



Making the ID

Companies are marketing products that aid law enforcement in finding and identifying missing children

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The figures on the number of children reported missing each day, provided by Kevin O'Reilly, director of communications for CHILD Project LLC, are the stuff of nightmares for parents and law enforcement alike.

According to data O'Reilly obtained from the National Center for Missing and Exploited Children (NCMEC), estimates are that approximately 2,000 children across the country are reported as missing every day. Recent FBI figures released in February indicate there are 63,711 active juvenile missing person cases in the agency's National Crime Information Center database, while the total number of active missing persons fell at 108,949.

"According to the NCMEC, the problem of missing children is complex and multifaceted," O'Reilly explains. "There are different types of missing children, including family abductions, endangered runaways, non-family abductions and lost, injured or otherwise missing children."

And the problem of identifying missing children can be equally complex, especially if the child has been brainwashed (as in the case of Elizabeth Smart); is too young, injured or impaired to help in their identification; or if the identification involves remains. Where no records of the child are available, or quickly accessible, identification can take days - delays that only intensify the anxiety and anguish of family members.

Fortunately technologies that can hasten identification and even help in locating missing children are readily available to law enforcement agencies and to the community at large.

Iris recognition

One identification technology gaining a lot of recent attention is that of iris

recognition, which involves taking a digital, high-resolution photograph of the person's iris - the "most mathematically unique biometric," says O'Reilly.

"The human iris is absolutely unique, even between twins or an individual's right and left eye," he explains. "The iris itself is stable throughout a person's life - approximately from the age of one. The physical characteristics of the iris do not change with age. Because of its accuracy (iris recognition is proven to have the highest biometric accuracy, with (reportedly) no false matches in more than 2 million cross-comparisons), reliability and ease of use, iris biometric technology is gaining popularity across the globe in such areas as public safety, aviation, education and health care."

Iridian Technologies Inc., located in Moorestown, New Jersey, develops and markets iris recognition software and sells the hardware to the CHILD Project, a Plymouth, Massachusetts-based biometric identification consulting and technology firm that sells proprietary systems to law enforcement agencies. Child Project has partnered with the Nation's Missing Children Organization (NMCO), the National Center for Missing Adults (NCMA) and various law enforcement agencies to build a national database of missing children and adults.

"The CHILD Project also has developed a proprietary software application that integrates with the leasing hardware supplier of digital iris recognition cameras and Iridian Technologies' recognition software to bring law enforcement agencies user-friendly iris recognition technology," O'Reilly says.

Frank Fitzsimmons, the president and CEO of Iridian, says iris recognition cameras have been around since the mid-nineties.

"The first application of this technology was for access into very secure areas such as government buildings or data centers," he says. "Then came the jails. About three or four years ago we repositioned this to go after large-scale populations, such as border crossings, driver's licenses, etc. We're currently in more than 50 border crossing points in Canada, England, Germany and the United Arab Emirates (UAE). People don't even need to show their passports."

He explains this is used by frequent travelers. The UAE also uses iris recognition to identify those who are on an "expelled list." About 67,000 people so far have been caught trying to enter that country with fake IDs and/or visas.

And now, says O'Reilly, these systems are being used to identify children and memory-impaired seniors.

Fitzsimmons explains the set-up.

"Right now we're using the Panasonic 330 camera, but other cameras will be coming along, including one that attaches to a PDA folks can use in the field to wirelessly send to a database," he says. "The software drives the camera and houses the database of iris codes and information on the person, which can be uploaded from the laptop to a national database."

This new camera became available in May. The software remained the same, whether using a laptop or PDA.

"Kids stare into the camera, actually looking into a 2-inch-by-4-inch mirror, and the camera finds their eyes from there," Fitzsimmons continues. "Right now the camera is stationary, and the kids sit about 18 to 24 inches away. But by the end of the second quarter of this year, we're releasing 'Iris on The Move,' which was developed by one of our partners. This is where the camera is about 10 feet out in front of you and you walk toward it in a very normal way. This consists of a special, longer-range and high-speed camera and high-speed image processing software."

Fitzsimmons says the chances of an individual being mistaken for someone else with only one eye photographed is one in 1.2 million. Photograph two eyes and it is one in 1.44 trillion. Even so, most organizations will photograph both eyes but use only one for identification, he says.

