EVIDENCE
TECHNOLOGY MAGAZINE

Mobile Identification

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N-DEx ties together disparate databases nationwide, making old-fashioned detective work and interagency communications an automatic process... and maybe even a smarter process.

CONNECTING THE DOTS.

Written by Kristi Mayo

THE WORLD WON'T STOP for the sake of an investigation. A homicide occurs, and things just keep on ticking. In any one instant, all across the United States, traffic stops are made, break-in reports are written up, and suspicious activity is documented. Meanwhile, the killer you are trying to track down is eating breakfast, driving to work, visiting his girlfriend, or traveling across state lines.

And as that killer goes about his daily life, what happens if just one of the thousands of incident reports being collected all over the country somehow involves the killer you are looking for —even in the most innocuous way? For instance, what if he is jotted down as a witness to a domestic disturbance in a neighboring state, and the name he provides is one of his many aliases?

In most cases, you would never get word of this connection. Unless, that is, you are utilizing the Law Enforcement National Data Exchange—known as *N-DEx*—a program that is now available to authorized law-enforcement users. N-DEx is provided by the FBI's Criminal Justice Information Services (CJIS) Division.

Using an N-DEx capability that is scheduled to launch later this year, you could "subscribe" to receive notification of any activity involving your person of interest. As soon as the data for that domestic disturbance mentioned above was entered into N-DEx, the system would make the connection between your suspect and the alias provided in that incident report, and

you would receive notification of that activity along with contact information for the person handling the case. That information could allow you to track down your guy before he has a chance to engage in another criminal act.

What you have read above is, of course, just a fictitious example of the power of N-DEx. There are many more benefits available and other planned capabilities in the works, ranging from geovisualization and mapping to advanced analytical reporting.

At the core of N-DEx, however, is its main mission: "To enable the sharing of complete, accurate, timely, and useful information across jurisdictional boundaries and to provide new investigative tools that enhance the nation's ability to fight crime and terrorism."

Achieving a monumental task
In the beginning, some people may have thought that the concept that led to the creation of N-DEx was too far reaching to be attainable.

"I think we realized early on that this was a daunting task," said Thomas E. Bush III, assistant director of the FBI CJIS Division. "Number one, there is the technical side of this. And then there is the other side: Coming up with an understanding—or a trust factor— between the various law-enforcement agencies and entities."

In a post-9/11 environment, Bush recalled many discussions regarding information sharing in the field of law enforcement. National data-sharing systems were in place, such as the Interstate Identification Index (III), the

Integrated Automated Fingerprint Identification System (IAFIS), and the National Crime Information Center (NCIC) system.

"All of those systems provide information where there has been some sort of court or police action: where a warrant or conviction has been obtained, for example," said Bush. "What was missing was a way to pull together incident data—where a burglary, or a murder, or a rape has occurred. There has been an investigation into the incident, but that data does not appear in any other national system."

Most law-enforcement agencies across the country maintain record-management systems that track this kind of incident data. In fact, some large metropolitan areas (Los Angeles and San Diego in California, for example) and even a few states (such as Ohio and Texas) have compiled participating agencies' records into one regional database. Sharing this information across state lines, however, is not an easy task.

"Certainly, it is all structured data," said Bush. "But the Gulfport Police Department in Gulfport, Mississippi uses a different record-management system than the Long Beach Police Department, which is right next door. And that sysem is different from the Nashville and Memphis systems in Tennessee, and so forth. All of those might be great systems, but none of them were the same, and none of that structured data was standardized."

Because the record-management systems developed by different vendors each had their own proprietary structure, agencies generally had no simple way of sharing their data. Instead, an investigator would get information from a neighboring agency the old-fashioned way: by picking up the phone.
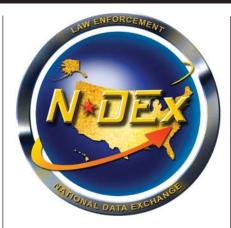
This is where the concept of N-DEx met its first hurdle: How do you get all of the different data sources structured similarly so that they are compatible? The answer was the National Information Exchange Model (NIEM), a partnership between the Department of Justice and the Department of Homeland Security. NIEM provides a set of building blocks that enable the creation of a "data dictionary," as Bush called it, to allow the exchange of documents between the federal government and state, local, and tribal organizations.

