
From: Tillery, George
Sent: Monday, June 20, 2011 3:38 PM
To: McCreary, James Patrick
Subject: RE: Denise O'Donnell and LPRs

Let me do a quick check.

From: McCreary, James Patrick
Sent: Monday, June 20, 2011 3:35 PM
To: Tillery, George
Subject: Denise O'Donnell and LPRs

Chris,

I know that you've got your conference going on so don't kill yourself responding right away. However, Denise has now mentioned to me a couple of times her concern about LPRs and lack of model policy and guidance for law enforcement. She also stated that NYPD ultimately drafted its own LPR policy to help address the wide use of LPRs by the larger New York City metropolitan area.

Unless I'm missing something on the IACP Web site, it appears there still remains the need to develop guidance, checklists, and model policy to help agencies navigate the LPR waters. She'd no doubt be really pleased if you have above in the works.

Good luck at the conference!

Patrick

From: Mcleod, Suzette
Sent: Monday, June 20, 2011 10:57 AM
To: McCreary, James Patrick
Subject: LPRs

Good morning Pat. Before the week gets too crazy I wanted to follow-up on our Friday conversation about License Plate Readers (LPRs). There are a number of activities OJP/DOJ has pursued to support LPR technology; specifically in NIJ and COPS. This work was focused on filling perceived voids in evaluating the effectiveness and usefulness of LPR data through evidenced-based evaluation and also exploring privacy and secondary LPR data use – the deliverables from which are listed below.

I am not certain whether LPR technology employs (or needs to employ) national technology standards that will help ensure data collected, retained, and shared by LPR devices and networks is interoperable with other LPR networks or data systems separately deployed. Again, I am not sure that is a concern---- I will conduct further investigation to see where those things stand.

- The George Mason University conducted a study for NIJ and SPAWAR. A short brief about the study can be located at <http://gemini.gmu.edu/cebcp/OnePageBriefs/LumetalLPR.pdf>. Additional deliverables included a final report entitled; "License Plate Recognition Technology: Impact Evaluation and Community Assessment" as well as a still available and maintained LPR web portal available at

<http://gemini.gmu.edu/cebcp/LPR/index.html>. Cynthia Lum was a key member of the GMU team and Matt Snyder who is now at SPAWAR.

- The IACP issued a Privacy Impact Assessment Report for the Utilization of License Plate Readers in September of 2009. The PIA provides insights into underlying privacy concerns, data collection and retention, information quality, information dissemination, and secondary usage considerations. The IACP also offers an LPR Model Policy as well as an free Training Seminars with help from OJP and COPs.
 - The PIA Report can be found at
<http://www.theiacp.org/PublicationsGuides/ResearchCenter/Publications/tabid/299/Default.aspx?id=1202&v=1>

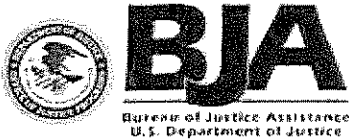
Some Additional/Recently Produced Resources:

NIJ 2010 Panel Discussion <http://nij.ncjrs.gov/multimedia/transcripts/trans-audio-nijconf2010-license-plate-readers.htm>
SPAWAR & NIJ Webinar http://www.justnet.org/Pages/SPAWAR_Webinar_Nov-1-2010.aspx

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From: Tillery, George
Sent: Friday, January 14, 2011 2:02 PM
To: Stoe, Debra; Scott, Frances
Cc: Ford, William; Hart, Davis
Subject: Questions on Digital and LPR Standards

I'm working my way through the program plans in preparation for March and figured I start with the most complex first, standards.

Frances has \$1.5M in here program plan for FY11 for continued development of the In-car, Interview Room, and LPR standards.

Debra has \$150K.

The IACP's year one proposal was for just under \$400K. Why do they need \$1.5M for Year 2? Are we doing test method development? If we are doing test method development, that sounds like a mission for the COE...once we get the COE un encumbered.

Thoughts?

Chris

From: Tillery, George
Sent: Thursday, October 01, 2009 10:26 AM
To: Burch, Jim
Cc: Rose, Kristina
Subject: RE: LPRs

The short answer is yes, there does appear to be work underway in sharing license plate reader data across jurisdictions.

Looks like there is an Illinois Recovery Act project that proposes to implement such a scheme.

One of the applications for the predictive policing planning grant solicitation had proposed that. That application was not funded because of its limited scope.

I know ARJIS submitted an application looking at that. Would have to dig to see if we funded it.

That being the short answer, what do you need for a detailed answer?

Chris

From: Burch, Jim
Sent: Thursday, October 01, 2009 10:13 AM
To: Tillery, George
Cc: Rose, Kristina
Subject: LPRs

Chris -

Can you advise if there is any consideration underway here or in the field regarding broader use of LPRs and specifically the sharing of LPR data across jurisdictions?

Thanks.

Jim

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Department of Justice
Office of Justice Programs
National Institute of Justice

Grant

PAGE 1 OF 6

1. RECIPIENT NAME AND ADDRESS (including Zip Code) Police Executive Research Forum 1120 Connecticut Avenue, N.W. Suite 930 Washington, DC 20036		4. AWARD NUMBER: 2007-II-CN-0023	
		5. PROJECT PERIOD: FROM 10/01/2007 TO 01/31/2010 BUDGET PERIOD: FROM 10/01/2007 TO 01/31/2010	
		6. AWARD DATE 09/14/2007	7. ACTION
1A. GRANTEE IRS/VENDOR NO 521101422		8. SUPPLEMENT NUMBER 00	Initial
		9. PREVIOUS AWARD AMOUNT	\$ 0
3. PROJECT TITLE A Randomized Experiment of License Plate Recognition Technology in Mesa, AZ		10. AMOUNT OF THIS AWARD	\$ 474,765
		11. TOTAL AWARD	\$ 474,765
12. SPECIAL CONDITIONS THE ABOVE GRANT PROJECT IS APPROVED SUBJECT TO SUCH CONDITIONS OR LIMITATIONS AS ARE SET FORTH ON THE ATTACHED PAGE(S).			
13. STATUTORY AUTHORITY FOR GRANT This project is supported under FY07(NIJ - ORE General) 42 USC 3721-3723			
15. METHOD OF PAYMENT PAPRS			
AGENCY APPROVAL		GRANTEE ACCEPTANCE	
16. TYPED NAME AND TITLE OF APPROVING OFFICIAL David Hagg Acting Principal Deputy Director		18. TYPED NAME AND TITLE OF AUTHORIZED GRANTEE OFFICIAL Bruce Taylor Director of Research	
17. SIGNATURE OF APPROVING OFFICIAL <i>David Hagg</i>		19. SIGNATURE OF AUTHORIZED RECIPIENT OFFICIAL	19A. DATE
AGENCY USE ONLY			
20. ACCOUNTING CLASSIFICATION CODES FISCAL FUND BUD. DIV YEAR CODE ACT. OFC. REG. SUB. POMS AMOUNT X C 75 60 00 00 00 474765		21. 7507S00122	

OJP FORM 4000/2 (REV. 5-87) PREVIOUS EDITIONS ARE OBSOLETE.

OJP FORM 4000/2 (REV. 4-88)

Abstract

Although it is an all too common and serious offense, auto theft has not received much attention by the research community. This is somewhat surprising given its vast prevalence. The police need new approaches to address auto theft, for while most vehicles are recovered by police, very few results in an arrest. One recent innovation which could help address this problem is License Plate Recognition (LPR) technology. PERF's proposed 27-month study will advance the field through a large scale randomized experiment in Mesa, AZ, grounded in a hot spot policing framework and the "journey-after-crime" literature, and fill a gap in our understanding of the effectiveness of LPR technology. Using a combination of quantitative and qualitative research methods, we will conduct our action research project (of close collaboration between researchers and practitioners) in four stages: baseline data collection on the location of all the hot spots, transit routes, and destination points for auto theft activity in Mesa; subsequent development of a placement and patrol pattern strategy for using the LPR technology; implementation of an experimental design; and collection of post-intervention measures, analysis and reporting. After identifying 128 hotspot transit routes, we will randomly assign half to receive an LPR enhanced patrol strategy and the other half to a control condition. In total we will have 512 unique observation windows (each lasting 4 months). For our Hierarchical Linear Model (HLM) analyses we will have 128 unique places to examine the effects of LPRs being introduced then withdrawn over four successive four month periods. Each of the 128 places would be used for a seven day period, four times over a 64 week period (with 16 week replenishing gaps).

We will collect five types of data for this project: Mesa Police Department (MPD) data, MPD auto theft database records and GIS information, insurance data, prosecutor/court data, and qualitative interviews with MPD personnel. Using a longitudinal design, we will collect data before the intervention, each day of the 7-day intervention period, and one month and four months after each intervention. In addition to traditional research products, PERF will develop a set of policy-focused documents that addresses the need among police departments for practical information that is useful for guiding the implementation of more effective strategies.

PROPOSAL

A Randomized Experiment of License Plate Recognition Technology in Mesa, Arizona

January 29, 2007



A PROPOSAL SUBMITTED TO
THE NATIONAL INSTITUTE OF JUSTICE

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A Randomized Experiment of License Plate Recognition Technology in Mesa, AZ

i. Purpose, goals, and objectives:

The Police Executive Research Forum (PERF) proposes to conduct a randomized experimental evaluation of the Mesa Police Department (MPD) License Plate Recognition (LPR) program. Using an "action research" model of close collaboration between researchers and practitioners, we will produce a set of findings to help police target their resources and improve their tactics in combating auto theft. The purpose of this 27-month study is to provide high-quality scientific evidence concerning the effectiveness of using LPR technology during regular patrol activities in auto theft "hot spot" transit routes compared to regular patrol without the use of LPR technology in comparable transit routes. Our long-term goal is to help increase the capacity of law enforcement to combat auto theft. We will do this by increasing knowledge about the efficacy of LPR technology by employing rigorous evaluation methods. Our objectives are:

1. To produce useful practical information to guide the use of LPR technology by law enforcement.

In order to provide policy guidance to police on combating auto theft, the current dearth of research data on promising technology tools, such as LPR systems, needs to be addressed. Our primary hypothesis is that the use of LPR technology increases the number of stolen vehicles, both occupied and unoccupied, which are recovered by the police in randomly assigned auto theft hot spots. We will assess through geo-coded police data if displacement/ diffusion emerges in nearby areas. Our second hypothesis, assuming that LPR use increases the number of stolen vehicles recovered, is that the number of auto theft suspects arrested and successfully prosecuted should increase. This would be an important accomplishment, for clearance rates for auto theft are very low throughout the US. Our third hypothesis is that LPR use will reduce the time between when an auto theft is reported and when the vehicle is recovered. Our fourth hypothesis is that a reduced stolen-to-recovery time will reduce the damage to a recovered car and its costs to victims.

2. To produce useful policy-related information to more generally assist law enforcement.

It is because of the great diversity of auto theft hot spots and policing in the United States that we believe an

intensive approach with detailed data on a single small geographic area is necessary. The use of a single site will help control for such diversity. However, there are certain human interactions occurring in all auto theft hot spots, and a number of general lessons will emerge from this project that can help inform policy makers in a large number of communities. Our study will also act as a template for communities outside Mesa, AZ and provide them with the important questions and approaches they should be exploring.

Strengths of our study: Our multidisciplinary team is uniquely qualified to conduct a rigorous evaluation of LPR devices. PERF staff members have extensive experience and national recognition in criminal justice, policing research and management, and experimental design and analysis. Our consulting partners at Texas State University and TSS are highly skilled in handling the specialized nature of our data (including analyzing geographical data and data that is hierarchical/nested). PERF has secured the necessary support from the MPD – an agency with which PERF has a preexisting strong professional relationship built on previous project work. This experience with the MPD is an asset, for this project requires close collaboration between the researchers and police staff. This study will advance the field by building on the hot spot policing and the “journey-after-crime” literature. We will study a relatively new technology that anecdotally appears to be producing very promising results, but has yet to be subjected to intensive experimental evaluation. To enhance interpretability, we will focus our research in a single city with a very serious auto theft problem (providing an ample number of cases/statistical power for our analyses), and use multiple outcome measures (almost all of which will be available for our entire sample).

ii. Literature review

Problem of auto theft: Although it is an all too common and serious offense, auto theft has not received much attention by the research community (Walsh and Taylor, 2007; Maxfield, 2004; Clarke and Harris, 1992; Rice and Smith, 2002; Herzog, 2002). This is somewhat surprising given its vast prevalence throughout the country. Nationwide in 2005, there were an estimated 1.2 million motor vehicle thefts (FBI,

2007). According to the FBI's Uniform Crime Reports (UCR), property loss as a result of motor vehicle theft totaled \$7.6 billion for 2005 (FBI, 2007), accounting for 11% of Part I offenses recorded by the FBI (Lamm Weisel, et al., 2006). The volume of vehicle theft rose from the mid-1980s to the early 1990s and then began to decline (Newman, 2004). While the data indicate a downward trend in vehicle theft since the 1990s, this is largely the result of a number of enhancements to vehicle security at the manufacturer level (Newman, 2004). However, motor vehicle theft remains a significant problem for the police across the U.S. Although nearly 67% of vehicles are recovered, most thefts do not result in an arrest (FBI, 2007). The arrest rate for auto theft nationwide was only about 13% in 2005 (FBI, 2007). One recent innovation which could serve as a useful tool for law enforcement in combating this serious problem is LPR technology.

License Plate Recognition (LPR) technology: LPR is a relatively new technology in the U.S. but has been used for many years in Europe to prevent crimes from auto theft to terrorism (Gordon, 2006). LPR is based on optical character-recognition technology originally developed in Italy for sorting letters and parcels and later extended to reading license plates. LPRs serve as a mass surveillance system for reading license plates on vehicles using a system of algorithms, optical character recognition, cameras, and databases. Through high-speed camera systems mounted to police cars, LPR systems scan license plates in real time, and compare them against a database of stolen vehicles, and alert police personnel to any matches. Under "Description of Intervention," we provide a detailed description of LPR technology.

The country with the greatest amount of experience with LPR technology is the UK, having used LPRs to aid in responding to attacks by the IRA in the 1990s (Manson, 2006). In fact, the Home Office has made £32.5 million available to British police for the years 2005-07 for the use of LPR (see <http://police.homeoffice.gov.uk>). One of the first UK agencies to use LPR was Northamptonshire. In the first year of using LPR, officers stopped 3,591 vehicles which yielded 601 arrests, and produced £500,000 in revenue from untaxed vehicles (Innovation Group, 2005). Also, a 17-percent reduction in vehicle-related crime was recorded in the first six months. In another UK pilot, officers used LPR to recover £2.75 million

in stolen vehicles/goods, seize £100,000 worth of drugs, and achieve an arrest rate more than 10 times the national UK average (PA Consulting Group, 2004).

Currently in the U.S., LPR systems are being utilized at toll booths, in parking areas/structures, in traffic studies, and for building security. In 2004, the Ohio Highway Patrol attached LPR devices to toll plazas (Patch, 2005), and after four months recovered 24 stolen vehicles and made 23 arrests. When compared to the same time period in 2003, this represented a 50-percent increase in stolen vehicle recoveries with a combined total of \$221,000 in recovered property. In a pilot test of LPR software conducted by the Washington Area Vehicle Enforcement Unit, that agency recovered 8 cars, found 12 stolen plates, and made 3 arrests in a single shift (McFadden, 2004). Based on the NIJ solicitation, a small number of other agencies have recently implemented the technology in single police vehicles, with the Sacramento Police Department having nearly 3 years of experience with LPRs, and the Los Angeles Police having equipped 36 vehicles with LPRs.

Although LPR systems have documented benefits, there are also limitations. First, inaccuracies may arise due to plates that are bent, are covered with certain reflective material, are positioned high (as on certain trucks), are very old, or are obscured by common obstructions such as trailer hitches, mud and snow, and vanity plate covers (see McFadden, 2005). Some states have addressed these issues by making certain obstructions of license plates illegal. Next, one reason why the LPR system was successful in the UK is the uniformity of the UK license plate design. Plate designs in the U.S. vary by state and even within states. Databases that are not up-to-date could result in the system providing false "hits." Also, there may be some concerns about invasion of privacy issues, potential abuse, and erroneous traffic stops. However, an important advantage to this technology is that it does not raise concerns about racial or ethnic discrimination. As opposed to some profiling approaches, plates are examined for all passing vehicles, and the system only alerts the officer if the vehicle is stolen.

There have been only a small number of pilot evaluations of LPR programs (and none with rigorous experimental methods), and the situation with evaluations of other auto theft prevention programs is not much better. While they are greater in number (see Barclay et al., 1995; Burrows and Heal, 1980; Decker and Bynum, 2003; Poyner, 1991; Maxfield, 2004; Mayhew, Clarke and Hough, 1980; Plouffe; Research Bureau Limited, 1977; Riley, 1980; and Sampson, 2004), none of these auto related evaluations applied randomized experimental designs or rigorous quasi-experimental methods in their evaluations. However, in the more general area of hot spot policing an impressive body of rigorous research has emerged. Given the focus of our evaluation on hot spot transit routes, which are used as thoroughfares to move stolen vehicles, we will build upon the hot spot policing literature and a new emerging area known as "journey-after-crime" analyses for our proposed study.

Hot Spots Policing and placement of LPRs: In the Minneapolis Hot Spots Experiment (Sherman and Weisburd, 1995) the concept of hot spots was first formally tested. Drawing upon empirical evidence that crime was clustered in discrete hot spots (Pierce et al., 1988; Sherman et al., 1989), Sherman and Weisburd found that preventive patrol was more effective when it was more tightly focused. More recently, Braga (2001, 2005) presents evidence from five randomized controlled experiments and four quasi-experimental designs that hot spots policing programs generate crime control gains without significantly displacing crime to other locations. These crime prevention effects were reported at general crime hot spots (Sherman and Weisburd, 1995), high-activity violent crime places (Braga et al., 1999), gun violence hot spots (Sherman and Rogan, 1995), and drug markets (Weisburd and Green, 1995). While none of these above studies were focused on reducing auto theft, the same logic that led to successful outcomes for these hot spot interventions should apply to our experimental evaluation of LPRs in Mesa.

