

# TechBeat

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by JTIC

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## About TechBeat



TechBeat is the monthly newsmagazine of the National Law Enforcement and Corrections Technology Center System. Our goal is to keep you up to date on technologies for the public safety community and research efforts in government and private industry.

### **Subscriptions:**

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### **The NLECTC System**

The Justice Technology Information Center (JTIC), a component of the National Institute of Justice's National Law Enforcement and Corrections Technology Center (NLECTC) System, serves as an information resource for technology and equipment related to law enforcement, corrections and courts and as a primary point of contact for administration of a voluntary equipment standards and testing program for public safety equipment.



JTIC is part of the NLECTC System, which includes the Justice Innovation Center for Small, Rural, Tribal, and Border Criminal Justice Agencies, which focuses on the unique law enforcement challenges faced by those types of agencies; the National Criminal Justice Technology Research, Test and Evaluation Center, which provides technology-related research and testing and operational evaluations of technologies; and the Forensic Technology Center of Excellence, which supports technology research, development, testing and evaluation efforts in forensic science. In addition, a Priority Criminal Justice Needs Initiative exists to assess and prioritize technology needs across the criminal justice community.



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The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance; the Bureau of Justice Statistics; the Office for



Victims of Crime; the Office of Juvenile Justice and Delinquency Prevention; and the Office of Sex Offender Sentencing, Monitoring, Apprehending, Registering, and Tracking.

### [WWW.JUSTNET.ORG](http://WWW.JUSTNET.ORG)

**JUSTNET News.** Includes article abstracts on law enforcement, corrections and forensics technologies that have appeared in major newspapers, magazines and periodicals and on national and international wire services and websites.

**Testing Results.** Up-to-date listing of public safety equipment evaluated through NIJ's testing program. Includes ballistic- and stab-resistant armor, patrol vehicles and tires, and more.

**Calendar of Events.** Lists upcoming meetings, seminars and training.

**Social Media.** Access our Facebook, Twitter and YouTube feeds for the latest news and updates.

**Tech Topics.** Browse for information on law enforcement, corrections and courts technologies.

 <http://www.youtube.com/JUSTNETorg>



# FTCoE Success Stories Promote New Products and Developments

## FTCoE Success Stories Promote New Products and Developments

Question: What do a new way to determine the time of a person's death, detection canines and a new database that could make it easier to identify missing persons have in common?

Answer: All three have been profiled in the Forensic Technology Center of Excellence (FTCoE) Success Story series during 2018.

Success Stories use a simple, two-page format to highlight National Institute of Justice-funded research that has impacted the forensics and law enforcement community, framing the problem the research addressed, key findings, impact and future directions. Spanning topics as varied as the three listed above and more, the Success Stories page on the FTCoE [website](#) represents a good starting point if you're looking for information on almost any type of recent forensic development.

“NIJ funds research and development grants across a wide variety of disciplines, with a goal



of supporting development of technologies that improve forensic capabilities,” says the FTCoE’s Rebecca Shute. “Success Stories highlight technology that isn’t just a concept or a prototype, but rather has been implemented or provided impact to stakeholders such as law enforcement or forensic labs. This could include a technology or technique used in actual casework, or dissemination of tools or information such as open-source software.”



The publications serve the dual purposes of allowing NIJ to communicate the success of its research and development program and helping the grantees obtain visibility for their results. In addition to their availability on the FTCoE website, new success stories are pushed out to the nearly 30,000 subscribers on the Center’s listserv, giving law enforcement agencies and forensic service providers two ways to learn about new products and developments.

The FTCoE uses an ongoing process to identify grants with tangible, real-world impact, then works with the principal investigator of the project to develop the publication: “Choosing these success stories is just one step in our disciplined portfolio management process, which captures all of the R&D grants and supports grantees throughout the stages of their work. While the FTCoE writes these pieces, we work closely with the PIs to help them tell their story,” Shute says.

As of June 2018, the FTCoE website includes 17 success stories, with more on the way. Here’s a closer look at the three mentioned above:

- **NIJ and Multi-Institute Academic Team: Establishing a “Microbial Clock” to Improve Time of Death Prediction.**

Determining the postmortem interval (PMI), or the time elapsed since a person’s death, may help investigators recreate a timeline and the victim’s movements, support or disprove a suspect’s alibi or corroborate evidence collected from autopsies. There are several well-known ways to do this immediately following a death, but accurately determining PMI when an individual died days or weeks previously can be challenging. The technology described in this publication uses microbial communities to accurately determine PMI up to 48 days since death, with an average error of about three days. It relates “universal” microbial markers for determining PMI, despite the environment; identifies environmental conditions, such as temperature, location and season that can affect microbial communities’ composition; and demonstrates the potential for microbial signatures to identify clandestine gravesites.