Since NIEM was launched back in February 2005, most of the vendors who provide the record-management systems to individual law-enforcement agencies have made their proprietary systems NIEM-compliant. "This allows those various types of vendor products to talk to each other," said Bush, "and then we could put in a system and allow it to be accessed nationwide."

The next obstacle for the developing concept of N-DEx to overcome was getting all of these federal, state, local, and tribal law-enforcement agencies on board with the concept of a national information-sharing system.

According to Bush, there was initial concern among state and local administrators that a national system would render obsolete their local and regional record-management systems that had required a serious investment of time, money, and effort for development. To overcome this confusion, a careful partnership with the law-enforcement community was necessary.

"The FBI did not develop N-DEx in a vacuum, and that is an important thing to remember," said Kevin Reid, the N-DEx program manager with the FBI CJIS Division. "We developed this in concert with what we call the CJIS Advisory Policy Board, which includes representatives from law-enforcement agencies all across the country, along with the four major law-enforcement

organizations in the United States: the Major City Chiefs Association, the National Sheriffs' Association, the International Association of Chiefs of Police, and the Major County Sheriffs' Association. Those organizations were all involved in putting together the concept from the beginning and really getting this thing rolling."

Bush added that working with the Advisory Policy Board—as well as individuals who serve as subject-matter experts throughout the development and delivery of N-DEx—is the only way to produce a successful, far-reaching program such as this one.

"That's the beauty of it," said Bush. "We build all of our systems here at CJIS with input from the people who will be using it. It is all based on things the law-enforcement community wants. We don't build anything and then say, 'Look at what we built for you.' It is all done with their input and approval."

Implementation of N-DEx

A contract for developing N-DEx was awarded to Raytheon Company in February 2007. Over the course of that four-year contract, N-DEx will be deployed in three increments, each one bolstering the system with additional capacity and capabilities.

❏ **Increment One** involved the initial deployment of the system, which became operational on March 19, 2008. During this first stage (which was still in progress in January 2009), data is loaded into the system from up to 15 contributors.

"And when we say 'contributor', we mean entities like the State of Delaware, the State of Texas, or all of Los Angeles and San Diego counties in California,"

explained Dave Erickson, the N-DEx technical director for Raytheon.

According to Bush, by mid-January 2009, the system contained 51 million records from 14 contributors—and it currently has the capacity to handle about 200 million records. The data includes five years of historical data from each of the contributing agencies.

Currently, the N-DEx system has the capacity to handle 50,000 users who can search through the shared data to receive basic correlation, visualization, and analytical reporting. Searches can also go beyond the data provided by the current contributors in order to take advantage of federal databases, as well.

"N-DEx can federate a query (or search) to NCIC or III, for example, so a user doesn't have to query each one individually," explained Erickson. "Access to that feature is controlled by the state that sponsors the user—because some states have different criteria on who can access some of the federal databases."

❏ **Increment Two**, scheduled to be deployed in Summer 2009, will add powerful features such as subscription and notification, allowing a user to identify a person of interest or a certain set of search criteria (a particular *modus operandi*, for example, or even a simple physical description); then the user just waits for the system to send out a notification if a match arises. Another feature, geovisualization, will allow a user to view case information on a map. The second deployment also features the addition of arrest, booking, and incarceration data. The user capacity will be increased to 100,000—and the system will be available to those users 24 hours a day, seven days a week.

❏ **Increment Three**, scheduled for Summer 2010, aims to bring the system up to full operational capacity. This will account for 200,000 users and up to about one billion records. Probation and parole data will become available, and developers will be working to insert additional enhancements and technological developments.

Throughout this process, developers will be meeting with subject-matter experts and end-users who will test-drive the system in order to ensure the user-friendly nature of N-DEx.

"We engage users in our development processes to define requirements and to get the look and feel just right, and to help with training," said Erickson.