In considering the placement of LPRs in our study, we will build on the existing literature on the geographic concentration of auto thefts (see Barclay et al., 1995; Copes, 1999; Fleming et al., 1995; Henry and Bryan, 2000; Plouffe and Sampson, 2004; Potchak, McCloin and Zgoba, 2002; Rengert, 1996; Rice

and Smith, 2002). Spatial analyses of crime have generally examined two different but related aspects: (1) the spatial patterns of the offense locations (e.g., Craglia, Haining, and Wiles 2000; Levine and Associates 2000); and (2) the spatial patterns of the paths related to crime activities (also known as the "journey-to-crime") (e.g., Smith 1976; Phillips 1980; Costanzo, Halperin, and Gale 1986; Wiles and Costello 2000). Within the journey-to-auto theft literature, researchers have reported that most auto thieves travel relatively short distances to steal vehicles (Levine and Associates 2000). Moreover, certain locations receive more auto thefts than do other locations (e.g., Kennedy 1980; White 1990), due to environmental characteristics that are very attractive to auto thieves. For example, in a study in Chula Vista, CA, the researchers (Plouffe and Sampson, 2004) identified 10 hot spots that accounted for 23% of the city's vehicle thefts in 2001. Rice and Smith (2002) found that vehicle theft was higher in areas close to pools of motivated offenders, where social control mechanisms were lacking, and where there were suitable targets such as bars, gas stations, motels, and other businesses. A number of studies have identified non-residential locations as hot spots for vehicle theft, including: parking lots close to interstate highways (Plouffe and Sampson, 2004), high-traffic areas (Rice and Smith, 2002), areas near schools (Kennedy, Poulson and Hodgson, n.d.), mall parking lots (Henry and Bryan, 2000), and entertainment venues (Rengert, 1996).

Of direct relevance to our proposed project is a newer area of research in the criminal travel patterns literature, pioneered by Professor Yongmei Lu (one of our project consultants), that examines the spatial patterns of stolen-vehicle recoveries and the "journey-after crime." The journey-after-crime is an offender's trip with the stolen vehicle in order to realize its expected utility, such as a trip to sell or strip the vehicle, a trip to another offense (e.g., a robbery), or a joy-ride (Lu, 2003). Dr. Lu demonstrated how GIS and Exploratory Spatial Data Analysis can be extended from journey-to-crime to journey-after-crime analyses in a study of 3,271 vehicle theft offenses in 1998 in Buffalo (see Lu, 2003). First, Lu (2003) drew theoretical support for her approach from Rational Choice Theory (Clarke, 1983; Cornish, 1993) and Routine Activity Theory (Cohen and Felson, 1979). Also, Lu (2003) built on the work of one of the only

other published studies of spatial patterns of stolen-vehicle recoveries, completed by LaVigne, Fleury, and Szakas (2000), in which the researchers designed search strategies to track stolen vehicles taken to “chop shops.” LaVigne et al. (2004) found that the location a car was stolen and the location where it was recovered was valuable in determining two important spatial components: the distance and direction after an auto theft. In Lu’s analyses (2003) she found that auto thieves’ trips from vehicle-theft locations to vehicle-recovery locations were mostly local in nature, with travel distances significantly shorter than randomly simulated trips, and she recommended that police responding to auto theft should check nearby locations first. Dr. Lu found that the difference in travel direction between observed and simulated trips was a combined result of both the criminals’ spatial perception and the city’s geography (e.g., street networks).

Also relevant for considering the placement of LPRs is exploring the distribution of the types of motor vehicle theft occurring in our study area. The type of thefts occurring in Mesa will help explain our journey-after-crime analyses. For example, if joyriding turns out to be among the most common types of vehicle theft in Mesa, as in many cities, we might see particular patterns in our journey-after-crime analyses, for joyriding is associated with higher and more rapid recovery rates (Clarke and Harris, 1992). However, one study found the most common type of auto theft in Arizona (as a whole) was for sport utility vehicles and pickup trucks for use in smuggling operations across the Mexican border. (ACJC, 2004).

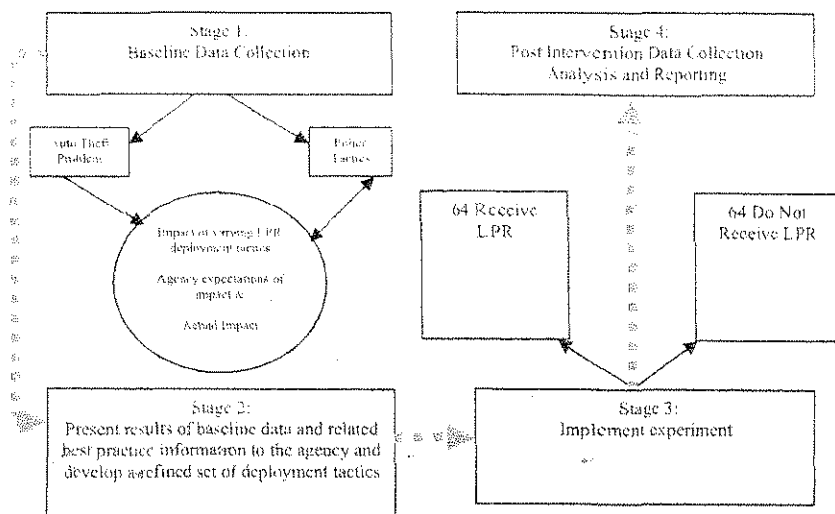
This research proposal will advance the field through a large-scale randomized experiment in Mesa, AZ, grounded in a hot spot policing framework and the “journey-after-crime” literature, to study an understudied area of the effects of LPR devices. The participation of the MPD is important, for they are contending with a serious auto theft problem and are committed to using the LPR device to address it. PERF has an established history of collaborating with the MPD, which has pledged the highest level of support (see letter from the Chief of the Mesa PD in Appendix E) to assess this important technology.

iii. Research design and methods

1. Design Overview:

Using a combination of quantitative and qualitative research methods, we will conduct our action research project in four stages (see Exhibit 1 for a visual depiction of our movement through the stages).

Exhibit 1. Four Stages of Evaluation



In Stage 1 we will collect baseline data on the location of all the hot spots for auto theft activity and transit routes in Mesa, AZ and will geocode these places. Based on discussions with the MPD detectives and crime analysts, we anticipate that there will be well over 150 hot spot transit routes in the city of Mesa. Our goal, based on a power analysis, will be to detect 128 such hot spot transit routes using "journey-after-crime" spatial analyses (see analysis section) and verifying our quantitative work with the experiences of MPD auto theft detectives and patrol officers. We will then collect existing police data on these 128 places focusing on: (1) the nature of the auto theft problem, (2) police tactics used to combat the problem, (3) the police department's expectations on the impact of these tactics, and (4) the actual impact on the problem.

In Stage 2, we will present the results of our baseline data to the MPD and work with them to develop a placement and patrol pattern strategy for the LPRs and a response plan to catch stolen vehicles once there is an LPR "hit." In addition to highlighting promising approaches from our baseline data, we also

will present the results of our literature review and a set of "best practices" used in other jurisdictions. In Stage 3, we will implement our experimental design. That is, half of the 128 places (64 hot spot transit routes) studied in Stage 1 will be randomly assigned to receive the LPR enhanced patrol strategy, and the other half would be assigned to the control condition. In Stage 4, we will collect our post-test measures of the effects of the LPR technology, conduct data analysis, and report our results.

2. Research Site: We will conduct this study in the city of Mesa, Arizona with the Mesa Police Department (MPD). Spanning 125 square miles, Mesa is located in Maricopa County and is part of the Phoenix-Mesa-Scottsdale Metropolitan Area. Founded in 1878, Mesa is the third-largest city in Arizona, after Phoenix and Tucson. Mesa is one of the United States' fastest-growing cities, and currently ranks as the 41st-largest. In 2005 the mid-decade U.S. Census survey estimated the city's population to be 442,780. Though a suburban city, Mesa actually has a larger population than many better-known cities. Despite its large population, Mesa has a decidedly bedroom-community, sprawl-like character. Like many large cities, Mesa has a considerable auto theft problem. First, the state of Arizona as a whole is currently ranked fourth in the nation in actual number of vehicles stolen. There are a number of reasons that contribute to the vehicle theft problem in Mesa and the state of Arizona as a whole (Arizona Automobile Theft Authority, 2006). First, Mesa and other cities in Arizona have experienced a dramatic population increase over the past 20 to 25 years (Arizona Automobile Theft Authority, 2006), with transiency arising from the many multi-family housing units found in Mesa. In these types of residential areas, vehicles are at greater risk to be stolen. Due to the dry, moderate climate in Arizona, vehicles also tend to maintain higher value than in other areas of the U.S. Also, the close proximity with Mexico allows thieves to get easy access to a foreign shipping point. There are seven official ports-of-entry along the 354-mile Arizona-Mexico border, and major California seaports are less than eight hours away.

The number of auto thefts in Mesa since 1999 has gone up fairly dramatically (see Chart in Appendix G). In 1999 there were 2,851 auto thefts, which increased for three successive years until

reaching a high of 5,089 in 2002 and dropping to 4,563 in 2003 and 3,745 in 2004 and increasing again in 2005 to 4,248. With close to 100 auto thefts per week in Mesa, there will be a large pool of cases on which the LPR can have a potential impact, making Mesa an attractive site from a research perspective. Also, like many police departments, MPD is able to arrest only a small percentage of the auto thieves. In 2000, MPD arrested 186 individuals for vehicle theft, 194 in 2001, 245 in 2002, 360 in 2003, 278 in 2004, and 253 in 2005. The selection of a large urban area is important, for vehicle theft is predominately an urban problem (see Clarke and Harris, 1992). The 2003 National Crime Victimization Survey suggests that households in urban areas have rates of vehicle theft that are more than three times the rate of rural areas (BJS, 2004).

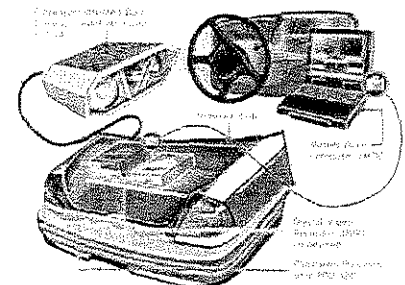
Additionally, the MPD has an extensive history of working with outside organizations on research projects to identify effective crime reduction strategies. PERF, at the time of this submission, is completing a comprehensive management review of the department. The MPD has expressed a strong interest in serving as a site for this study and has agreed to the use of random assignment (see letter of support). With over 800 sworn officers, this agency possesses the resources that will allow us to undertake a large-scale study targeting the problem of auto theft, a persistent problem for most law enforcement agencies.

3. Description of Intervention/Treatment: Based on discussion with MPD, the lag time it takes before a vehicle is reported to the police as stolen and entered into the MPD database precludes our team from using the LPR device in the specific hot spot zones where vehicles are actually typically stolen. Instead, we will use "journey-after-crime" spatial analyses to identify all the transit routes in Mesa where auto thieves typically drive stolen vehicles (including dumping/destination points). Next, half of these transit routes/destination points will be randomly assigned to receive LPR enhanced patrol and the other half to a control condition which will receive only routine/regular patrol deployment without any LPR enhancements. Our objective is to assess the effectiveness of LPR technology— not intensive patrol versus non-intensive patrol. To assure a fair comparison, the "control" area officers will be told to enter license plate numbers into their computers manually and look for stolen cars in their designated area at similar intensity levels as

the "treatment" area officers. Our team has the experience to work carefully with the MPD to assure that the only difference between the groups will be the use of LPR. That is, manually, an officer might check a hundred plates per day, but the LPR will do the job automatically and scan thousands per day.

There are a number of LPR devices on the market. The MPD has been working with the Remington Elsas Mobile License Plate System (Model: MPH-900S) and has had very good experiences with the product and related support services. MPD expects to buy one more LPR device over the next few months. Our study design calls for four LPRs for use across all shifts (24/7), and we have budgeted for the purchase of two Remington Elsas Mobile License Plate Systems (REMLPS).

The REMLPS operates independently of the officer on board (in the background) and works at patrol and highway speeds, with the capability to handle oncoming differential speeds in excess of 120MPH and passing speeds in excess of 75MPH. Two infrared cameras mounted on a cruiser take photos of passing license plates. The cameras are triggered by the reflective material in the plate. A laptop computer (see above) uses character-recognition software to determine the letters and numbers of the license plate. That plate is then checked against a daily "hot list" of stolen vehicles and stolen license plates for the state of Arizona. An alarm sounds for each possible match. The officer then verifies the accuracy by looking at the tag before taking any action. The REMLPS is able to read up to 4 lanes of traffic with a single vehicle and can read 8,000 to 10,000 plates in just one shift with just a single vehicle mount. The REMLPS has built-in capability to communicate with a police operations center for alarm notification and throughout the day for database update. The REMLPS also has a GPS/time stamping function which records the GPS coordinates and time for every plate it reads.



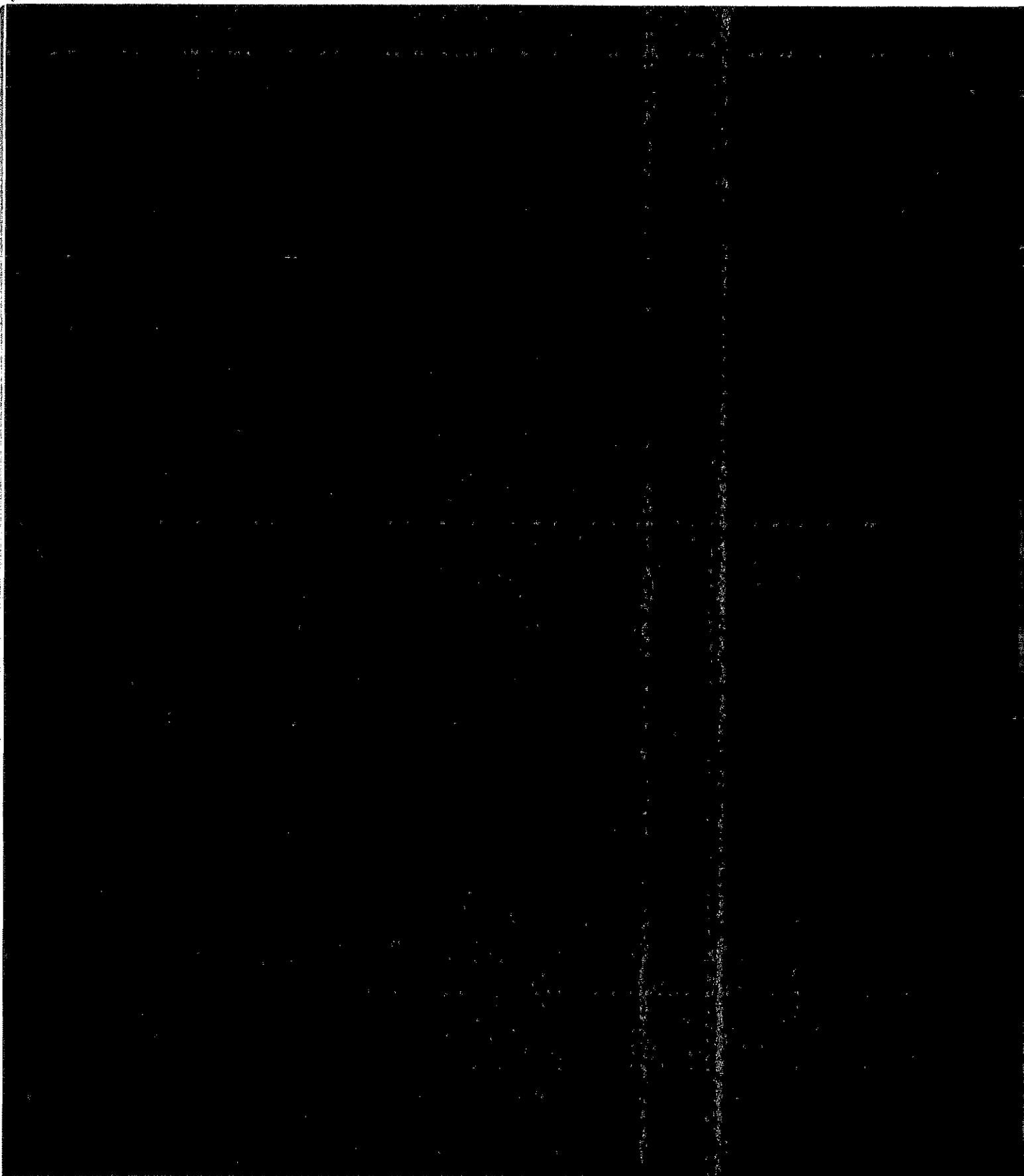
4. **Experimental Design:** We propose to use an experimental design with random assignment to either an LPR enhanced condition or to a regular patrol condition (the control group). After identifying 128 hot spot transit routes (see above), we will randomly assign half (n=64) to receive an LPR enhanced patrol strategy

and the other half (n=64) to a control condition. In total we will have 512 unique observation windows of 4 months for the study, with the LPR treatment occurring in 256 places and no LPR occurring in 256 control places. For our Hierarchical linear models (HLM) we will have 128 unique places to examine what happens when treatment is introduced and then withdrawn over four successive four-month periods. Each of the 128 places will be used for seven days four times over a 64-week period (one year and three months) with 16-week replenishing gaps (see Appendix H for a table outlining this process) in between (when no LPR technology will be applied and the pool of stolen vehicles can be potentially reestablished). The unit of assignment and unit of analysis (for most models) will be hot spot transit routes. Before implementation of the LPR intervention, hot spot transit routes will be assigned to conditions according to computer generated random numbers (see Shadish, et al., 2002). Procedures will be put in place to monitor the integrity of the assignment process (and monitor for expectancy, novelty, disruption, and local history) and to measure and statistically control for any contamination (especially for hot spots contiguous with each other).