Although the technology is useful only if someone is alive (it cannot be used forensically), there are many advantages, says O'Reilly.

"[This technology] is always a one-to-many search," he explains. "Every time a person is presented to the iris camera, the system searches every enrolled person. The search time also is important. For example, the average search time for a one-to-many search using the iris recognition system is about 2 to 5 seconds. On the other hand, most states report a fingerprint search at the state level, on a one-to-one search, is approximately 3 hours, although it can take even longer."

As of April 2006, more than 1,600 of the nation's sheriff's departments have made written commitments to participate in the CHILD Project, says O'Reilly. At this point, systems have been installed in 21 sheriff's departments in 12 states.

The Summit County Sheriff's Office in Akron, Ohio got its first system last fall and had it up and running within months of purchase, says Sheriff Drew Alexander.

Currently, 95 percent of Summit County's collection effort is focused on children.

"It can be used for Alzheimer's patients as well but we haven't had a chance to really hit the seniors in an organized way; we've been really overwhelmed by the kids," he says.

The department has the system set up in malls and at community events, and will take it into the schools. To date, they've taken well over 10,000 photos, and the public response has been enthusiastic.

"At one mall we had a line as long as a football field," says Alexander, who adds that at these events they also take fingerprints and hair samples for DNA that parents/guardians can take home.

"We like the kids to be older than three because when they are younger than this, they can be difficult to photograph - it's hard to keep them still," he says, - "But we don't turn any child away."

Alexander wants to purchase another system for the county jail. This is where the Hampshire County Sheriff's Office in Northampton, Massachusetts, first used its system, says Evelyn Ross, Hampshire County crime prevention and triad officer.

"Sheriff Robert Garvey saw firsthand how well the technology worked and came up with the idea of expanding it to help identify and locate missing children," she says. "Working with retired Plymouth County Sheriff Peter Flynn and CHILD Project president Sean Mullin, the sheriff brought his idea to the National Sheriff's Association, which endorsed the project in June 2004."

Hampshire County scans children four and up, in settings such as childcare centers, schools, sporting events, fitness centers and malls. The laptop, issued by the CHILD Project, can hold approximately 3,000 images, says Ross. Once they hit this maximum, the information is downloaded to the NMCO and the NCMA. Initially dedicated to collecting photographs of children, the project has since been expanded to include senior citizens with Alzheimer's or wandering issues, says Ross.

The systems, purchased through the CHILD Project, run around \$25,000. Alexander purchased his in partnership with the Akron Police Department, the prosecutor's office, the juvenile court and the child services board, all of whom are equal shareholders.

Along with offering the public another tool in their efforts to protect children, Alexander likes the community outreach opportunities this system affords, especially the interaction with kids one on one.

From DNA to dental impressions

There are other tools on the market that give departments the opportunity to promote child safety and spread some goodwill at the same time. First Impressions Inc., headquartered in Phoenixville, Pennsylvania, manufactures the ChildPrint ID Kit, the ChildPrint ID Card and Safe Shoes Child ID. The company also carries Toothprints, designed to capture a child's bite mark impression.

The ChildPrint ID Kit is an eight-page booklet containing space to store a child's personal, contact and medical information; fingerprints; photo; dental records; and DNA sample, along with two pages of safety tips for children, says CEO Debra LaPorte. Parents take the hair sample, fingerprints and store the booklet, handing it over to police if their child is missing.

The ChildPrint ID Card is a wallet-sized version of the kit parents can carry with them and provide to police if, for example, their child wanders away in a public place.

"Safe Shoes Child ID is a unique label that is affixed inside a child's shoes," LaPorte says. "It contains the parent's names and phone numbers. If the child is lost or missing, the labels provide contact information in a non-visible manner - it's important that children don't wear any visible identification."

Although none of their products are given to law enforcement unless necessary, many departments opt to have their patch or logo printed on the cover of the ChildPrint Kit.

"This gives them visible exposure within the community and enhances community awareness of child safety issues," LaPorte says. "We believe all parents should have some form of identification of their children. Although most believe their child will never wander off, get lost or be abducted, it's a real problem in our society. The first few hours following an abduction are the most crucial to recovery. Our products provide a sort of insurance policy, that if the worst occurs, [parents/guardians] have accurate information to immediately give to authorities."