**Real-life benefits
the experts believe in**

One of the law-enforcement professionals serving as subject-matter expert for the team developing N-DEx is Capt. P. K. O'Neill, chief of the Records and Technology Division at the Nevada Department of Public Safety in Carson City, Nevada. In a recent interview, O'Neill said he truly believes in the benefits that are delivered by N-DEx.

"N-DEx will have almost as much of an impact on helping law enforcement address crime as the two-way radio—in that it will start quickly and appropriately exchanging information and drawing parts together into a larger picture so we can see things as a collective," predicted O'Neill. "So we can start looking at the forest instead of constantly looking at little trees."

And while it is easy to focus on the end-benefit—that is, finding the clues

> **For agencies
> that have actually used
> the N-DEx system,
> it is seen as
> a valued component
> …and a powerful tool…
> for law enforcement.**

that lead to the identification and apprehension of a criminal—it is also important to look at the benefits that are offered to those personnel who are tasked with entering data into N-DEx in the first place.

For instance, once a contributor's five years' worth of historical data have been loaded into N-DEx, then a routine upload of information will need to be initiated in order to keep the records current. According to Bush, this can be set up to be done in real-time, or in one "data dump" during off-hours —or whatever works best for the user.

"That's all part of developing this system: How do we make it user friendly?" said Bush. "No one wants to be required to load that data into their local police department's system and then have to key the data again into the regional information-sharing system and then—oh yeah—key it into N-DEx, too. Instead, we need to make sure that you enter the data once and that it automatically populates all three different databases."

Another feature of N-DEx is its ability to take into account the varying privacy policies that already exist from one state to another, or even from one jurisdiction to another.

"Each state has different laws that deal with the privacy policy of victim information—personal identification of victims in certain kinds of crime, such as sex crimes or crimes involving juveniles," explained Erickson. "Sometimes, those agreements are regional; for instance, two neighboring states may have reciprocal agreements on being able to view each other's juvenile

records, but that agreement doesn't extend outside those states."

Developers of N-DEx had to find a way to allow the sharing of information while respecting the privacy policies for each state or jurisdiction. The answer was a system that allows the data owner to identify which N-DEx users can view certain types of restricted information. The submitter of a record can designate that record as *Full Access* (or *Green*), meaning all N-DEx users with the appropriate access authority would be able to view the full record. *Pointer-based Access* (or *Yellow*) informs users that there is N-DEx data that meets their search criteria, and they have to contact the data owner to get access to the full record. Designating *Restricted Access* (or *Red*) will prevent any other N-DEx user from even knowing the record is in the system. However, the agency that submitted that record will still be able to view any correlations that may occur between the restricted record and other records in the N-DEx system.

"We developed a robust system that a lot of people are really excited about," said Erickson. "Without this feature, it would have been very difficult for agencies to figure out what data they wanted to share depending on their various policies. Now, they can send in everything and we program N-DEx to respect their privacy policies. And then it's good to go."

Pulling all these details together and making the system work has been one of the most rewarding aspects of this project, said Bush. "It was three years ago when we first started talking about this project," he said. "Now, N-DEx is up and running. There is a great sense of gratification in delivering this kind of technology to the law-enforcement community."

In fact, not long after the initial deployment of N-DEx in March 2008, an investigator at the North Las Vegas (Nevada) Police Department made what he thought was a long shot and typed some search information into N-DEx for a case he was working. His search showed a correlation with data from an agency's database in southern California that subsequently resulted in search warrants and an arrest.

O'Neill, who has worked hard to encourage the utilization of N-DEx by agencies in Nevada, said he has no doubt there will be more arrests made solely because of N-DEx's ability to "connect the dots."

"I really do believe in the program," said O'Neill. "I have been around long enough and worked enough cases in my lifetime that I know I have unsolved homicides out there that could have been solved if we had had N-DEx back in the 1980s or '90s. And it always bothered me to have an unsolved homicide. I felt like I did a disservice to the victim and their families.

"I see N-DEx as being a really valued component to law enforcement. It is a powerful tool." ◯◯◯

For More Information:
To learn more about N-DEx, you can visit the FBI's N-DEx homepage: **fbi.gov/hq/cjisd/ndex/ndex_home.htm**