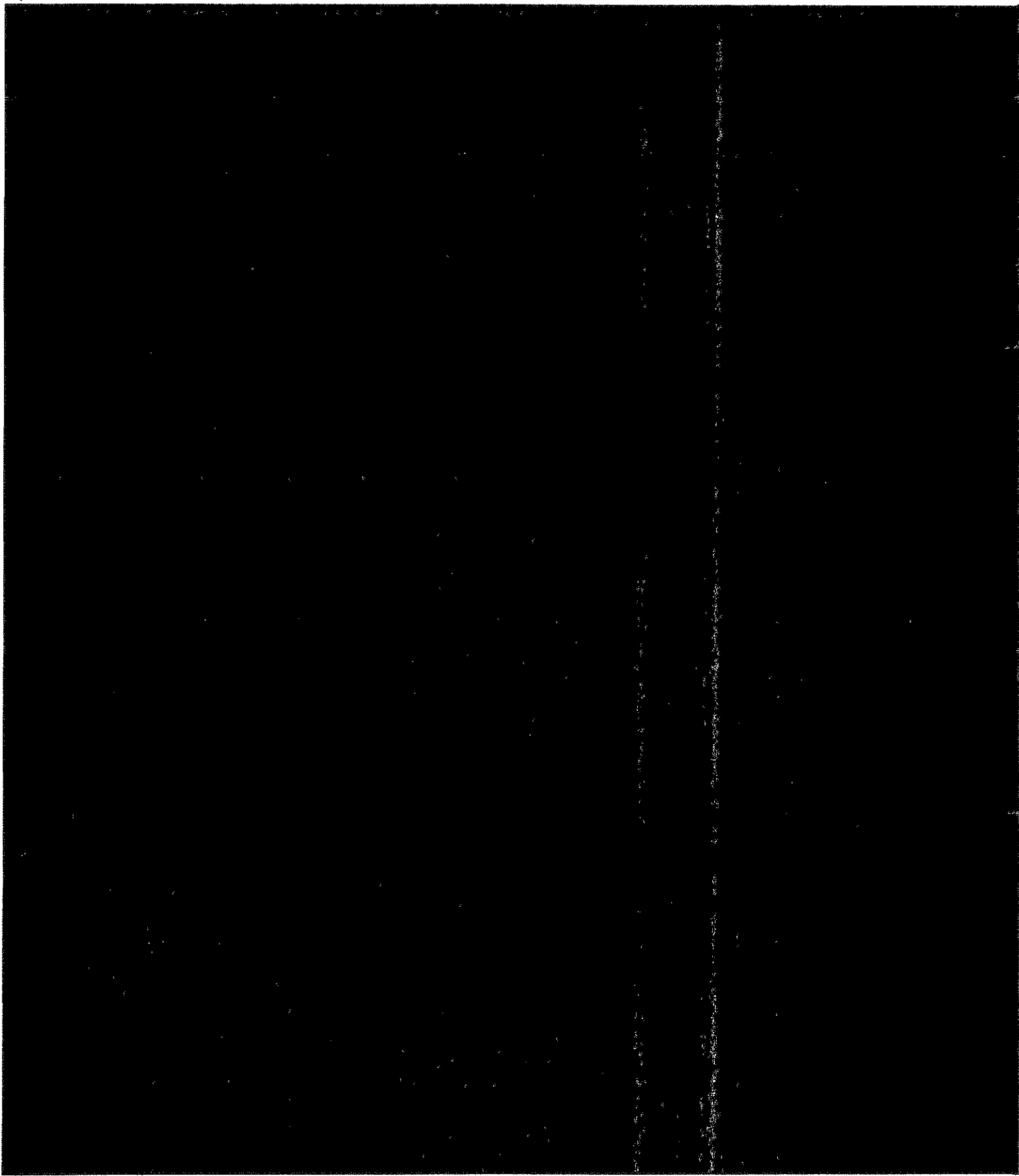
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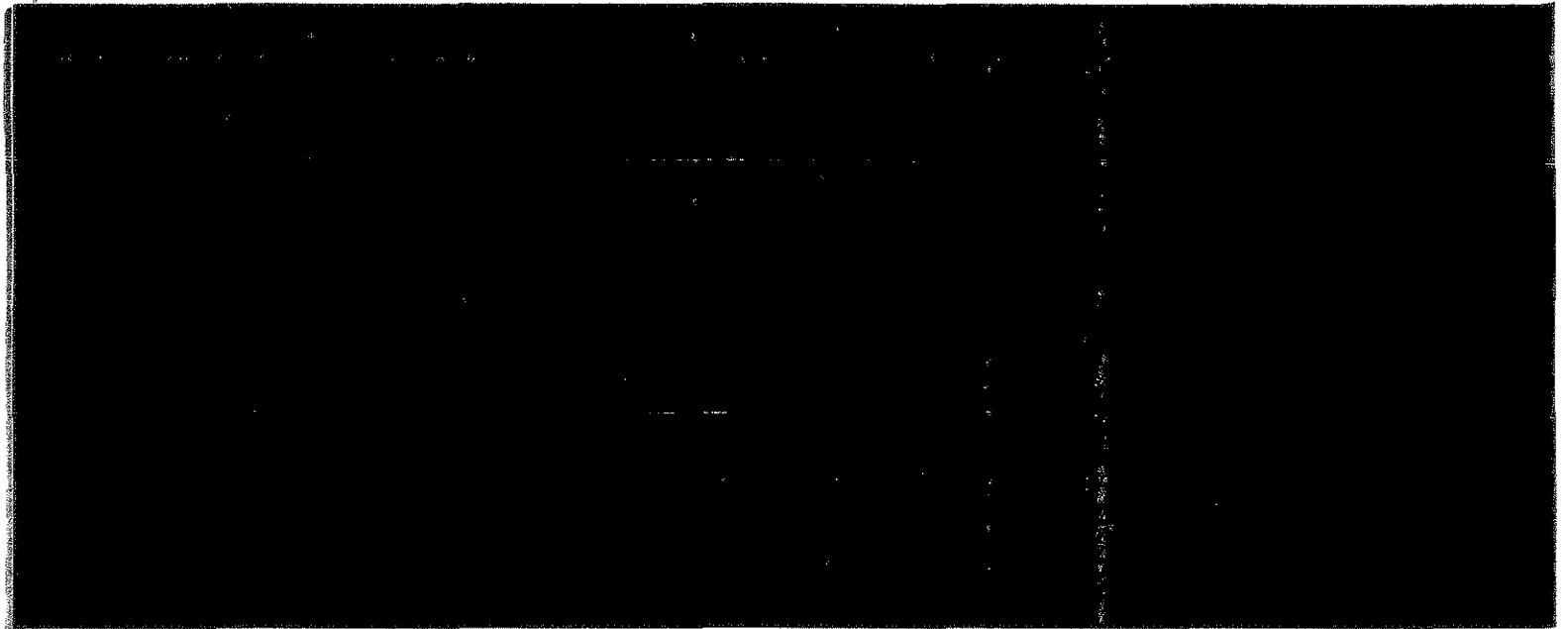
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5. Longitudinal design: In order to measure changes in hot spot transit routes, we plan to collect data before the intervention, on each day of the 7-day intervention period, one month after each intervention, and four months after each intervention (the end of the "replenishing period"). We will create a linked longitudinal analysis file that contains contemporaneous measures for each hot spot thoroughfare at each of these points in time. The advantages of longitudinal data include: reduction of sampling variability in estimates of change, measures of gross change for each sample unit, and collection of data in a time sequence that clarifies the direction as well as the magnitude of change among variables.

Nonresponse (either through attrition or missing data) in longitudinal data can create analytical complexities. We do not anticipate any problems in the area of nonresponse, for our measures will be based on data generated by the LPR device itself, police Records Management System and geocoded data available for every police service area in Mesa during the entire study period, and prosecutor and court/conviction data. The Mesa PD also has a stolen vehicle database for tracking and describing every recovered vehicle. Supervisors in the auto theft unit make sure this database is up-to-date. We will use this database to calculate our damage-to-vehicle outcome measure. To the extent possible, we will also seek to link to insurance company data on dollar amounts paid to victims. It is with the insurance data that issues of missing data will likely emerge. While the insurance data will not be part of our main outcome measures, we will deal with this by performing separate analyses to determine the characteristics that

predict non-response. We also have the full cooperation of the MPD to conduct interviews with its Auto Theft Unit Detectives and patrol officers to qualitatively assess their experience with the LPR device. Our team has experience implementing longitudinal designs, conducting diagnostic testing of longitudinal data, and analyzing such data (e.g., Taylor et al., 2001; Taylor, 1999; Davis & Taylor, 1997; Taylor, 1998, 1997).

6. Data sources and data collection procedures: We will collect five types of data for this project: (1) police data and Geographic Information Systems (GIS) information, (2) MPD auto theft database records, (3) insurance data, (4) prosecutor and court data, and (5) MPD qualitative interviews and strategy papers.

Police data: The first type of data will involve broad auto theft-related data for the entire city of Mesa on auto theft enforcement tactics based upon *qualitative* data from police strategy documents. Second, we will collect a variety of traditional measures of enforcement activity for the hot spot transit routes and surrounding blocks to assess for displacement/diffusion effects, including calls for service for auto theft, incident data on auto thefts, field contacts by officers related to auto theft, and arrest data on auto theft. Sources of error in police data are not insubstantial (for a review of this problem, see Sherman et al., 1989); however, these data provide a relatively efficient way to evaluate both the effectiveness of strategies and the potential displacement of auto theft activity. Third, similar to Krimmel and Mele (1998), we will use GIS to pinpoint hot spots for locations where vehicles are stolen, hot transit routes used by auto thieves, and destination/dumping spots within Mesa for stolen vehicles. We will examine these locations for predictors of their perseverance, how they adapt to changing police strategies, how these strategies affect the number of auto thefts, and displacement of crime to nearby places. To conduct these GIS analyses, we will use geo-coded police data and related city planning data. Based on collection of data at the area level, as opposed to the individual-level, we do not anticipate having any major non-response or missing data problems. However, if such problems arise our team is skilled in performing non-response analyses.

MPD auto theft database: We will use descriptive data from the MPD auto theft database describing the stolen vehicles (e.g., make, model, type of vehicle, value of vehicle) or stolen license plates,

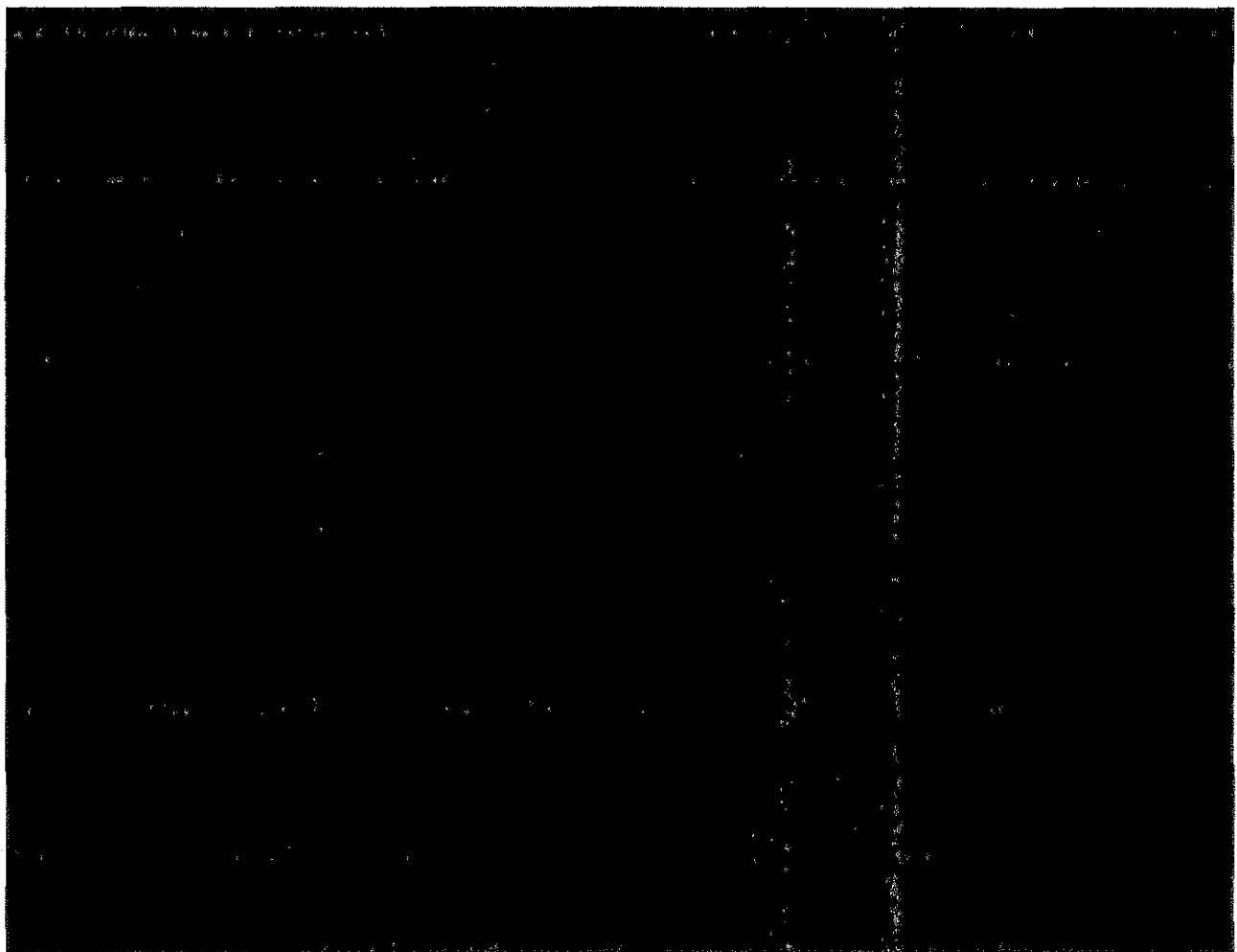
details on the types of damage to recovered vehicles, and the approximate cost of the damage to recovered vehicles. The LPR device itself collects a variety of data which is downloaded on a daily basis into the MPD auto theft database. We will use the following LPR device-driven data, including: the number of plates scanned, the number of "hits" (i.e., number of recovered vehicles and license plates detected or recovered in the LPR patrolled areas), date and time data on these "hits," the officer's name who confirmed the "hit," the GPS coordinates for the "hit" where the plate was read by the LPR device, whether the vehicle was occupied or empty at the time of the "hit," and the number of hours the LPR device was used during the shift. We will also use the device to assess the integrity of the treatment assignment process and assess if officers strayed out of their assigned areas, and if so to identify those cases for "override analysis." For the control group areas we will rely on the number of license plate queries originated, and the number and GPS coordinates of recovered vehicles and stolen license plates recovered in these control areas as recorded in the MPD auto theft database.

Insurance data: Aside from homicides, motor vehicle theft is one of the types of crime most likely to be reported to police (83% reporting rate in the 2005 NCVS; Catalano, 2006). According to the FBI, the estimated value of motor vehicles stolen in the United States in 2000 was almost \$7.8 billion, a large amount of which was paid by insurance companies. While we will have data on the estimated damages to recovered vehicles from the MPD auto theft database, we will also collect data from insurance companies on the amount of dollars they paid to victims. This information is available in the MPD auto theft database but we will need to do some follow-up work with insurance companies to fill in for cases with missing data.

Prosecutor and court data: We will also link our study data to prosecutor and court records on the outcome of MPD arrests. We will examine conviction and dismissal rates for each arrest in our study sample. Next, we will examine the sentences received by the auto thieves connected to our study areas (e.g., type of sentence, incarceration rate, length of sentence, and amount of fines). This information is tracked already in the MPD auto theft database, but we will need to do some follow-up work with

prosecutors and court records management personnel to fill in for cases with missing data. Also, there will be missing data in this area due to the lag time in processing cases from arrest through the legal system.

Police qualitative data: Our team will review MPD strategy documents and conduct detailed interviews and "ride-alongs" with auto theft detectives and patrol officers assigned to use the LPR device on their use of LPR and the dynamics of auto theft problem. We will also conduct treatment integrity checks by querying officers on their use of the LPR technology they employed. We will also interview a small number of officers in the control condition who did not use LPR and assess if they followed the study protocols. Also, we will design a training program covering data collection, details on extracting electronic data and using data forms, coding procedures, qualitative interviewing protocols, and protecting human subjects.



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8. Data analysis

Preliminary analyses: First, we will clean all the data using standard data-cleaning processes to verify that the data are correct and conform to a set of rules. We will write SPSS programs to remove errors and inconsistencies in all data files. Next, we recognize the importance of achieving complete data for all of the data collection areas within this study, and will take a number of steps to assure complete data files (e.g., training data collection staff and working closely with the MPD administration to improve the quality/timeliness of the police databases). While we do not anticipate any problems in the area of nonresponse, due to the use of official data available on all of our cases, if necessary PERF will perform non-response analysis by examining whether we get more incomplete data for some cases compared to others. This will correct for possible differentials in missing data. We will compare the impact of employing various imputation-based procedures to fill in missing values (mean imputation, regression imputation, and non-ignorable missing-data models) for the data forms that are only partially completed.

Descriptive analyses: The first set of univariate analyses will describe the key analytic variables to summarize the nature of the distribution of our data. A series of frequencies will be summarized with measures of central tendency, measures of dispersion, and point estimates. Bivariate cross-tabulations, comparison of means, and a variety of regressions also will be conducted using the main study variables.

Spatial Methods to describe hot spots and to model journey-after-auto-theft: To identify the spatial-temporal dependencies of auto theft and recovery locations in Mesa, we will use Mesa geo-coded police data, Mesa transportation network data, Mesa census data, and Mesa land use data to examine the distribution of and the connection between the hot spots of auto theft and recovery locations. This part of

the study will consist of two major components – the analysis of the spatial patterns of auto theft locations and stolen vehicle recovery locations, and the description and modeling of journey-after-auto-theft. Both of these two tasks will be conducted based on the geo-coded location information of auto thefts and recoveries. For hot spots analysis, global scale spatial autocorrelation statistics, such as Moran's I and Getis G_i^* , will be applied to evaluate the presence of hot spots and to estimate the spatial extent of hot spots. Local scale statistics, including Anselin's LISA, Getis G_i^* , and Kulldorff SaTScan, will be applied to identify the locations of hot spots in Mesa to aid the effective placement of the LPR.

The second task of the analysis will focus on the describing the patterns of journey-after-auto-theft in Mesa. As Lu (2003) argued, due to the diverse purposes of auto thefts, vehicles that are stolen from close by locations might be related for totally different reasons and deposited at different locations. This might result in vastly different patterns of journey-after-crime trips. Using MPD data, we will classify the auto thefts into different groups according to the possible purpose of the offense, and will model journey-after-auto-theft patterns separately for each type of trip. These analyses will be conducted using street network data and ArcGIS Network Analyst. Furthermore, using the MPD data for auto theft and recovery locations, the hot links between auto theft hot spots and recovery hot spots will be identified. "Crime hot link" refers to the spatial autocorrelation of the links between a crime hot spot and a crime-related location hot spot (Lu, 2005). Combining with the urban street network data and network analysis, the patterns of hot links between vehicle theft hot spots and recovery hot spots will be closely assigned to possible streets to assist predicting the travel route of vehicle thief's journey-after-auto-theft. LPR enhanced patrol will then be randomly assigned to half of these identified hot transit routes.

Hierarchical linear models (HLM): To address our main outcome questions we will use HLM 6 software (developed by Raudenbush et al., 2004). HLM provides a framework and a flexible set of analytic tools to analyze the special requirements of our clustered data with repeated measures. Essentially, each of our 128 hot spot transit routes is nested across the four repeated interventions. While we are allowing

for a four-month “replenishing period” after the assignment to the LPR or control condition, we cannot assume that the four repeated intervention periods are independent. That is, “statistical dependency” or nesting may still be present (e.g., a permanent obstruction on a specific transit route may make it more difficult for auto thieves to avoid detection, and these conditions would exist across the four time periods). Nesting occurs when a unit of measurement is a subset of a larger unit and the units clustered in the larger unit might be correlated. If ignored, this type of dependency can lead to biased estimates (Hox, 2002).