LaPorte also carries Toothprints, another way of identifying and locating missing children that is becoming more widely used. Although law enforcement agencies would not participate in the collection process, they should encourage their communities to sponsor programs that include toothprint bite impressions, says David Tesini, DMD.

Tesini specializes in pediatric dentistry (he owns the practice David A. Tesini & Associates, located in Sudbury, Massachusetts). He filed the first patent on the use of this method for identifying missing and unknown children.

Toothprints impressions record the size and shape of teeth, the position of the teeth within the dental arch, and the relationship of the upper and lower jaw to each other using a thin thermoplastic wafer that is softened in water and placed in the child's mouth. The wafer also captures the child's DNA and scent, via the saliva, explains Tesini. The wafer is placed in a plastic bag and given to the parents to store, handed over to police only if necessary.

"Whether a child is missing from an abduction, has run away or was lost accidentally in the woods, law enforcement's ability to use Toothprints in a rapid response with scent dogs may mean the difference between a life or death recovery," Tesini says.

"Many police unions, district attorneys and state forensic dentists have endorsed the concept of toothprint bite impressions," he continues. Some dental associations also collect this information.

For the last two years, the Ohio Dental Association (ODA) has provided Toothprints to its members to use in their "Give Kids A Smile! Day" programs, which provide free dental services to disadvantaged children, says Kathy Woodard, director of communications and public service for the ODA. She says that up to 4,000 Toothprints bite impressions will have been provided to children during this year's events, held throughout February.

"Fingerprints have historically been the primary biometric tool used by law enforcement for solving crimes," says Tesini. "With the advent of the extremely sensitive methods used for DNA analysis, most solvable crimes in part have used DNA analysis. Where fingerprints may help solve crimes, it is our hope that Toothprints will help find children alive."

Don't forget fingerprints

All of these tools are designed to be used in conjunction with fingerprints, which with the advent of digital technology have become an even more useful tool for identifying and locating missing children, and also for fostering goodwill between the community and police departments.

Sentry Technologies LLC manufactures SentryKIDS FingerTIPS, a digital child fingerprinting system software that electronically captures 10 fingerprints, a digital photo of the child (through either a digital camera or Web cam) and key biographical data, explains Brian Famous, president of the Charlotte, North Carolina-based company.

Digital prints offer several advantages over ink, says Famous.

"The percent of ink prints that are rejected because of smudges and/or smears is surprisingly high," he says. "With digital you get a better image. And you can enlarge our image as much as you want because we use a

special algorithm that prints the fingerprint with no pixilation, so no matter how large it is, the image will be clear."

The software loads onto any Windows program, says Famous, who adds they also provide the digital fingerprint scanner (most agencies already have printers, CD, cameras and laptops).

There are several output methods available from the company. Bio-Doc is a paper document (either 8 1/2-inch by 11-inch or 8 1/2-inch by 14-inch) printable from a standard inkjet or laserjet printer using the company's special algorithms. The larger version contains two pre-perforated ID cards, which can be laminated and carried in the parents' wallet or purse.

Bio-Disk is an electronic version of the Bio-Doc, which can be saved to any drive on the computer (including CD and USB storage key) or e-mailed or uploaded to a Web page. Information is saved in Adobe Acrobat .pdf format.

Finally, Bio-Card is an ID-style card, either in paper or a PVC (driver's license style) ID card. Both formats contain the photo, key biographic information and one or two fingerprints. All of the outputs contain at least one fingerprint image, but the Bio-Doc and Bio-Disk can hold all 10.

Currently, the company has more than 300 systems in police departments across the country, says Famous. The majority of departments don't retain the information, handing it over instead to parents/guardians then wiping it clean from their systems.

"Having a current photograph of the child is the most important thing in the time of crisis," says Famous, who advises parents to get a cell phone with a camera and take a photo of their child every day, especially before going on a field trip, vacation or to any public place.

"A fingerprint can be used in a proactive way to help find a missing child, as can DNA," he continues. "However, fingerprint analysis and comparison is usually able to be done in a more rapid timeframe and at a more local level. The most proactive thing our photo and fingerprinting software, as well as any of the services to help prevent missing children, can do is provide the parents with an opportunity to breach the topic of conversation with their children and explain to them what they should and should not do in order to stay safe in everyday situations."