organization’s reliance on CLEAR has pushed it toward a renewed focus on statistics – numbers of incidents, arrests, guns seized and calls for service – to determine whether something is a problem; if anything is being done about it; and whether the problem is getting any better. As we noted in our 2002 report on community policing in Chicago, managers in the field report that CLEAR undervalues the “intangibles” that were community policing’s hallmark, including community satisfaction and the formation of police-community partnerships.

An example of how reliance on CLEAR for evaluative information can turn the attention of the Department away from other organizational goals be found in the city services component of CAPS. To a remarkable degree, CAPS harnessed the delivery of city services to community policing, both to support police problem-solving projects and to respond effectively to the concerns of residents attending beat community meetings. In the early years this was one of the most successful components of CAPS. Over time, however, the police have moved away from this goal. A painfully small percentage of city service requests are being generated by officers. City service delivery is not a CLEAR data item, and district commanders must go to a stand-alone computer to monitor whether their officers are submitting service requests. The city-service component of CAPS is perhaps in danger of disappearing from the menu of tools that are available for problem solving in Chicago.

Finally, CLEAR has not yet played a role in facilitating external accountability by the Chicago Police Department. A possible use of the system is to increase the external transparency of the organization's activities. Currently, top administrators use the data and their management tools to hold mid-level managers accountable, leaving open the question of the extent to which the organization as a whole is accountable to anyone. If external actors were to establish clear, quantifiable goals for the Department, they may be able to use CLEAR – which is so user friendly that anyone with a bit of training can use it – to hold the organization as a whole accountable. The mayor, city council, the media and sophisticated community organizations come immediately to mind as entities with an interest in finding ways for holding the CPD as a whole accountable for its efficiency and effectiveness.

### **Community Involvement: The Web Survey Field Test**

The Community/Business component of CLEAR has not received the same level of attention or funding as that afforded to the management and integration components, but some innovation has been advanced nonetheless. If successful, this new initiative should bring greater attention to the problems and priorities of local residents and provide an ongoing system for organizational assessment and geo-based external accountability.

One idea that emerged from planning discussions was a community web-based survey that would collect systematic data on residents' central perceptions, beliefs and behaviors regarding public safety at the beat level. Historically, police organizations have relied exclusively on crime rates, arrests, clearance rates, response times and property seizures to measure organizational, unit and individual performance. This web survey would provide a methodology for measuring a host of critical variables, including residents' perceptions about their neighborhood, crime, disorder, anti-violence programs, community crime prevention behaviors, police performance and other matters.

A web survey was conceptualized in 2002, pilot tested in 2003 and field tested more extensively in 2004 as a joint venture between the CPD and the University of Illinois at Chicago.

The question was whether Chicago could build a new system of public safety statistics that “measures what matters” to the public on a regular basis, building on the CAPS citywide telephone survey. A limited feasibility test in three police beats produced encouraging results. In predominately Africa-American and white police beats, CAPS attendees were able to go online and complete sequential web surveys over a six-month period.

The feasibility test in three beats yielded a number of lessons. First, participation from the Latino community will require special attention. Similar to CAPS participation documented in previous reports, the web survey was unable to reach a sufficient number of Latino residents due to a variety of factors. Second, feeding back the survey results at CAPS meetings is a critical part of the process, but attendees must be prepared to incorporate this information into their problem-solving activities. We noted that problem-solving skills for police and residents seem to have declined over the years, perhaps because of a lack of refresher training and a weakened commitment to the CAPS process in some areas. Third, group facilitation and leadership skills during CAPS meetings are essential for success and, hence, must be identified and reinforced in future initiatives. Fourth, the CAPS meeting agendas must be flexible enough to accommodate a data-driven discussion about problems and solutions. A rigid agenda will undermine the very problem-solving process it was designed to promote. In essence, a continued investment in CAPS at various levels is critical if both residents and police officers are expected to utilize new information in a constructive and mutually beneficial manner. For example, victims or witnesses’ e-mail addresses could be collected on the various automated reports to facilitate follow-up communication and create a future database for management to assess public satisfaction with police services.

The lessons learned from this field test provided the foundation for a larger Internet experiment in Chicago. Called the “Chicago Internet Project,” the National Institute of Justice has funded a randomized trial in 60 Chicago Police Department beats beginning in 2005. CAPS civilian participants, police officers and random samples of residents in the beat will take part in this multi-faceted demonstration and evaluation project.

### **Criminal Justice Data Sharing and Integration: The Emergence of I-CLEAR**

The most future-looking component of CLEAR involves data sharing and data integration with other criminal justice agencies. After developing a large data warehouse in 2001 under CLEAR, the Chicago Police Department invited law enforcement agencies in Cook County to have access to the system in 2002. As its first endeavor in criminal justice information sharing, the CPD offered access to the system through the CPD extranet, free of charge, along with training and an easy login procedure. Adoption and usage spread quickly in Cook County in 2003, and access was soon being offered in the border counties and to federal agencies. Currently, participating law enforcement agencies can tap into the CPD extranet to get online reports, investigative information and streaming video training.