First we will identify the level of each of the study variables. We will collect data on each of the four intervention periods for each transit route (our level 1 data) for each overall transit route (our level 2 data). In the past, hierarchical data were analyzed using conventional regressions, but these techniques yield biased standard errors and potentially spurious results (Hox, 2002). Also, analyzing only at the aggregate level will lead to a loss of information and power. At level 1 of an HLM the analysis an outcome variable is predicted as a function of a linear combination of one or more level 1 variables, plus an intercept, as so:

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_1 + \dots + \beta_{kj}X_k + r_{ij}$$

where β_{0j} represents the intercept of group j , β_{1j} represents the slope of variable X_1 of group j , and r_{ij} represents the residual for individual i within group j . On subsequent levels, the level 1 slope(s) and intercept become dependent variables for level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_1 + \dots + \gamma_{0k}W_k + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}W_1 + \dots + \gamma_{1k}W_k + u_{1j}$$

and so forth, where γ_{00} and γ_{10} are intercepts, and γ_{01} and γ_{11} represent slopes predicting β_{0j} and β_{1j} respectively from variable W_1 . Through this process, we accurately model the effects of level 1 variables on the outcome, and the effects of level 2 variables on the outcome. In addition, as we are predicting slopes as well as intercepts, we can model cross-level interactions, whereby we can attempt to understand what explains differences in the relationship between level 1 variables and the outcome.

Using HLM we will address the following four main outcome questions. First, we will assess whether LPR technology increases the number of stolen vehicles recovered, both occupied and unoccupied, in randomly assigned hot spot transit routes. Second, we will assess whether the increased number of recoveries due to LPR use increases the number of arrests, prosecutions of auto theft suspects, and the number of auto thieves receiving criminal sentences (e.g., greater use of incarceration). Third, we will explore whether LPR improves the earlier recovery of stolen cars. Fourth, we will assess whether a reduced time-to-recovery reduces the damage to a stolen car and its costs to victims. Here we will assess time to recovery using discrete-time multilevel hazard models (see Steele [2003] and Barber, Murphy, Axinn, and Maples [2000], who demonstrate how the HLM software developed for multilevel data can be extended to discrete-time hazard analysis with time-varying macro and individual level covariates).

Although not strictly necessary because we are working with experimental data, we will also introduce a set of covariates to the model. The introduction of covariates to the model improves the precision of the treatment comparisons and corrects for any major imbalances in the distribution of these covariates across the treatment and control groups that may have occurred due to chance, adjusts for the natural variations between cases within the two comparison groups, allows us to test for additional non-experimental hypotheses, and allow us to specify interaction effects.

Qualitative data analyses: Our qualitative data for this project will consist of police strategy documents and qualitative interviews with auto theft detectives and patrol officers assigned to use the LPR device regarding their use of LPR and the dynamics of the auto theft problem. The interviews will be audiotaped and transcribed verbatim and will be analyzed using an inductive process. Interview data will be coded for helping identify tactics and locations for the LPR devices to be used. Also, the interview data will be used to assess perceived positive and negative effects of the LPR technology. Primary patterns and themes in the data will be allowed to emerge from the data rather than being imposed on them (Miles & Huberman, 1994; Patton 1990). Our qualitative data will document the implementation of the LPR program

in Mesa and will guide practitioners and other researchers in replicating the program in other cities, and provide suggestions for other potential policing applications of LPR technology. The qualitative data will provide rich data on dosage levels for the intervention and will help guide our interpretation of study results.

iv. Implications for policy and practice

With some exceptions, the crime of auto theft has not received much attention by the research community. This is somewhat surprising given its vast prevalence throughout the US. That is, while over a million vehicles are stolen every year, representing over one in ten Part I offenses recorded by the FBI and close to \$8 billion in property loss, we know little about effective law enforcement approaches to reducing auto theft. Law enforcement agencies need new approaches to address this extensive problem, for while most vehicles are recovered by police, only 13% of the cases result in an arrest (FBI, 2007). One recent innovation which could serve as a useful tool to address this problem is LPR technology. LPR is a relatively new technology in the United States, but has been used for many years in the UK with impressive results based on pilot testing. While LPR technology appears to be very promising, based largely on anecdotal and descriptive data, it has yet to be subjected to intensive empirical analysis. Our proposed study, through a large scale randomized experiment in Mesa, will lead to significant advances and fill a gap in our understanding of the operation of LPR devices and the likely effects of these devices on the auto theft problem. If the evaluation, as hypothesized, shows measurable benefits to law enforcement, agencies will be able to use our results to gain funding for purchasing LPR systems. Our proposed study addresses one of NIJ's identified priority topics, and addresses the call for police departments to have practical information that is going to be useful for guiding their tactics and strategies (Cosner and Loftus, 2005).

v. Management plan/organization

With a multidisciplinary project team that has extensive experience and national recognition in criminal justice, policing research and management, and experimental design and analysis, our team is uniquely qualified to conduct this study (see Appendix C for resumes).

PERF is a Washington, D.C.-based membership organization of progressive law enforcement chief executives from city, county and state agencies who collectively serve more than half of the country's population. Established in 1976 by 10 prominent police chiefs as a nonprofit organization, PERF has evolved into one of the leading police think tanks. PERF has conducted some of the most innovative research in the profession on topics such as: problem-oriented policing, community policing, use of force, crime prevention, police recruiting and hiring practices, violence and victimization, racially biased policing, law enforcement fatigue, agency level measurement, and investigations. All of these studies involved cooperation or collaboration with law enforcement agencies. The quality of PERF's research is indicated by the continued funding it has received over the past decades from a number of federal agencies (including NIJ, OJJDP, BJS, BJA, and COPS), as well as private funding sources (e.g., Motorola, the Ohio Association of Chiefs of Police, and Target).

PERF has a proven track record using the types of methods proposed for this project. PERF's Research and Management Services units have strong capabilities for working with police Records Management Systems (RMS) and related databases and conducting qualitative interviews on a wide variety of topics. With PERF's committed membership and excellent reputation for research, we have consistently achieved very high response rates. PERF has strong capabilities—both in terms of staff expertise and technology—for conducting research on a variety of topics. Staff members are experienced in data extraction, RMS data management and cleaning, developing and refining research protocols, research design, conducting data collection, data management, attrition/missing data analyses and other relevant analytic techniques appropriate for this project. PERF staff are skilled at translating research results into

practical, easy-to-understand material that can be put to use by practitioners. PERF publications are used for training, promotion exams and to inform the field about innovative approaches to community problems.

Qualifications of Staff

██████████ Ph.D. is the Director of Research for PERF. ██████████ is the proposed Principal Investigator (PI) for this study. ██████████ (~ 20% time on project) will lead the coordination, management and implementation of this study. Given the heavy practitioner component to the project, PERF's Director of Management Services, ██████████ will lead the police tactical/ management aspects of this study (see below). ██████████ will handle day-to-day project issues, supervise research staff, assess progress of research components, lead and co-lead meetings, ensure the timely completion of research tasks, oversee the work of the subcontractor (Tailored Statistical Solutions), and write study reports/papers for publication/ presentation.

██████████ has over 15 years of professional experience in research design, measurement, survey design, program evaluation and statistical analysis which he has applied on more than 50 criminal justice research projects, most of which he has directed, for federal state and municipal governments and private sources.

██████████ has led six randomized experiments covering a variety of areas in criminal justice: (1) a dating violence prevention curriculum in middle schools (Dr. Taylor's current NIJ study), (2) a community rape prevention program for young women, (3) a police intervention for domestic violence victims in public housing (DVIEP and PSA-2), (4) a police intervention for elder abuse victims, (5) a batterer intervention program for men in community-based settings, and (6) a batterer intervention program for men in custodial settings. ██████████ is also currently leading an NIJ quasi-experiment on conducted energy devices.

██████████ has extensive experience conducting police research. ██████████ developed one of the first studies on best practices for law enforcement in identifying and responding to transnational crime, developing the first comprehensive community policing assessment tool, one of the few rigorous randomized experiments on the effects of a policing program on reducing violence, one of the early studies on community policing in immigrant communities, and an evaluation of a training program for police

officers [REDACTED] current policing research involves a variety of studies on police training, police responses to the mentally ill, port police, policing methamphetamine markets, police leadership styles, use of DNA evidence by police investigators, officer safety issues and the use of force by law enforcement.

[REDACTED] Ph.D., directs PERF's Management Studies practice. [REDACTED] (~ 11% time on project) will lead the police tactical/management aspects of this study. He will handle day-to-day management issues, supervise practitioner staff, assess progress of police tactical/management components, lead and co-lead meetings, ensure the timely completion of police tactical/management tasks, and write study reports/papers for publication/presentation. He worked at PERF for eight years before leaving to direct the Public Safety practice area for MAXIMUS, Inc. in January 2003. He returned to PERF in June 2005 and will serve as a Co-PI for this study. Prior to his initial job at PERF he held a joint position as Director of Training, Richmond Police Department and Director of the Criminology/Criminal Justice Program, Virginia Union University. He has worked as Planning and Budget Manager for the Santa Ana, California Police Department; as Director, Training, Education, and Accreditation Division for the Massachusetts Metropolitan Police; and Director, Management Information Division, Winston-Salem, NC Police Department. Additionally he has held appointments at Boston University, Florida State University, Washburn University, and the University of Kansas. He has managed more than 100 studies of police agencies and operations – in both large and small agencies – over the last 12 years. Many of the management studies focused on the effectiveness of auto theft operations.

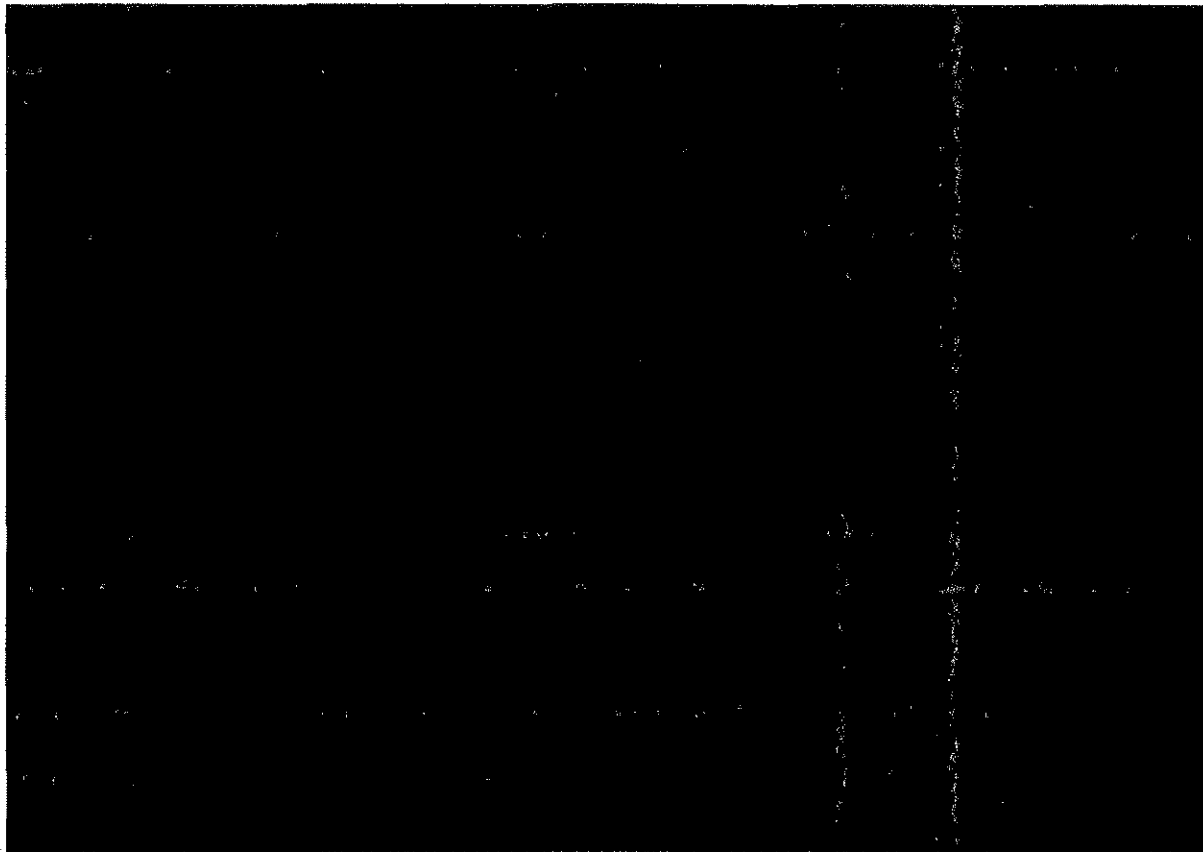
In addition to [REDACTED] and [REDACTED], other PERF staff members include [REDACTED] (Deputy Director, Management Services), [REDACTED] (Senior Associate), [REDACTED] (Associate), [REDACTED] (Associate) and [REDACTED] (Research Assistant) (see resumes in Appendix C).

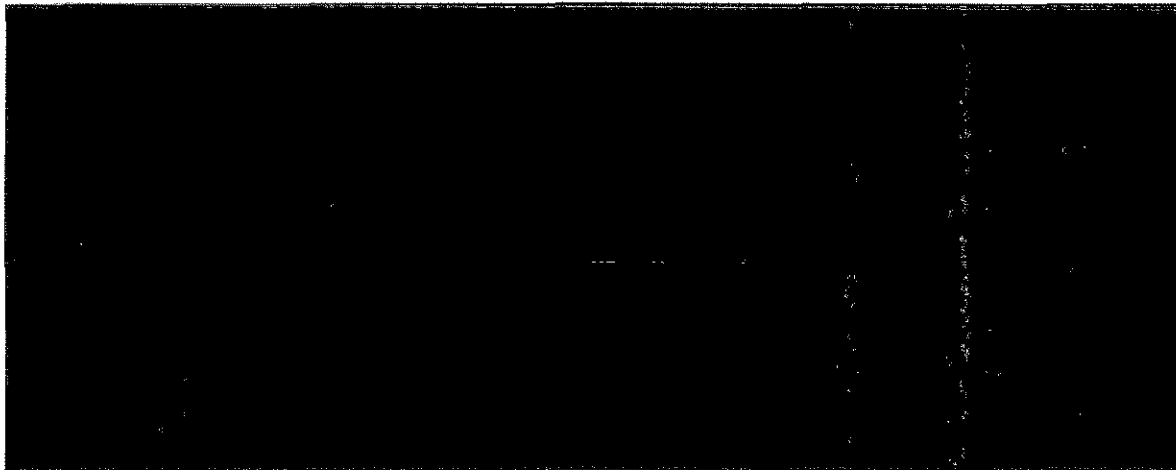
[REDACTED] is statistician with Tailored Statistical Solutions, an Ohio-based small women-owned statistical analysis firm that was founded in 2001 and has conducted research in education, health care, justice, and other areas. [REDACTED] will advise the PERF team on the randomized experimental

sampling plan (helping our team randomly select non-overlapping transit hot spots) and conducting HLM analysis; including discrete-time multilevel hazard models. She is an expert in HLM analysis and has conducted seminars in HLM with the National Institute for Occupational Safety and Health (NIOSH). Most recently she has used HLM on a large project involving the Internal Revenue Service and NIOSH.

Professor [REDACTED] is an assistant professor in the Department of Geography and the Texas Center for Geographic Information Science, Southwest Texas State University. [REDACTED] received her Ph.D. in Geography (emphasizing GIS) from the State University of New York at Buffalo. Her research has focused on the application of GIS in crime analysis for police departments, spatial statistics, and applications in urban and regional modeling. [REDACTED] is an expert in the spatial analysis of auto theft, having published numerous papers in this area, including pioneering work on the "journey after crime." [REDACTED] role on this project will be to conduct GIS analyses/spatial modeling ("journey after crime" analyses).

b4, b6





Human subjects (see attached Privacy Certificate in Appendix J). The project will be reviewed by PERF's IRB, which has a consistent track record for operating an approval system that is fair and ethical.

Task Timeline: The timeline for the project (see Gantt chart in Appendix F) has six main components (planning, data collection, review of baseline data and development of strategy for placement of LPR enhanced patrol, implementation of experiment, data analysis, and reporting). Task A (planning) will cover the first two months of the project and includes seven main subtasks (see Appendix F), including items such as: kickoff meetings, literature search updates, electronic data abstraction form development and piloting, drafting qualitative interview protocols, data collection training, IRB review, and data collection protocols. Task B (data collection) will cover the end of month 2 (initial baseline) and months 4-22 (additional baseline/follow-up collection) and includes eight main subtasks. Task C (month 2 and month 3) will involve presenting to the MPD team promising approaches from our baseline collection, reviewing "best practices" on LPR use in other agencies and the updated literature review. Task C will also involve working with the MPD on a LPR placement/patrol strategy and a response plan to catch car thieves. Task D (months 4-18) will involve our Stage 3 implementation of the experiment and LPR intervention.

Task E will begin with our qualitative and quantitative analysis of the baseline data (months 2-3), and analysis of the follow-up data (months 6-24). Task F begins in Month 23 with our team writing the Final Report and delivering a draft report at the end of Month 24 (allowing the required 90 days prior to the end of

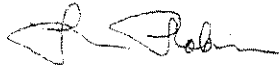
the project). We allow for a peer review and PERF's response for months 25 and 26 (we also will be working on the other products during these months). The "Final Final" Report will be delivered in month 27.

vi. Dissemination strategy

PERF has a demonstrated record of effectively disseminating project material and a particularly strong capacity to convey policy-relevant material to practitioners. The products from this project will help inform law enforcement about the effectiveness of LPR technology in combating auto theft. An extensive dissemination plan will be implemented to reach practitioners (e.g., policing executives), policy makers, and researchers in order to produce a set of findings and recommendations to help inform the police on effectively applying LPR technology to combat auto theft. We propose the following dissemination plan:

- A practitioner-focused, user-friendly summary document with a clear and concise set of recommendations, including the submission of papers to practitioner publications such as *Police Chief*.
- PERF Publications: The research results will be conveyed to approximately 1,000 practitioners through PERF's in-house publication, *Subject to Debate*. PERF will also place selected project results and papers on PERF's website (www.policeforum.org).
- We are committed to exposing the project results to the scrutiny of scientific review, and will pursue peer-reviewed publications in refereed journals (e.g., *Criminology*, *Police Quarterly*).
- We will make conference presentations (e.g., ASC, ACJS, IACP, and PERF conferences).
- Semiannual progress reports to NIJ and delivery of the final report at the 27 month mark.
- If requested by NIJ, the executive summary could be the basis for a publication as part of the NIJ Research in Practice publication series. The final report will contain detailed documentation to allow for replication of the study. The final report package will include an abstract, a 2,500-word summary, a technical report, a data set for archiving, and a codebook.