- **NIJ and the American Registry of Pathology: Maximizing the Use of Mitochondrial DNA in Identifying Remains and Aiding Missing Persons Casework.**

Mitochondrial DNA is valuable in situations where scientists cannot use traditional nuclear DNA testing, such as when testing aged bones, fingernails or hair when nuclear DNA has become degraded. This makes it a valuable tool in missing persons casework. Research outlined in this success story focused on how complete sequencing of the mitochondrial genome provides for a more effective way of using mitochondrial DNA. The team developed a robust no-cost reference population database that improved the understanding of genetic mtDNA rarity between individuals, enabled continuous improvement of the data and ensured incorporation of high-quality population data through quality control of submitted data.

- **NIJ and Florida International University: NIST’s Dogs and Sensor Subcommittee Builds on Achievements by SWGDOG.**

Dog “detector teams” support law enforcement and first responders in a variety of applications ranging from drug and contraband interdiction to locating human remains. A lack of peer-reviewed research combined with recent media coverage of dog detection failures raised concerns about the effectiveness of dog-based detection and its admissibility in court. Also, the widespread application of dog detector teams makes the standardization of protocols difficult; many national canine organizations have developed standards but only for their respective programs. The Scientific Working Group for Dog and Orthogonal Detector Guidelines (SWGDOG), a group of 55 experts from academia, law enforcement, military and canine organizations, developed 39 consensus-based best practice guidelines for dog detector teams. SWGDOG served as the foundation for the National Institute of Standards and Technology’s (NIST) Dogs and Sensor Subcommittee, which is currently developing SWGDOG’s best practices into scientifically validated standards.

“The FTCoE really sees the value in communicating success stories like these and the others on the website to the forensic community, and writing more of them will remain a priority,” Shute says.

For more information on the programs of the FTCoE, contact Dr. John Morgan, Director, at [jmorgan@rti.org](mailto:jmorgan@rti.org). For more information on forensics programs of the National Institute of Justice, contact Gerald LaPorte, Director, Office of Investigative and Forensic Sciences, at [Gerald.LaPorte@usdoj.gov](mailto:Gerald.LaPorte@usdoj.gov).

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## Using Shotguns as Less-Lethal Weapons

### Using Shotguns as Less-Lethal Weapons

Shotguns, long a staple of law enforcement departments, can be used to fire less-lethal rounds. When the Corvallis Police Department moved away from everyday use of shotguns in favor of patrol rifles, it decided to repurpose shotguns for use solely as less-lethal weapons.

In 2017, the department repurposed its 12-gauge pump action shotguns for use as less-lethal weapons by fitting them with orange stocks labeled “less-lethal,” and orange fore-ends, according to Lt. Dan Duncan, public information officer for the department.

The department uses a less-lethal shotgun round made of a polymer material that is designed to “pancake,” or flatten on impact. The shells of the ammunition are transparent with an orange band and label for high visibility.

The shotguns are still able to fire standard lethal ammunition. To guard against accidental use of



live rounds, the department was careful to remove all standard live shotgun ammunition from the police department building and vehicles.

“We had to go through our department and basically scour every desk and locker and nook and cranny to ensure we did not have any live shotgun ammunition anywhere,” Duncan says. “The shotgun loads and functions the same with less-lethal rounds, which is why we had to be diligent on gathering up the lethal rounds and ensure there was no access to them in the building or patrol cars.

“The less-lethal rounds have a transparent casing and the internal part is orange so they are blatantly marked that they are a less-lethal round, very distinct, which is another safety measure we wanted.”

Located in Oregon’s Willamette Valley, Corvallis encompasses about 14 square miles. The department has 60 sworn police officers that serve a population of about 57,000.

In patrol vehicles, Corvallis officers carry patrol rifles and their assigned handguns, as well as the less-lethal shotguns. Other less-lethal options used by the department include Tasers and pepper spray.

“The conversion took away a long-standing lethal option that we were not deploying or using and gave us one more less-lethal option when we come into a situation,” Duncan says. “The more tools we can provide of a less-lethal nature to our staff, the better off we are going to be. A Taser or pepper spray may not be an effective tool given a particular scenario. The shotgun with the less-lethal rounds we use can reach up to about 25 yards.”

The department trains officers regularly on use of standard and less-lethal weapons.