CLEAR's value to civic leaders, as well as the law enforcement community, was quickly noticed. In early 2004, the Illinois governor and Chicago mayor announced their commitment to building a single criminal justice database for the state and all of its criminal justice agencies. The new system is called I-CLEAR, with the "I" designating that it will serve all of Illinois. I-CLEAR represents an unprecedented partnership between the Illinois State Police and the Chicago Police Department with the capacity for expansion to other agencies. Progress in data sharing and data integration has been steady, but not without obstacles and challenges for all parties involved in the I-CLEAR venture. A few of these challenges are summarized here.

**Governance.** A continuing issue in the interagency partnership emerging around data warehouse access is governance. To get the process underway, the Chicago Police Department moved ahead on its own, simply opening access to other agencies who could sign on without any out-of-pocket costs. One drawback, however, is that participants had to accept the system "as is," without modification. Other actors in the criminal justice system are now pressing for input and oversight of this information-sharing process by some formal governing body. Some actually have resources to contribute, and many want a say in the system's evolution.

**Cost.** The cost of access to the system was, undoubtedly, an important factor in the adoption decision, for "free" is an attractive price point. Our survey of system users presented a checklist of reasons that they might have considered when deciding to get involved, and cost was cited as the number one reason. Whether participation in the system can continue to be free of charge to non-CPD users once it becomes part of the routine operation of Illinois' criminal justice system remains an open question.

**Security.** Another important issue is security. The system is configured to identify individual users, but what they search for and what is done with the findings is only under the control of their home agency. In the survey, only a small percentage of the police chiefs expressed concern about the potential misuse of the system, and these concerns focused on the unauthorized release or private use of information available through the data warehouse. Generally, the security issue was seen as a management and training issue, rather than a fundamental problem with I-CLEAR. However, as the number of individuals with access to electronic case information increases, the opportunities for security breaches also multiply. Hence, security concerns should be a top priority in the future.

**Development and Implementation Challenges.** The research team is in the midst of conducting a process evaluation of the development of I-Case, a statewide shared case reporting system. We are documenting the application development process and the eventual application implementation. Future research is needed to monitor this application as it is introduced into the field, to assess the extent and quality of implementation, and to measure its impact on participating criminal justice agencies in Illinois.

The process evaluation findings to date suggest that members of the Application Development team – CPD, ISP and Oracle workers alike – are capable, cooperative and open-minded. The group appears to share a belief in the product. Team members possess skills and a knowledge base that are extensive, complementary and well-suited to the tasks at hand. The Oracle members have demonstrated a remarkable knowledge of CPD policies and procedures and are now showing the same grasp of the ISP environment. We observed meetings where team members arduously grappled with potential policy and procedural conflicts between the two vastly different organizations. Nonetheless, the disagreements were not personal in nature, and participants continue to make use of a problem resolution process that has worked to date.

Continued funding is essential to keep I-CLEAR moving ahead. As noted previously, while not all of the potential funding sources have been realized, several sizable grants have been awarded, and there is great optimism about future funding. This being said, recent funding delays will be one of the primary culprits if I-Case is unable to meet its current launch date.

Finally, we originally observed a disconnect between the high-level I-Case decision-makers and the working groups in terms of setting realistic timelines for product development and implementation. This likely is due, in part, to the fact that the early deployment date was publicly announced by state and city leaders who have limited knowledge of the complexity of developing and implementing such a system. Under the present CPD administration, timelines appear to be more realistic. The law enforcement community has learned from past experience that launching an unreliable product on an arbitrary date is far worse than introducing a well-crafted product at a later date. The challenge for the working groups is to develop a solid product amid pressures to produce whatever it can to meet the financial and political constraints in their environment.

### **Knowledge Transfer: Application to other Cities**

The question of whether the CLEAR will be useful to other communities has, to some extent, already been answered. The current sharing of the data warehouse with hundreds of jurisdictions in Northern Illinois demonstrates the utility of this model for law enforcement. The future of I-CLEAR looks promising in Illinois, although the road to full integration will be rife with obstacles ranging from incompatible systems to governance. In any event, criminal justice integration is one of the top issues on the agendas of governors and big city mayors across the nation, so many eyes will be watching to see what happens in Illinois.

Whether the CLEAR system will be useful to other law enforcement agencies outside of Illinois will depend on a host of factors. The most fundamental issue is cost. Historically, information systems have been more costly than originally expected in both the private and public sectors, and CLEAR is no exception. Emergent problems with bandwidth, equipment and ergonomics have been addressed, but the solutions come with a hefty price tag. Some of these costs

have been absorbed by the developers, but others would likely be incurred by new users, depending on the extent to which a jurisdiction's information infrastructure can accommodate a new system. In the final analysis, each jurisdiction will need to conduct its own cost-benefit analysis.

This report has documented some of the problems encountered, lessons learned and benefits accrued when an agency invests in an entirely new information system. It suggests that the benefits can be substantial for larger jurisdictions that are interested in more efficient deployment of personnel for targeted crime reduction, more efficient case processing of suspects, better unit accountability, and enhanced crime solvability. Also, the benefits of creating a NIBRS-compliant database are numerous and yet to be realized for larger law enforcement agencies. But whether the many potential gains of such a system will outweigh the considerable investment of time and resources must be determined on a case-by-case basis. We suspect that some agencies would benefit greatly while others would see only marginal gains, depending on the capacity of their present information system and whether the organizational culture encourages data-guided decision-making.

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