Budget Section consisting of 5 pages
withheld pursuant to exemptions b4 and b6

 Department of Justice Office of Justice Programs National Institute of Justice	Cooperative Agreement	PAGE 1 OF 14																
1. RECIPIENT NAME AND ADDRESS (Including Zip Code) Automated Regional Justice Information System 401 B Street Suite 800 San Diego, CA 92101-4231	4. AWARD NUMBER: 2009-SQ-BQ-K002 5. PROJECT PERIOD: FROM 08/01/2009 TO 09/30/2010 BUDGET PERIOD: FROM 08/01/2009 TO 09/30/2010																	
1A. GRANTEE IRS/VENDOR NO. 956000842	6. AWARD DATE 09/10/2009 8. SUPPLEMENT NUMBER 00 9. PREVIOUS AWARD AMOUNT \$ 0	7. ACTION Initial																
3. PROJECT TITLE SRFERS: State Regional & Federal Enterprise Retrieval System III	10. AMOUNT OF THIS AWARD \$ 476,821 11. TOTAL AWARD \$ 476,821																	
12. SPECIAL CONDITIONS THE ABOVE GRANT PROJECT IS APPROVED SUBJECT TO SUCH CONDITIONS OR LIMITATIONS AS ARE SET FORTH ON THE ATTACHED PAGE(S).																		
13. STATUTORY AUTHORITY FOR GRANT This project is supported under FY09 Recovery Act (NII - Byrne JAG LE Technology) Pub. L. No. 111-5, 123 Stat. 115, 130; 42 USC 3756; 28 USC 530C																		
15. METHOD OF PAYMENT PAPRS																		
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OJP FORM 4000/2 (REV. 4-88)

SRFERS: State, Regional, and Federal Enterprise Retrieval System III

Abstract

ARJIS, the Automated Regional Justice Information System seeks to enhance the State Regional and Federal Enterprise Retrieval System (SREFRS) by expanding on the following components:

- License Plate Reader (LPR) data: Enhance the existing LPR SRFERS capabilities to include data from fixed and mobile LPRs in the San Diego/Imperial County region. In collaboration with Nlets, enhance the existing Nlets LPR query which currently provides information from the LPRs at the borders, to include access to regional data sources.
- Apply the alerting capabilities being developed as part of the ARJIS Officer Notification and Smart Alerting System (ONASAS) project to Nlets transaction archive database know as RAND. This will allow users to set both regional and national alerts, testing a national level alerting capability in the San Diego area;
- Interstate Photo Sharing through Nlets: Expand interstate access to driver's license photos, State Departments of Correction photos, and booking photos to up to 3 additional states/regions;
- Information Sharing Toolkit: Develop additional content, capabilities, and resources available to agencies seeking to initiate interstate information sharing.

With additional funding, SRFERS will implement and pilot access to LPR data from regional systems, beginning with a regional LPR system now underway at ARJIS. Access to a regional system through Nlets will be piloted in the San Diego area. If successful, the implementation will provide a model to greatly expand LPR access in the United States.

ARJIS is completing development on the Officer Notification and Smart Alerting System (ONASAS) project. ONASAS is an automated alerting system that is currently being tested in the San Diego area. ARJIS proposes to extend ONASAS alerting capabilities by refining and expanding the San Diego area framework to apply to Nlets RAND data. By expanding the Alert monitor to leverage RAND as well as the Nlets alert capabilities that are being explored and developed at Nlets, ARJIS will provide extremely comprehensive monitoring capabilities to its users. In addition, this capability will be piloted and tested with the ARJIS member agencies and the results can assist Nlets in their continued development efforts.

With additional funding, SRFERS will extend Drivers License (DL), Corrections, and/or Booking photo sharing capabilities in to up to three additional states. During an initial assessment of potential participants, several states expressed interest in participating in DL photo sharing, but their proposed timeline precluded earlier participation. These states will be re-assessed, along with states and regions ready to share corrections or booking photos, to choose the best fit for maximum benefit to the public and law enforcement agencies.

To maximize funding SRFERS will assess shared systems and infrastructure among state DOCs that will allow implementations to provide reusable system components for other states seeking to implement the DOC photo sharing transaction (CPQ).

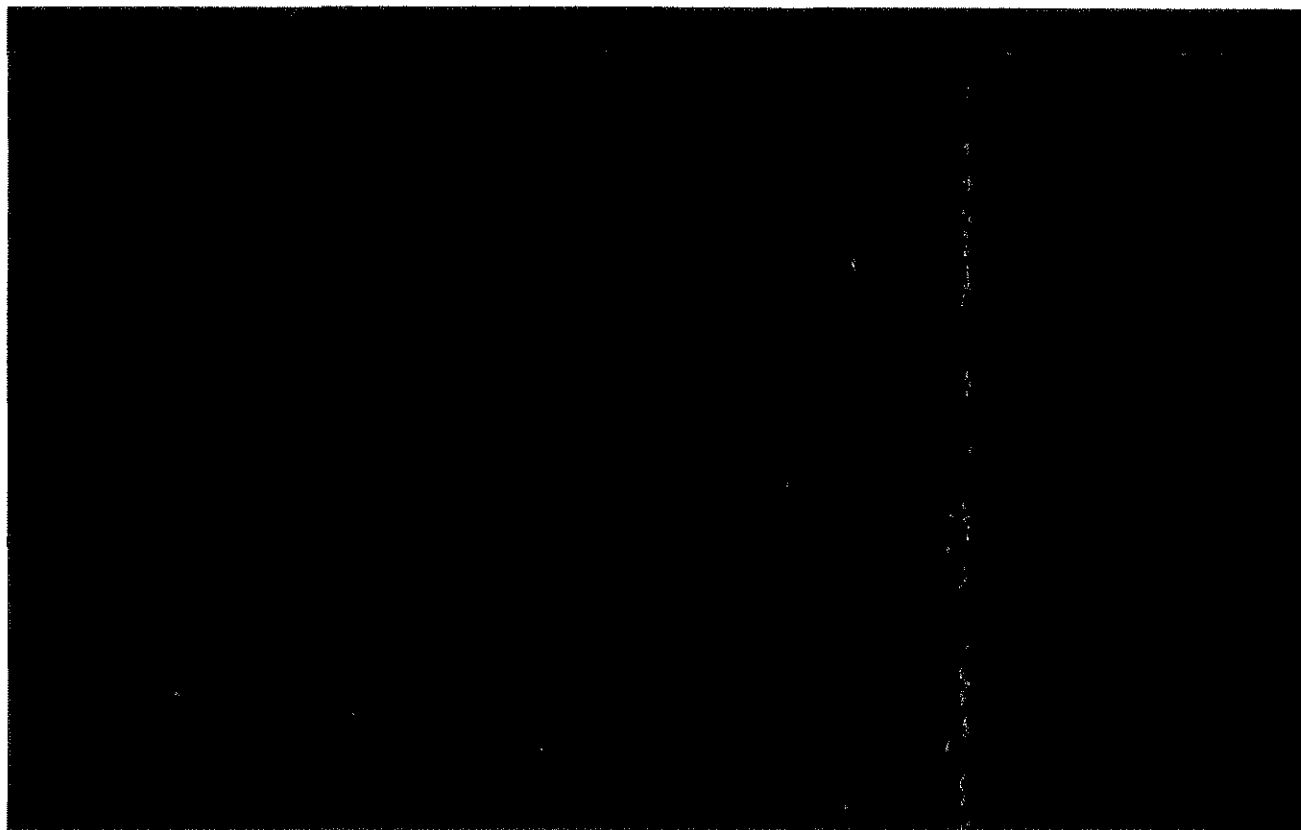
During SRFERS Phase I, a new Nlets transaction for interstate sharing of booking photographs was piloted between Maricopa County, Arizona and ARJIS in the San Diego area. This transaction has yet to be expanded and has enormous untapped potential to assist law enforcement.

Prospective states and regions for DL, DOC, or booking photo expansion include: Washington, Colorado, Utah, Alaska, (DL) Idaho, New Mexico (DOC); Los Angeles County and Las Vegas, Nevada (booking). The assessment of these states and regions will be coordinated with Nlets to choose the best strategic fit.

The SRFERS Portal hosting the Information Sharing Toolkit has been a critical component in the dissemination of standards, policy and privacy guidance, project components, and other documentation developed as part of SRFERS. With additional funding, the Toolkit will be expanded to include information about other national public safety initiatives such as GIS, biometrics, and Wireless projects.

Recovery Act:
Law Enforcement Technology Research &
Development

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State Regional & Federal
Enterprise Retrieval System III

ARJIS Program Narrative

May, 2009

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SRFERS: State, Regional, and Federal Enterprise Retrieval System III

Program Narrative: Section I

Background/Literature Review

The Automated Regional Justice Information System (ARJIS) is a Joint Powers Agency (JPA) created to share information, tactical analysis, investigations, statistical information and crime analysis among justice agencies throughout San Diego and Imperial Counties, CA. A complex criminal justice enterprise network used by 75 local, state, and federal agencies in the two California counties that border Mexico, ARJIS integrates more than 6,000 workstations throughout an area the size of the Commonwealth of Massachusetts. ARJIS, now a division of SANDAG (San Diego Association of Governments), is responsible for major public safety initiatives, including wireless access to photos, warrants, and other critical data in the field, crime and sex offender mapping, and an enterprise system of applications to help users solve crimes and identify offenders.

In 2005, with funding from a National Institute of Justice grant, ARJIS initiated the State Regional and Federal Enterprise Retrieval System (SREFRS) Project. Originally intended to implement recommendations from the National Criminal Intelligence Sharing Plan (NCISP), the SRFERS project has evolved into a national model for information sharing. The SRFERS mission is to enhance officer and public safety through the cross jurisdictional and interstate sharing of photos and other critical justice data, by leveraging the Nlets network and existing infrastructures and resources; and by utilizing national information and messaging (XML) standards.

A major hurdle for expanded multi-jurisdictional information sharing is the development of agreements on adequate information control and governance. Through the SRFERS project ARJIS developed a strong partnership with the International Justice and Public Safety Network (Nlets), leveraging the robust and established governance of the Nlets nationwide information sharing network. All US states and territories participate in information sharing through Nlets, and contribute representatives that form the Nlets governance structure. In 2009, ARJIS became the first regional member of Nlets.

The goal of the SRFERS I NIJ grant was to develop interstate public safety information sharing beginning with the Pacific region of the United States. This key first phase of the project resulted in three proof-of-concept prototypes that demonstrated the ability to share information and booking photographs across state lines, and provided access to License Plate Reader data and Nlets transaction archive data (RAND). These prototypes were implemented within a single proof-of-concept application and share the same SRFERS communication infrastructure.

SRFERS Phase I proved to be extremely beneficial to law enforcement officers in the San Diego region. The SRFERS LPR assisted officers in cases involving jail escapees, stolen vehicles, and homicides. Within two hours of deployment SRFERS assisted in identifying a missing CA person who had fled to AZ.

SRFERS Phase II expanded upon the successful completion of the Phase I SREFRS application. With Nlets as a strategic partner, the SRFERS project developed technical specifications for driver's license (DL) image exchange through the Nlets network. These specifications were provided to initial pilot state participants, state technical staff, and

vendors contracted for implementation services. Upon releasing the specifications, the SRFERS team collaborated with the State of Oregon to create a State Implementation Plan (SIP) for interstate DL photo exchange. Oregon became the first state in the country to be able to successfully send and receive a driver's license photo across state lines.

This phase of the project utilized and enhanced existing resources such as the Nlets network, interstate agreements, and artifacts in the SRFERS Toolkit, allowing new agencies to share critically needed justice information. Because of SRFERS II the following Western states will have the capability to share driver's license (DL) photos: Oregon, New Mexico, Idaho, Wyoming, Montana, Arizona, and Nevada. These states will all have the capability to share DL photos with more than 25 other states implemented by either SRFERS or the Nlets Interstate Sharing of Photos Project (NISP).¹

The SRFERS team completed assessments to determine the readiness of potential project participants from the Western States. Once the new participants were confirmed, implementation plans were or are currently being developed for each that utilize standardized XML specifications and messaging schemas. These implementation plans and specifications provide a range of architectural options to allow additional states to choose implementation designs that best fit the needs of each state while keeping in line with national standards.

In addition, SRFERS collaborated with NISP to develop a standardized transaction for the interstate sharing of state Departments of Correction (DOC) Photos. The Nationwide Corrections Image Exchange through Nlets (NCIEN) project went to full production in Oregon and North Carolina in late March 2009. Law enforcement and corrections officers

in those states are now able to access DOC photos in state and across state lines. Montana is currently undergoing contract work to implement the new Nlets DOC photo transaction (CPQ), becoming the third state to engage in interstate DOC photo sharing. There is significant interest in other states to participate in DOC photo sharing. SRFERS also led and funded the development of a Privacy Impact Assessment for Corrections photo sharing. SRFERS collaborated with NISP during the development of a similar PIA for DL Photos. The NCIEN PIA for Corrections and the NISP PIA for DL photos have been instrumental in facilitating legal review by states considering participation in DL and Corrections photo sharing.

In a White Paper published by the Corrections Technology Association (CTA)ⁱⁱ, the CTA issues a call to action asking the federal government to assist with providing vital corrections information to law enforcement via fusion centers. Further implementation of the CPQ would not only provide photographs and identifying information to the fusion centers, but would provide this information directly to law enforcement officers in the field where it is most valuable.

All policy/privacy documentation, project documentation and technical artifacts produced are available via the Toolkitⁱⁱⁱ on the SRFERS portal (www.srfers.org) to facilitate future information sharing. Access to the documentation resulting from the SRFERS and NISP projects was enhanced by the 2008 redesign and expansion of the information sharing Toolkit which resides on the SRFERS portal. The portal now services criminal justice policy makers, IT managers, and technical staff members from federal, state, and local agencies.

Problem statement

Although the project has already accomplished many significant achievements, many states have yet to participate, and the entire range of capabilities implemented during SRFERS I and II has yet to be expanded to full potential. Additional funding will allow further expansion of national infrastructure and information sharing capabilities for law enforcement. Because this project leverages the Nlets network and governance and is directly interoperable with the NISP implementations, each state that can be enabled for photo sharing raises the value for prior implementers. As more states sharing borders implement photo sharing, states gain tremendous value for their public safety infrastructure as the likelihood of officer contact with persons traveling in contiguous states is much higher.

In addition, there is significant synergy in ease of implementation and cost effectiveness as this infrastructure is implemented. The range of architectural models for sharing DL photos, State Departments of Corrections Photos, booking photos, LPR, and other capabilities is intentionally similar. The implementation of one type of photo sharing creates a strong opportunity for a state to participate in additional information and sharing for other photo types with greater cost effectiveness.

There is significant opportunity to maintain momentum for nationwide information sharing if additional funding can be secured. Without funding, the partnerships, personnel expertise, additional documentation, and other assets would have to be reconstructed at a later time to continue to build upon the successes of the project.

Goals/Initiatives

With additional funding, SRFERS seeks to:

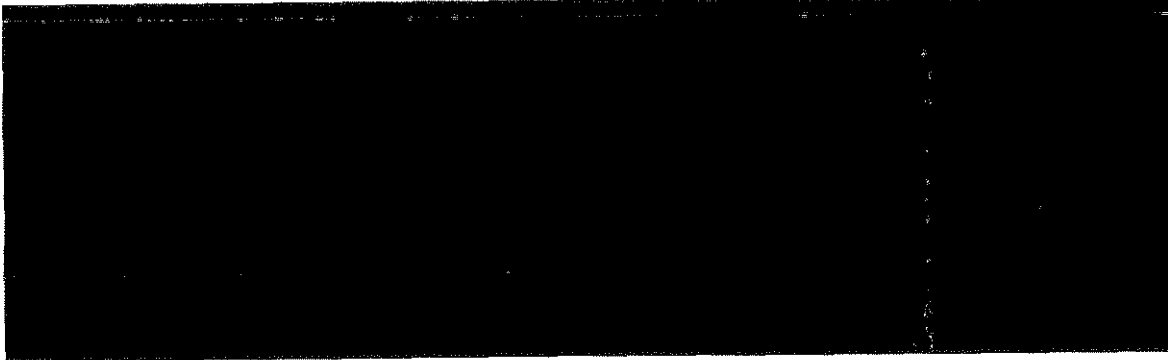
- License Plate Reader (LPR) data: Enhance the existing LPR SRFERS capabilities to include data from regional fixed and mobile LPRs in the San Diego/Imperial County region. In collaboration with Nlets, enhance the existing Nlets LPR query which currently provides information from the LPRs at the borders, to include a federated query for access to regional data sources.
- Apply the automated monitoring and deconfliction capabilities being developed as part of the ARIIS ONASAS project to Nlets archive database know as RAND. This will allow users to set both regional and national alerts, testing a national level alerting capability in the San Diego area;
- Interstate Photo Sharing through Nlets: Expand interstate access to driver's license (DL) photos, state Departments of Correction (DOC) photos, and/or Booking photos to up to 3 additional states/regions;
- The Information Sharing Toolkit: Develop additional content, capabilities, and resources available to agencies seeking to initiate interstate information sharing.

Goal 1: Expand LPR information sharing to more regions on the SW border

LPR technology can be a powerful force multiplier for law enforcement agencies. Fixed or vehicle mounted cameras scan license plates, then use OCR (Optical Character Recognition) to form queries against a database.



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Nlets houses this data, which is provided by the National Insurance Crime Bureau. While it is extremely useful, there are many regional LPR systems with rich sources of LPR information from both fixed LPRs, such as at border crossings, or major intersections, as well as LPRs on some law enforcement agency patrol vehicles.

With additional funding, SRFERS will implement and pilot access to LPR data from regional systems, beginning with a regional LPR system now underway at ARJIS. ARJIS has been selected as the "test bed" for demonstrating the regional approach to sharing and accessing cross jurisdictional license plate reader (LPR) data. San Diego and Imperial County law enforcement agencies have acquired LPR systems to include fixed systems at the Border and those on state highways, as well as mobile devices acquired by many of the law enforcement agencies in the region.

ARJIS is well suited to be the demonstration site for cross jurisdictional sharing of LPR data because of its proximity to the Mexican Border (the largest bi-national metropolis in the western hemisphere), and the ability to share critical data among 75 law enforcement agencies. The ARJIS LPR Project will load data in real time from disparate LPR systems into a regional server that can be queried by any of the 75 ARJIS member agencies. A key

Pending funding the federated query may be expanded to additional regions. Prospective additional regions include Los Angeles County, Maricopa County, AZ and Las Vegas, Nevada. Networking these areas will establish an effective Southwest Border region for LPR data sharing.

Goal 2: Extend the ARJIS Alert system to monitor Nets RAND

Officers and investigators are overtaxed when working multiple cases and do not have time to continually re-run queries on multiple systems to see if their suspects have had any new contacts with other law enforcement agencies (either by being involved in another crime, arrest, citation, accident, pawn slip, etc; or been queried by another officer). Suspects will often move to a neighboring jurisdiction to commit crimes and/or avoid detection because they are aware of the lack of cross jurisdictional sharing of information.

In more serious cases, investigators will manually check a variety of systems daily to see if their subject has been involved in any police incidents throughout the region. ARJIS is currently completing development on an automated alerting system implemented in the San Diego area. The Officer Notification and Smart Alerting System (ONASAS) project, will allow officers to enter alerts, set conditions for being notified, and be assured that they will be notified when new data is entered. This process, known as change detection, will allow alerts to be set on name, address, vehicle, and/or phone number. The system will not only provide alerts on changes to police incidents but also a consolidation of each agency's CAD data – which will provide near real-time alerts as subjects are contacted in the field.

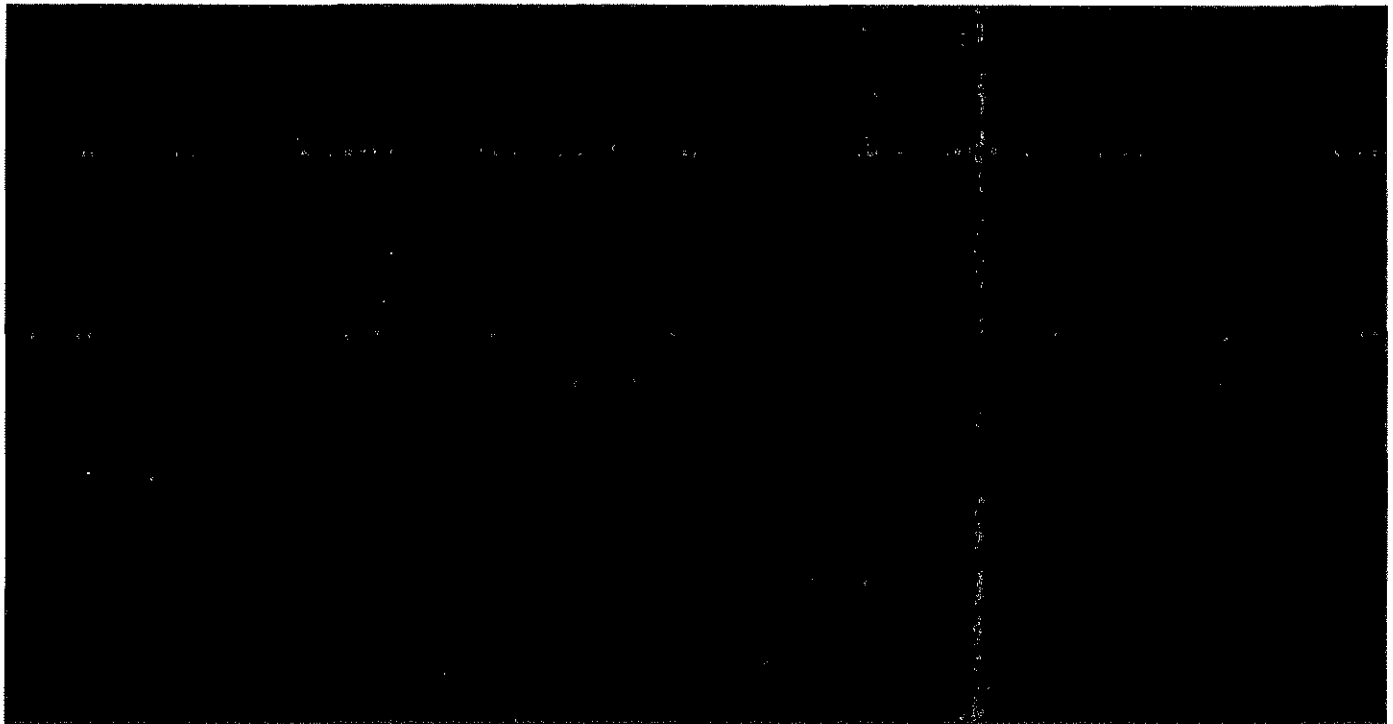
The ONASAS/Alert project has five major components:

- Alert entry and management system

- "Watcher" system(s) that poll the data sources for queries and results.
- Unified alerting framework for processing alerts
- Development of ARJIS specific data source interfaces including CAD data.

The system is web-based and written in Microsoft .NET. It will use GJXDM, LEITSC IEPD, and NEIM standards along with web services interface. ARJIS proposes to apply this alert system to Nlets RAND data to create an interstate Alert capability.

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RAND (Random Access to Nlets Data) is a powerful information source that allows ad hoc inquiry capability into the Nlets transaction logs to determine if a name, plate or data string has been queried across the country via Nlets. Nlets/RAND records all officer transactions across the country transmitted via the Nlets network. Although all states have access to RAND, not all states have programmed their systems to query RAND data. Since the

information comes back in text format, states are limited in the types of queries that can be run and how the data can be used.

ARJIS, as the first regional Nlets partner, has provided Nlets with information about the ONASAS project since its inception. In early 2009, ARJIS demonstrated Alert for Nlets, which has resulted in the formation of an Nlets technical subcommittee to apply the Alert concepts to RAND for a national level Alert system. ARJIS has provided and will continue to provide Nlets with development results and source code from ONASAS, including the .Net framework.

ARJIS proposes to extend the ONASAS by refining and expanding the San Diego area framework to apply to Nlets RAND data. For example, if an officer or investigator in San Diego sets an alert on a subject, vehicle or location of interest in a case, ONASAS will monitor ARJIS data sources and query applications which include queries to CLETS (California Law Enforcement Telecommunications System) via the ARJIS federated query application. Currently, the ONASAS only monitors CLETS for interstate wanted queries. If an officer in Oregon stops the subject on traffic and only runs a driver's license query, the alert would not be triggered. However, if ONASAS is monitoring all of RAND's available information, the officer in San Diego would be notified if his person of interest is queried on any query through Nlets.

By expanding the ONASAS monitor to leverage RAND as well as the Nlets alert capabilities that are being explored and developed at Nlets, ARJIS can provide extremely comprehensive monitoring capabilities to its users. In addition, this capability can be

piloted and tested with the ARJIS area agencies and the results can be provided to Nlets to assist in their own development efforts to expand RAND monitoring.

Goal 3: Extend DL, DOC, and Booking photo sharing capabilities to additional states

Driver's Photo Sharing

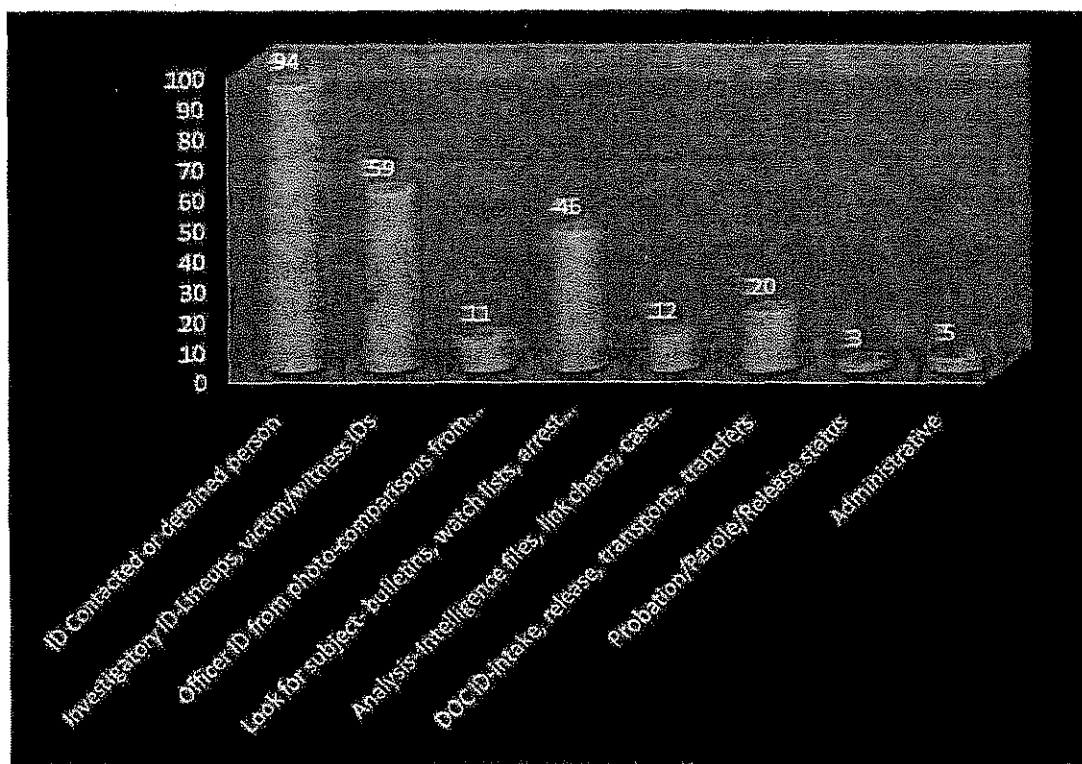
During an assessment of Western states, several states expressed interest in participating in DL photo sharing, but their proposed timeline precluded earlier participation. One example is the state of Washington. Washington worked to change legislative language that precluded sharing driver's photos for general law enforcement purposes. New legislation has recently passed that now enables Washington to participate in driver's photo sharing and they are now actively seeking funding assistance. Since Vancouver, British Columbia is the host of the 2010 Olympic Winter Games, Washington will see a large influx of traffic from out of state during that time. The ability to allow officers to more reliably identify out of state drivers will tremendously benefit efforts to ensure the safety of the public and those attending the event. Additional Prospective states for DL photos include: Colorado, Utah, Alaska, Texas and Hawaii.

Corrections Photo Sharing

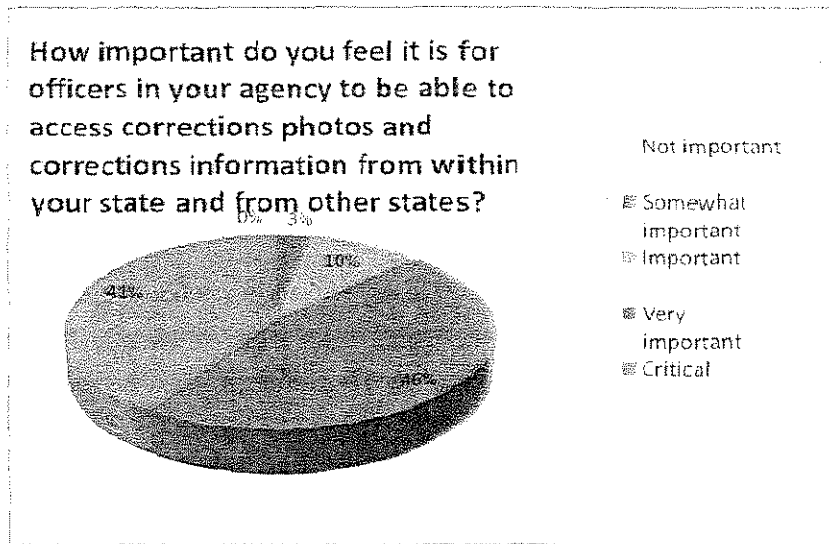
In the 1994 National Recidivism Study of Released Prisoners, an estimated 67.5% of released prisoners were arrested for a felony or serious misdemeanor within 3 years^{iv}. Corrections photos provide specific benefit to law enforcement since they provide the ability to verify the identity of subjects that will be highly likely to come into contact with law enforcement. Corrections photos represent an excellent source of high quality, verified

photographs that are often more recent than DL photos because of lengthy drivers license renewal periods in many states.

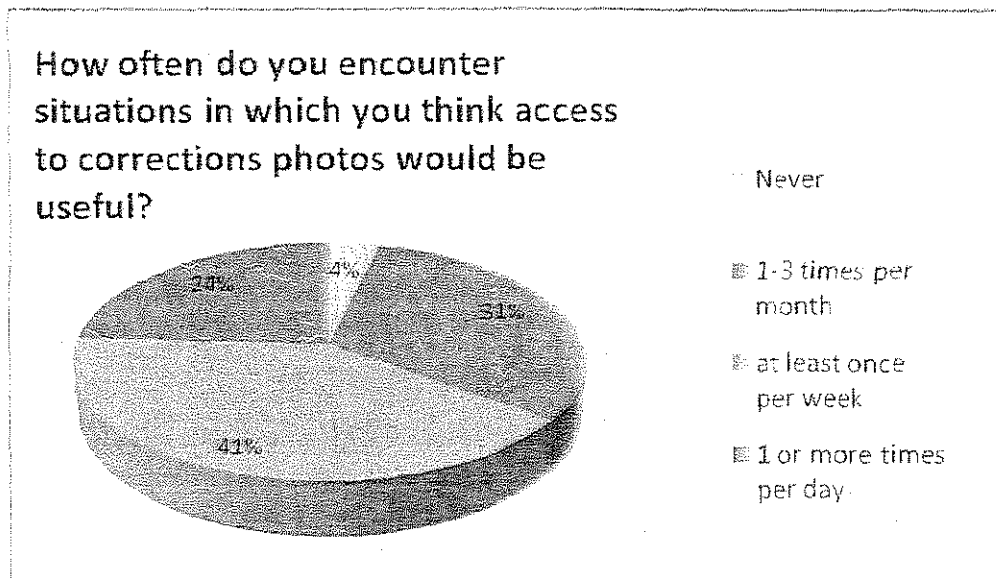
In 2008, SRFERS and NISP collaborated on a pilot project to create a standard transaction to share state Departments of Correction photos and associated information over the Nlets network. As part of a comprehensive user requirements analysis, SRFERS project staff surveyed officers from police agencies in California and Oregon to gather baseline metrics and user requirements on how officers currently and prospectively use corrections photographs. 160 users from 59 state and local agencies in California and Oregon responded. By manually classifying several open ended responses from the survey, SRFERS project staff found that field identification and investigative identification were the most prevalent desired uses of corrections photos.



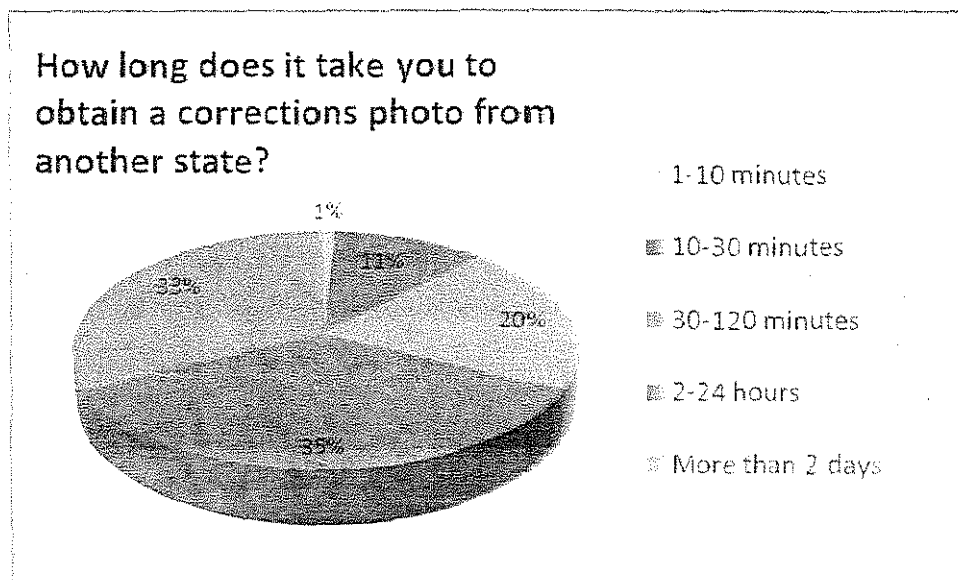
All of the officers that responded felt it was important for officers to be able to access corrections photos and information in and out of state.



Most officers surveyed regularly encounter situations in which access to corrections photos would be useful. The majority of those officers felt they would use such a system on at least a weekly basis.



Current access to corrections photos for most officers is a lengthy and cumbersome process. Thirty-five percent of the officers surveyed responded that it would take between 2 and 24 hours to get a corrections photo; a significant number felt it would take more than two days. This lengthy delay does not permit officers to use corrections photos for the use most critical for police officers; field ID or suspect identification.



To maximize the opportunities to develop reusable standards and components that will assist other states, SRFERS proposes to leverage shared systems and infrastructure among state DOCs. Fourteen states belong to one consortium in which the member state Departments of Corrections (DOCS) participate in the development and maintenance of offender management software. Idaho DOC is the state designated as the central point to maintain version control for this system. Since Oregon has implemented corrections photo sharing and Montana is in process, Idaho is a key state in that it creates a contiguous block of states from Montana to Oregon that could act as a potential testbed for corrections photo sharing.

The initial pilot between Oregon and North Carolina was vital to developing the user requirements, transaction content, and technical specifications. However, since the states are at opposite geographic ends of the country, the frequency of officers encountering subjects in one state from the other is very low. The implementation of Idaho, which fills in an interstate travel route through part of the Northwest would make photos accessible to officers in three adjoining states. In addition, since Idaho DOC is the version control point for the fourteen state consortium, the state is ideally situated to partner with SRFERS to develop components that will be reusable for the other 13 states in the consortium.

Other states will also be assessed to implement the new Corrections photo sharing standardized Nlets transaction (CPQ). The states that have already implemented DL photo sharing will have the advantage of having infrastructure in place for the interstate transmission of photos.

Booking-Additional states/regions for booking photos

Booking photo repositories are another excellent source of high quality photographs for law enforcement. Since many arrested subjects do not serve prison sentences, there are many more subjects with booking photos on file in local and regional systems.

During SRFERS Phase I, a new Nlets transaction for interstate sharing of booking photographs was piloted between Maricopa County, Arizona and ARJIS in the San Diego area. Since criminals are a transient population, it is difficult to identify them when they travel across state lines. The proximity and amount of criminal activity between Southern California and Phoenix, AZ suggested that these locations would be ideal for implementing interstate booking photo exchange. ARJIS collaborated with Nlets and Maricopa County,

ICJIS to develop re-usable technical specifications for booking data and photo sharing across state lines. Implementing these capabilities proved to be extremely beneficial. SRFERS assisted officers in San Diego and Phoenix with a variety of cases, including missing persons, murders, and positive identifications.

This area of photo sharing has great potential that has yet to be tapped. Prospective regions for booking photo expansion include: Los Angeles County, California and Las Vegas, Nevada.

ARJIS proposes to implement interstate photo exchange in at least three of these states or regions. Upon funding, project management staff will complete an environmental scan and assessment of the eligible states to determine the most effective strategic choices for implementation.

Goal 4: Expand and maintain the information sharing Toolkit

The SRFERS Portal hosting the Information Sharing Toolkit has been a critical component in the dissemination of standards, policy and privacy guidance, project components, and other documentation developed as part of SRFERS. The Portal underwent a significant revision during the summer of 2008 to simplify access to documentation and to provide better resources and information for states and agencies seeking to initiate information sharing projects.

One Toolkit component is a step-by-step chronological guide to planning, initiating, and implementing interstate information sharing, such as driver's license, corrections, and booking photo sharing through Nlets. The guide contains tips for each implementation step and links to exemplar documentation or technical specifications to assist state and regional

decision makers and information technology implementers seeking to expand their access and contribution to nationwide criminal justice information sharing.

The Toolkit website also contains interactive US maps with links to state pages describing their active information sharing projects. The state pages contain links to documentation associated with projects to assist other states seeking to implement similar systems or architectures. States with similar present or desired systems may then access project plans, policies, architectural models and other IEPD documents, reusing them with little or no modification, saving time and resources.

A Toolkit Document Download page gives implementers a central location to access documents from the following categories: Example Memorandums of Understanding (MOU's); Privacy/Policy research documents; State Implementation Plans (SIPs); Technical specifications (DL photos); Technical specifications (DOC photos); Architectural models; and Project plans. The website also features pages on other ongoing initiatives such as the ARJIS' PDA project, License Plate Reader (LPR) initiatives, and the expanded use of RAND (Nlets transactional data).

During the early phases of the project and continuing through the present, ARJIS/SRFERS project managers and staff have sought and integrated the requirements of the users-men and women on the front lines of the criminal justice system. Business case information and statistics have been gathered, recorded, and analyzed to direct the efforts of the project team. One example is a business case survey conducted in Oregon and California that took a baseline snapshot of how law enforcement officers in the field use corrections photos. The responses were analyzed and used to direct the project team efforts and decision

making when designing the new Corrections photo exchange model and technical specifications to enable the transfer of Corrections images through Nlets. This study, other business case studies, and the Corrections exchange model and technical specifications are all available as part of the Toolkit.

As the content and user base of the Portal has expanded, opportunities to use the portal to facilitate communication and document flow between the states have also expanded.

During a joint SRFERS/NISP conference call in February 2009, state representatives expressed interest in adding a moderated user forum to the portal. The forum would facilitate collaboration between states to address technical issues and document sharing.

There are many states with software components and other technical artifacts that could be shared but those states need assistance in identifying useful items that can be shared and preparing those for inclusion in the Toolkit. Furthermore there are many public safety initiatives taking place across the country that could benefit from the toolkit including GIS, biometric and Wireless projects. With additional funding, the Toolkit could be expanded and enhanced.

Management plan and organization

ARJIS will initiate the project upon award. ARJIS will be responsible for developing the SRFERS architecture, technical specifications, and messaging. ARJIS will leverage the existing partnership with Nlets during the development of technical specifications and the implementation of additional capabilities through the Nlets network. ARJIS, Nlets, and partner agencies will jointly test the operational systems to ensure effectiveness and

desired operation. ARJIS expects the project will be completed one year following award of funding. A high level work breakdown structure is referenced in the timeline below.

Oversight, policy, strategy and guidance will come from the National Institute of Justice and the ARJIS Executive Board. Leadership and overall project management direction will come from Pam Scanlon, Executive Director of ARJIS, who will function as Principal Investigator.

ARJIS will be responsible for the development of the system components. ARJIS will also provide support for the operational testing. Existing member agencies and users will provide a test bed for field deployment.

Dissemination/Implications for public policy and practice

The results of the SRFERS project have had significant impact for public policy and practice nationwide. States across the country are sharing DL photos and Corrections photo sharing is in process in a third state.

Additional funding will allow SRFERS to leverage the additional infrastructure, capabilities, and working relationships forged during the previous effort to further develop, enhance, or refine standards and capabilities. All of the technical and policy documentation generated during the course of the project will be made available to the states via the Toolkit at www.srfers.org.

Section II Recovery Act

Project Objectives

The SRFERS objectives are linked with the Recovery Act objectives in that they are all projects that require development and management activities where the vast majority of

the budget goes to employee or contractor salaries. The sub projects funded under SRFERS directly benefit the public in several states, benefiting not only those states but the public and law enforcement agencies in all the states by making critical information available to criminal justice agencies nationwide. The outcomes will greatly benefit the public and measurably increase the efficiency of criminal justice agencies. The improved infrastructure resulting from the expenditures thus have the direct employment benefit for economically struggling communities, plus the benefit of improved IT infrastructure, public safety, officer safety, and homeland security in keeping with the goals of all levels of government.

Improvements in law enforcement information sharing enhance efficiency and effectiveness of criminal justice agencies. During the requirements phase of the NCIEN project, surveyed officers described the process that they would have to work through to acquire out of state photographs for investigations. Depending on the state, the process would often require several phone calls to locate make contact with an agency that could supply a photo. The photograph would often be faxed or even mailed, with the results either being delayed or poor quality.

With widespread implementation, rapid access to photographs can save hours of time for officers and investigative personnel during criminal investigations. With the implementation of these interstate information sharing capabilities, an officer in one state can immediately check for available driver's or corrections photos from a contacted person's home state. During SRFERS I, feedback from the needs assessment and user

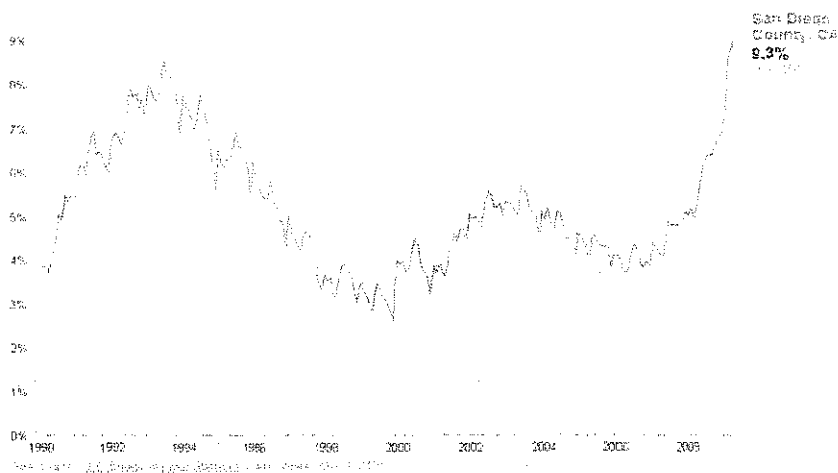
surveys indicated that officers would save considerable time (2hours – 2 weeks) per photo based - assuming that it takes 5 days on average to retrieve a photograph.

SRFERS photo sharing capabilities reduce the time it takes to get an out of state photo from five days to several seconds. In streamlining this process officers will be able to complete their casework in a shorter amount of time without having to run unnecessary searches. Missing and wanted persons are now more easily identified by out of state officers resulting in clearance of missing and wanted persons databases in a more timely manner.

Offenders and fugitives that would otherwise escape justice can be identified immediately. An example of this occurred recently in North Carolina since the NCIEN implementation. A traffic violator was stopped by police and gave a name and date of birth. The officer did not have photo access, but the name and date of birth returned a valid license and the subject was released with a citation. Approximately two hours later, the same subject was stopped by an officer who did have corrections photo access. The officer was able to immediately retrieve a corrections photo to determine the subject had given a false name and had a warrant for his arrest.

Job retention/creation

The additional SRFERS funding will further the goals of the American Recovery and Reinvestment Act in job retention and creation. San Diego County has been severely impacted by the economic crisis. Unemployment has reached higher levels than any time in the last 20 years.



With this additional funding, permanent ARJIS/SANDAG employees and contracted project staff will retain their employment for an additional year, adding revenue to their own communities and avoiding placing these individuals into the ranks of job seekers. Much of the funding goes to software programming and development work that will be contracted to IT companies. Typically IT companies expand and contract their own personnel resources based on the number of project contracts they secure. These companies will continue to retain and expand staff to accomplish the available workload, keeping individuals employed and revenue flowing into the employees' communities. All of the vendors that are contracted as a part of this project are US companies. There are several states now in a position to participate in the project focus areas. Contract work for these implementations could begin within a matter of weeks following award of funding.

Competencies and Capacities

ARJIS has a proven history of implementing effective information sharing initiatives throughout the region. Through the ARJIS Joint Powers Agreement (JPA), which binds 70+ agencies throughout the San Diego region, ARJIS has strong partnerships with public safety agencies at the local, state, and federal levels. ARJIS is governed by the SANDAG Public Safety Committee (PSC). The PSC advises the SANDAG Board of Directors on major policy-level matters related to crime and public safety. This committee is unique because of the membership of six elected officials and eight public safety professionals and officials, five of which are voting members. This blend of elected officials and public safety professionals on the PSC offers benefits and opportunities for enhancing regional public safety that goes beyond current ARJIS activities.

Routine direction is set by and received from the ARJIS Chiefs' /Sheriff's Management Committee, comprised of all the police chiefs in the county and the Sheriff, and high ranking officials from the ex-officio agencies (or their designees). Due to its governance structure, ARJIS is held strictly accountable for implementing cost-efficient and useful systems in a timely manner. By hiring individuals with public safety backgrounds and diverse technical experts, ARJIS is able to capture the needs of the law enforcement community and convert them into effective information sharing systems.

Administratively, ARJIS is a division of SANDAG, which represents the 18 cities and county governments in the San Diego region. SANDAG builds consensus, makes strategic plans, obtains and allocates resources, plans, engineers, and builds public transportation, and provides information on a broad range of topics pertinent to the region's quality of life. The SANDAG Finance Department is responsible for tracking ARJIS funding. SANDAG

assigns distinct accounting numbers to each grant fund, and tracks all grant expenditures, invoices and drawdowns separately. This ensures that ARJIS Grant funds are not commingled with other funds. SANDAG produces a Comprehensive Annual Financial Report (CAFR) each year which includes the findings from an independent auditor report. The audit is completed in accordance with generally accepted auditing standards in the United States and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States.

Performance Measurements

To assist in fulfilling the accountability objectives of the Recovery Act, as well as the Department's responsibilities under the *Government Performance and Results Act (GPRA)*, *Public Law 103-62*, applicants who receive funding under this solicitation must provide data that measure the results of their work. Additionally, applicants must discuss their data collection methods in the application. Performance measures for this solicitation are as follows:

OBJECTIVE	PERFORMANCE MEASURES	DATA THE GRANTEE PROVIDES FOR 3-MONTH REPORTING PERIOD	DESCRIPTION (PLAIN LANGUAGE EXPLANATION OF WHAT EXACTLY IS BEING PROVIDED)
Recovery Act: Preserving and creating jobs and promoting economic recovery			
Job retention	This award would enable ARJIS to support retention of a minimum 3 up to 12 jobs. One of these jobs will support an ARJIS employee and the remaining eleven would be contractors. ARJIS: a grants manager. Contractors: a project manager, a senior	Every three months, ARJIS will report on the labor hours by category for all positions retained, including FTE and contractors.	job retention

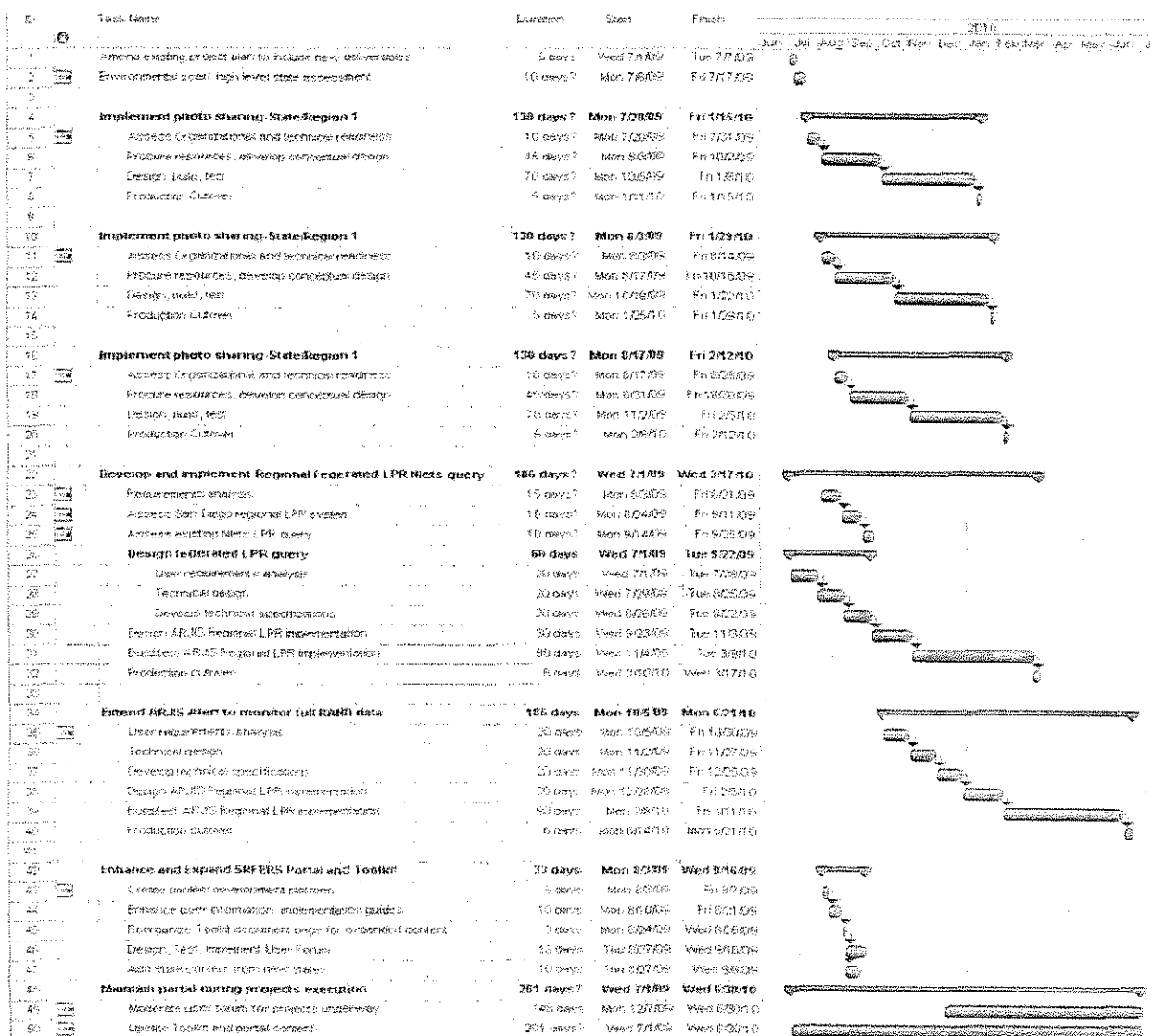
	software engineer. There will also be up to 3 photo sharing projects that will be contracted to different vendors depending on which states/regions are chosen in the assessment process. Most vendors supply at minimum 1 project manager, a technical lead, and a programmer. Up to 3 sub projects may therefore support to up to 9 total jobs depending on contract award.*See note under Job Creation.		
Job creation	**IT companies may expand staff on award of additional contracts. Job creation is not possible to calculate in advance of contract award; it would depend on whether a vendor has already laid off or allowed staff numbers to fall by attrition due to the economic decline whether a portion of these 9 positions will fall under created rather than retained jobs.	See note**	job creation
Promote economic recovery	ARJIS plans to spend approximately \$476,000 on goods and services the majority of which goes to permanent or contracted salaries of individuals.	Every three months ARJIS will report on grants expenditures for these categories. ARJIS plans to expend these funds over a one-year period.	Grantees will use the funding provided to pay the salaries of the individuals in their organization working on this project. Funding will also be used to procure goods and services from other sources, including sub grantees, office supplies, high technology components such as computers, precision instrumentation, etc. In so doing, it will preserve and create jobs in other businesses and so promote economic recovery.

NJ Specific: Develop and demonstrate relevant tools or technologies for law enforcement application			
OBJECTIVE	PERFORMANCE MEASURES	DATA THE GRANTEE PROVIDES FOR 3-MONTH REPORTING PERIOD	DESCRIPTION (PLAIN LANGUAGE EXPLANATION OF WHAT EXACTLY IS BEING PROVIDED)
Extend photo sharing to additional state/regions:	Successful implementation in up to 3 states/regions to share new photo sources over Nlets. The photos would be available to all states that have implemented photo retrieval. Results in Additional project and technical documentation available to agencies	Every 3 months ARJIS will provide a report summarizing the status of these projects.	Up to three new operational systems in states or regions sharing DL, DOC, or booking photos. The resulting documentation and technical artifacts provided to states via the Toolkit.
Expand the LPR query to a regional federated query:	Results in access for officers in the pilot area to access regional LPR information through Nlets. Results in a repeatable model to expand nationwide LPR access to regional systems through Nlets.	Every 3 months ARJIS will provide a report summarizing the status of this project.	A new capability to access regional LPR data will be fully implemented and tested in the San Diego area. Feasibility for expansion to the rest of the country will be assessed. A new LPR query for regional LPRs will be developed if indicated in the requirements phase.
Extend the ARJIS Alert to monitor RAND and pilot national alerting capability:	Results in greatly expanded monitoring capabilities for 70 agencies in the ARJIS consortium. Results in additional development and code enhancements	Every 3 months ARJIS will provide a report summarizing the status of this project.	Officers using the ARJIS Alert system will be able to monitor the full range of Nlets RAND data. Code enhancements for Alert and its .NET framework will be

	that can be applied to Nlets national level RAND alerts.		available to Nlets.
Enhance, expand, and maintain the Information Sharing Toolkit on the SRFERS Portal:	Results in improved assistance to states and agencies seeking to initiate or in the implementation process for law enforcement data sharing projects.	Every 3 months ARJIS will provide a report summarizing the status of this project, including a description of enhanced content, capabilities and expanded user base.	The resources available to states and agencies initiating or implementing data sharing will be enhanced. Agencies will be able to share information and work out technical issues via the user forum.
Applicable to all portions of the project:	A final technical report providing a comprehensive overview of the project and a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy. Required financial and programmatic reports. Software deliverables and/or training materials.		Final report and full description of all project findings, implications for policy and practice, and any non-proprietary software components.

Timeline

The proposed development will be completed within one year of funding. A high level task breakdown and timeline is shown below.



References

ⁱ <http://www.srfers.org/ParticipantStates/tabid/87/Default.aspx>

ⁱⁱ <http://www.correctionstech.org/documents/CTA%20Whitepaper%20Mar%202008.pdf>

ⁱⁱⁱ <http://www.srfers.org/ToolkitDocumentation/ToolkitDocumentDownloadPage/tabid/57/Default.aspx>

^{iv} <http://www.ojp.usdoj.gov/bjs/crimoff.htm#recidivism>

ID	Task Name	Duration	Start	Finish	2010											
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	Amend existing project plan to include new deliverables	5 days	Wed 7/1/09	Tue 7/7/09												
2	Environmental scan, high level state assessment	10 days?	Mon 7/6/09	Fri 7/17/09												
3																
4	Implement photo sharing-State/Region 1	130 days?	Mon 7/20/09	Fri 1/15/10												
5	Assess Organizational and technical readiness	10 days?	Mon 7/20/09	Fri 7/31/09												
6	Procure resources, develop conceptual design	45 days?	Mon 8/3/09	Fri 10/2/09												
7	Design, build, test	70 days?	Mon 10/5/09	Fri 1/8/10												
8	Production Cutover	5 days?	Mon 1/11/10	Fri 1/15/10												
9																
10	Implement photo sharing-State/Region 1	130 days?	Mon 8/3/09	Fri 1/29/10												
11	Assess Organizational and technical readiness	10 days?	Mon 8/3/09	Fri 8/14/09												
12	Procure resources, develop conceptual design	45 days?	Mon 8/17/09	Fri 10/16/09												
13	Design, build, test	70 days?	Mon 10/19/09	Fri 1/22/10												
14	Production Cutover	5 days?	Mon 1/25/10	Fri 1/29/10												
15																
16	Implement photo sharing-State/Region 1	130 days?	Mon 8/17/09	Fri 2/12/10												
17	Assess Organizational and technical readiness	10 days?	Mon 8/17/09	Fri 8/26/09												
18	Procure resources, develop conceptual design	45 days?	Mon 8/31/09	Fri 10/30/09												
19	Design, build, test	70 days?	Mon 11/2/09	Fri 2/5/10												
20	Production Cutover	5 days?	Mon 2/8/10	Fri 2/12/10												
21																
22	Develop and Implement Regional Federated LPR Niets query	185 days?	Wed 7/1/09	Wed 3/17/10												
23	Requirements analysis	15 days?	Mon 8/3/09	Fri 8/21/09												
24	Assess San Diego regional LPR system	15 days?	Mon 8/24/09	Fri 9/11/09												
25	Assess existing Niets LPR query	10 days?	Mon 9/14/09	Fri 9/25/09												
26	Design federated LPR query	60 days	Wed 7/1/09	Tue 9/22/09												
27	User requirements analysis	20 days	Wed 7/1/09	Tue 7/28/09												
28	Technical design	20 days	Wed 7/29/09	Tue 8/25/09												
29	Develop technical specifications	20 days	Wed 8/26/09	Tue 9/22/09												
30	Design ARJIS Regional LPR implementation	30 days	Wed 9/23/09	Tue 11/3/09												
31	Build/test ARJIS Regional LPR implementation	90 days	Wed 11/4/09	Tue 3/9/10												
32	Production cutover	5 days	Wed 3/10/10	Wed 3/17/10												
33																
34	Extend ARJIS Alert to monitor full RANB data	185 days	Mon 10/5/09	Mon 5/21/10												
35	User requirements analysis	20 days	Mon 10/5/09	Fri 10/30/09												
36	Technical design	20 days	Mon 11/2/09	Fri 11/27/09												
37	Develop technical specifications	20 days	Mon 11/30/09	Fri 12/25/09												
38	Design ARJIS Regional LPR implementation	30 days	Mon 12/28/09	Fri 2/6/10												
39	Build/test ARJIS Regional LPR implementation	90 days	Mon 2/8/10	Fri 6/11/10												
40	Production cutover	5 days	Mon 6/14/10	Mon 6/21/10												
41																
42	Enhance and Expand SRFERS Portal and Toolkit	33 days	Mon 8/3/09	Wed 9/16/09												
43	Create parallel development platform	5 days	Mon 8/3/09	Fri 8/7/09												
44	Enhance user information, implementation guides	10 days	Mon 8/10/09	Fri 8/21/09												
45	Reorganize Toolkit document page for expanded content	3 days	Mon 8/24/09	Wed 8/26/09												
46	Design, Test, Implement User Forum	15 days	Thu 8/27/09	Wed 9/16/09												
47	Add state content from new states	10 days	Thu 8/27/09	Wed 9/9/09												
48	Maintain portal during projects execution	261 days?	Wed 7/1/09	Wed 6/30/10												
49	Moderate user forum for projects underway	148 days	Mon 12/7/09	Wed 6/30/10												
50	Update Toolkit and portal content	261 days?	Wed 7/1/09	Wed 6/30/10												



State Regional and Federal Enterprise Retrieval System III

A. Personnel—List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	Time Devoted	Computation	Cost w/o fringe benefits
ARJIS Grant Administrator	25%	\$65,266 per year at .25 FTE	\$16,250.00
Total			\$16,250.00

B. Fringe Benefits—Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Name/Position	Computation	Cost
Project Manager		
Grant Administrator Retirement	\$16,250 x 16.67%	\$2,709.00
Grant Administrator Health Insurance	\$16,250 x 8.56%	\$1,392.00
Grant Administrator Dental Insurance	\$16,250 x 1.35%	\$219.00
Grant Administrator Vision	\$16,250 x .24%	\$39.00
Grant Administrator Life Insurance	\$16,250 x .4%	\$65.00
Grant Administrator Disability	\$16,250 x .79%	\$128.00
Grant Administrator EAP Program	\$16,250 x .0076%	\$1.20
Grant Administrator Medicare tax	\$16,250 x .109%	\$17.71
Sub-Total		\$4,570.91
TOTAL		\$4,570.91

C. Travel—Itemize travel expenses of project personnel by purpose (e.g. staff to training, field interviews, advisory group meetings, etc.). Show the basis of computation (e.g. six people to 3-day training at X airfare, \$X lodging, \$X subsistence). In training projects, travel and meals for trainings should be listed separately. Show the number of trainees and the unit costs involved. Identify the location of travel if known. Indicate source of travel Policies applied, applicant of travel regulations.

Purpose of travel	Item	Computation	Cost
Site visits to states/regions for photo sharing projects	Airfare	\$400 x 2 persons x 3 site visits	\$2,400.00
Site visits for photo sharing projects	Lodging	\$150 x 2 nights x 2 persons x 3 site visits	\$1,800.00
Site visits for photo sharing projects	per diem	\$58 x 2 people x 3 site visits	\$348.00

Niets technical meetings	Airtare	\$200 x 3 people x 2 meetings	\$1,200.00
Niets technical meetings	Lodging	\$150 x 3 people x 2 nights x 2 meetings	\$1,800.00
Niets technical meetings	per diem	\$56 x 3 people	\$174.00
NIJ Program Review in Washington, DC	Airtare	\$350 x 2 people	\$700.00
NIJ Program Review	Lodging	\$170 x 2 people x 2 nights	\$680.00
NIJ Program Review	per diem	\$56 x 2 people x 3 days	\$338.00
TOTAL			\$9,450.00

D. Equipment -- List non-expendable items that are to be purchased. Non-expendable equipment is tangible property having a useful life of more than two years and an acquisition cost of \$5,000 or more per unit. (Note: Organization's own capitalization policy may be used for items costing less than \$5,000).

Item	Computation	TOTAL	Cost
			\$0.00

E. Supplies--List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. Generally, supplies include any materials that are expendable or consumed during the course of the project.

Item	Computation	Cost
N/A		
TOTAL		\$0.00

F. Construction-- As a rule, construction costs are not allowable. In some cases, minor repairs or renovations may be allowable. Consult with the program office before budgeting funds in this category.

Item	Cost	
N/A	\$0.00	
TOTAL		\$0.00

G. Consultants/Contracts -- For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and an estimated time on the project.

Name of Consultant	Service Provided	Computation	Cost
TBD	Project Manager	\$75 x 866 hours	\$64,950.00
TBD	Senior Programmer	\$70 x 2080 hours	\$145,600.00

TBD	Nets Senior Programmer	\$108 x 462 hours		\$50,000.00
			Subtotal	\$260,660.00
Contract				
	Contract IT company for photo sharing implementation	\$62,000 X 3 states/regions	Subtotal	\$186,000.00
			TOTAL	\$446,660.00

H. Other Costs— List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot rent, and provide a monthly rental cost and how many months to rent.

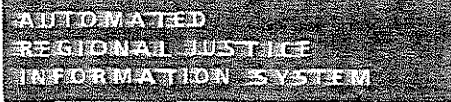
Item	Cost
N/A	\$0.00
TOTAL	
	\$0.00

I. Indirect Cost—Indirect costs are allowed only if the applicant has Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

N/A	\$0.00
TOTAL	
	\$0.00

Budget Summary - Compute the total direct costs and the total project costs. Indicate the amount of Federal requested and the amount of non-Federal funds that will support the project.

Budget Category	Amount
A. Personnel	\$16,250.00
B. Fringe Benefits	\$4,570.91
C. Travel	\$9,450.00
D. Software	\$0.00
E. Supplies	\$0.00
F. Construction	\$0.00
G. Consultant/Contracts	\$446,660.00
H. Other Costs	\$0.00
I. Indirect Costs	\$0.00
Total Direct Costs	\$476,820.91



Budget Narrative

Overview:

ARJIS, the Automated Regional Justice Information System seeks to expand critical justice information sharing by applying additional funding to four important development areas.

1. SRFERS will also implement and pilot access to LPR data from regional systems, beginning with a regional LPR system now underway at ARJIS. Access to a regional system through Nlets will be piloted in the San Diego area.
2. ARJIS proposes to extend the ARJIS Alert by refining and expanding the San Diego area framework to apply to Nlets RAND data.
3. SRFERS will extend Drivers, Corrections, and/or Booking photo sharing capabilities in to up to three additional states. During assessment of states implemented with the current funding, several states expressed interest in participating in DL photo sharing, but their proposed timeline precluded earlier participation. These states will be assessed, along with states and regions ready to share Corrections or booking photos, to choose the best fit for maximum benefit to the public and other law enforcement agencies.
4. The SRFERS Portal hosting the Information Sharing Toolkit has been a critical component in the dissemination of standards, policy and privacy guidance, project components, and other documentation developed as part of SRFERS. With additional funding, the Toolkit could be expanded and maintained. Enhanced implementation guides, state project information, LPR information and many other components could be made accessible to law enforcement agencies.

A. Personnel:

Grants Manager Estimate: \$16,250

The Grants manager is a permanent SANDAG/ARJIS employee. Her time commitment to this project will be at .25 FTE.

B. Fringe Benefits Estimate: \$4,570.91

Fringe benefits are based on actual known costs. Fringe benefits are for the personnel listed category (A) and only for the percentage of time devoted to the project.

C. Travel: \$9450

Travel is required for the completion of project goals. Lessons learned from earlier activities highlights the need for site visits during the initiation of photo sharing projects. Travel for a PM and a technical person are included for the three photo sharing sub projects. Travel for project technical staff to an Nlets technical meeting is also required for the completion of project objectives. Travel to Washington, DC for an NIJ program review is included.

D. Equipment Estimate: \$0

ARJIS proposes to leverage existing technology, infrastructure, and resources. No equipment purposes are proposed.

E. Supplies: N/A

F. Construction: N/A

G. Consultants/Contracts:

Consultant Fee Estimate: \$0

Contracts: \$446,550

The SRFERS Project Manager, and the senior software programmer are ARJIS contractors. Nlets technical staff time is also included in the anticipated contracts.

In addition, it is anticipated that the technical development, and portions of the technology assessment will be completed by sub-contractors. Sub-contractors will follow the ARJIS/SANDAG procurement policies.

H. Other Costs: N/A

I. Indirect Costs: N/A

TOTAL ESTIMATE: \$ 476,820.91



U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

Recovery Act: Law Enforcement Technology Research and Development

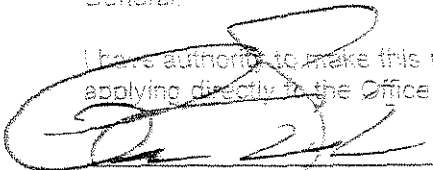
Certification as to Recovery Act Reporting Requirements

On behalf of the applicant entity named below, I certify the following to the Office of Justice Programs, U.S. Department of Justice:

I have personally read and reviewed the section entitled "Accountability and Transparency under the Recovery Act" in the program announcement for the Recovery Act grant program identified above. I have also read and reviewed section 1512(c) of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5), concerning reporting requirements for grants. I agree that the applicant will comply with the reporting requirements set forth therein with respect to any grant the applicant may receive under the Recovery Act grant program identified above.

I acknowledge that a false statement in this certification may be subject to criminal prosecution, including under 18 U.S.C. § 1001. I also acknowledge that Office of Justice Programs grants, including certifications provided in connection with such grants, are subject to review by the Office of Justice Programs, and/or by the Department of Justice's Office of the Inspector General.

I have authority to make this certification on behalf of the applicant entity (that is, the entity applying directly to the Office of Justice Programs).


Signature of Certifying Official

PAMELA SCRUBBS
Printed Name of Certifying Official

EXECUTIVE DIRECTOR
Title of Certifying Official

Automated Regional Justice Information
Full Name of Applicant Entity

May 14, 2009
Date

System

 Department of Justice Office of Justice Programs National Institute of Justice	Cooperative Agreement	PAGE 1 OF 10																
1. RECIPIENT NAME AND ADDRESS (including Zip Code) International Association of Chiefs of Police 515 North Washington Street Alexandria, VA 22314-2340	4. AWARD NUMBER: 2009-U-CX-K009 5. PROJECT PERIOD: FROM 10/01/2009 TO 09/30/2013 BUDGET PERIOD: FROM 10/01/2009 TO 09/30/2013 6. AWARD DATE 09/13/2012 7. ACTION																	
1A. GRANTEE IRS/VENDOR NO. 530227813	8. SUPPLEMENT NUMBER 02	Supplemental																
3. PROJECT TITLE Video Standards Project	9. PREVIOUS AWARD AMOUNT \$ 784,203 10. AMOUNT OF THIS AWARD \$ 299,995 11. TOTAL AWARD \$ 1,084,198																	
12. SPECIAL CONDITIONS THE ABOVE GRANT PROJECT IS APPROVED SUBJECT TO SUCH CONDITIONS OR LIMITATIONS AS ARE SET FORTH ON THE ATTACHED PAGE(S).																		
13. STATUTORY AUTHORITY FOR GRANT This project is supported under FY12(NIJ - OS&T Gen.) 42 USC 3721-3723; 6 USC 161-165; 28 USC 530C																		
15. METHOD OF PAYMENT CPRS																		
AGENCY APPROVAL GRANTEE ACCEPTANCE																		
16. TYPED NAME AND TITLE OF APPROVING OFFICIAL John H. Laub Director, National Institute of Justice		18. TYPED NAME AND TITLE OF AUTHORIZED GRANTEE OFFICIAL Burt R. Johnson Executive Director																
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20. ACCOUNTING CLASSIFICATION CODES <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>FISCAL YEAR</th> <th>FUND CODE</th> <th>BUD. ACT.</th> <th>OFC</th> <th>DIV. REG.</th> <th>SUB.</th> <th>POMS</th> <th>AMOUNT</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>C</td> <td>75</td> <td>60</td> <td>00</td> <td>00</td> <td></td> <td>299995</td> </tr> </tbody> </table>		FISCAL YEAR	FUND CODE	BUD. ACT.	OFC	DIV. REG.	SUB.	POMS	AMOUNT	X	C	75	60	00	00		299995	21. I75SGT0374
FISCAL YEAR	FUND CODE	BUD. ACT.	OFC	DIV. REG.	SUB.	POMS	AMOUNT											
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OJP FORM 4000/2 (REV. 5-87) PREVIOUS EDITIONS ARE OBSOLETE.

OJP FORM 4000/2 (REV. 4-88)

1 - Abstract

Law enforcement is increasingly becoming more dependent on various forms of technology. Evidence collection and analysis, interoperable communications, records management and information sharing, mobile computing, and speed enforcement have emerged as highly specialized and technology-intensive disciplines. Inconsistent performance from any technology, however, can negatively impact its overall value to law enforcement, and this is particularly the case with technologies that directly affect evidence collection and use in a criminal case.

Digital imaging has quickly become one of the most abundant forms of evidence in police investigations. The use of dedicated interview room recording systems (IRRS) and license plate recognition technology (LPR) has increased significantly in the last decade. To date, however, there are no uniform standards governing the technical performance of these technologies, leaving agencies with only the vendors' often unsubstantiated performance claims as the basis to make their purchasing decisions, and leaving the courts with scarce objective guidance as to the reliability of video and other images considered digital multimedia evidence (DME). This proposed project continuation will enable IACP to finalize standards development initiatives for IRRS and LPR technologies.

During the first two years of the Video Standards project, IACP staff and a Special Technical Committee (STC) completed work on performance standards for Vehicular Digital Multimedia Evidence Recording Systems (VDMERS). Three documents were drafted as required by the NIJ standards development process: 1.) *Performance Standards*, 2.) *Testing and Certification Protocol*, and 3.) *Selection and*

Application Guide. All three documents have previously been released for public comment and review, and were delivered to NIJ for final review during FY2012. In year three of the Video Standards project, similar documents will be drafted and finalized for IRRS and LPR technologies.

A substantial amount of work has already been completed by IACP over the past two years in developing standards for IRRS and LPR. Special Technical Committees (STCs) were formed for both IRRS and LPR technologies, and each of the two STCs met three times during FY2011. The LPR STC has met three additional times in FY2012, and a fourth meeting is being scheduled prior to the end of the current fiscal year. The IRRS STC has met twice in FY2012, and a third meeting is similarly scheduled prior to the end of the current fiscal year. To date, both Committees have developed *Needs and Requirements* documents applicable to the respective technologies and are presently working on the three documents referenced above.

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3 - Main Body

3.1 - Statement of the problem/goals and objectives

The purpose of this project is to research video recording systems in use by law enforcement agencies to facilitate the establishment of a set of measureable performance benchmarks to provide guidance to agencies and the courts. Law enforcement is increasingly deploying video technology to assist in the documentation of violations, police interactions with the public, and interviews of suspects and witnesses in criminal investigations. Because there are no established technical standards for the image and/or sound recording performance of these devices, police have no reliable information to assess products in the marketplace. Without standards vetted and broadly accepted by the relevant scientific community, the reliability and accuracy of recorded evidence presented in court may be vulnerable to challenges under Daubert¹ and Frye².

This project will cover two specific categories of video systems used by law enforcement:

- Interview room recording systems (IRRS)
- License plate recognition systems (LPR)

Long practiced in the United Kingdom, Canada, as well as many domestic law enforcement agencies, the recording of interviews of suspects and witnesses is rapidly increasing in the United States. A growing number of state governments are passing

¹ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993)

² *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923)

legislation requiring the recording of custodial interviews of suspects in at least some categories of major crimes.³

A 2004 study on the use of interview recordings found, "Experience shows that recordings dramatically reduce the number of defense motions to suppress statements and confessions. The record is there for defense lawyers to see and evaluate: if the officers conduct themselves properly during the questioning, there is no basis to challenge their conduct or exclude the defendants' responses from evidence. Officers are spared from defending themselves against allegations of coercion, trickery, and perjury during hostile cross examinations."⁴ How effective the recordings are, however, may depend on the quality of the audio and video captured. The establishment of a minimum performance standard will help ensure the reliability of valuable evidence.

License plate recognition (LPR) technology is one of the fastest growing segments of the police technology market. These devices can capture thousands of license plate images per hour -- often while the police car, the target vehicle, or both are moving at highway speeds -- scanning the images with optical character recognition (OCR) software and comparing the alpha-numeric information with a "hot list" of stolen or wanted vehicles. Because of the very nature of their function, image clarity and accuracy of the OCR translation of the images are critical to the reliability of the data collected. A standard for the performance of LPR systems will help assure agencies and the courts that they are collecting accurate information.

³ Recording Makes Sense. Main Justice. 2011. <http://www.mainjustice.com/2011/06/22/recording-makes-sense>. Accessed June 13, 2012.

⁴ *Police Experiences with Recording Custodial Interrogations*, Northwestern University School of Law Center on Wrongful Convictions, Thomas P. Sullivan, 2004, p.12.