For more information, contact Lt. Dan Duncan at [Daniel.Duncan@corvallisoregon.gov](mailto:Daniel.Duncan@corvallisoregon.gov)

*Article photo:* Corvallis Police Department

*Main photo:* TfoxFoto/Shutterstock.com



## **JTIC Launches Expanded Resources on Unmanned Aircraft Systems**

### **JTIC Launches Expanded Resources on Unmanned Aircraft Systems**

Locating a lost child. Dropping contraband on correctional facility grounds. Soaring over a wildfire to provide key information to ground personnel. Unmanned aircraft systems (UAS) have become a permanent part of the landscape, and for law enforcement, they are at times a useful tool, at times another problem to face.

Agencies looking for information on law enforcement use of UAS have a new resource: the Justice Technology Information Center (JTIC) has added an expanded subsite specific to UAS to JUSTNET, the website of the National Law Enforcement and Corrections Technology Center (NLECTC) System.

“Law enforcement interest in using small UAS for accident reconstruction, search and rescue, and other emergencies continues to increase, and that made us realize that JUSTNET needed to offer a more complete set of well-organized



pages to respond to that need,” says Ron Pierce, JTIC deputy director.



During 2017 and 2018, approximately one-third of all requests for information fielded by JTIC through its [asknlectc@justnet.org](mailto:asknlectc@justnet.org) mailbox and (800) 248-2742 telephone number were related to UAS. JTIC processed 335 requests for information for the law-enforcement sensitive document, *A Template for Standard Operating Policy (SOP) Guidance for Law Enforcement Use of Small Unmanned Aircraft Systems (sUAS)*, from its release in October 2017 through June 2018.

Development of the [UAS home page](#) follows body armor and school safety, two other important topics in the NLECTC portfolio. JTIC staff designed the UAS home page to showcase video content and provide direct links to a new page of agency success stories, frequently asked questions about public safety and UAS, and information on how an agency can start a UAS program. The new subsite also features an updated collection of resource materials and publications, including the National Institute of Justice report, *[Considerations and Recommendations for Implementing an Unmanned Aircraft Systems \(UAS\) Program](#)* and JTIC’s white paper *[Law Enforcement Guidance Concerning Suspected Unauthorized UAS Operations](#)*. The new design ensures that the subsite’s functionality is retained when viewed on mobile devices.

“We’ve updated the navigation menu to help you find what you’re looking for more quickly and easily, including adding a topic-based search in the reference section,” Pierce says. “Before we created the UAS subsite, you had to scroll through a lot of information on JUSTNET to find the information you needed on UAS. Now you can see what’s there at a glance and go straight to the information you need.”

That information includes success stories, which feature programs that have gained recognition for their use of UAS. National Institute of Justice funding, through JTIC, has provided several agencies with small UAS for testing for use during indoor tactical operations, and plans call for the production of a publication featuring lessons learned from that testing in the future.

The UAS home page will soon have links to more videos, accessed through a link to the JUSTNET YouTube channel. These new products, including one featuring guidance from the Federal Aviation Administration on how agencies can cope with unauthorized use of UAS by

members of the general public, will join *Eyes in the Sky: How Law Enforcement Uses Unmanned Aircraft Systems*, which consistently ranks as the most-watched video on the NLECTC YouTube channel. The subsite may be just as popular, registering more than 100 page visits in the first five days after the June 4, 2018 soft launch.

“We’ve added many features that are attractive graphically and also serve as functional improvements,” Pierce says. “Unmanned aircraft systems have the potential to be a useful public safety tool, and law enforcement agencies thinking about standing up a program have a lot to consider. Our new subsite is here to help them find the information they need to make informed decisions.”

For more information on JTIC’s UAS informational resources, contact [asknlectc@justnet.org](mailto:asknlectc@justnet.org).

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## NIJ Marks 50 Years of Helping the Criminal Justice Community

### NIJ Marks 50 Years of Helping the Criminal Justice Community

In 1968, police officers faced gunfire without wearing any kind of protective equipment; DNA might have been a vague, distant memory from high school biology; and the U.S. Department of Justice's new National Institute of Law Enforcement and Criminal Justice (NILECJ) awarded its first grants to the criminal justice community.

Fifty years later, officers commonly wear ballistic-resistant body armor certified by the renamed National Institute of Justice (NIJ), armor that has saved thousands of lives; DNA has become part of our everyday vocabulary; and NIJ awards result in rigorous research that helps inform and shape criminal justice policies and practices.

On July 10, members of the research and criminal justice communities, along with NIJ staff and contractors, gathered in person and online to hear two former NIJ directors and two practitioners participate in a panel discussion on



“NIJ’s 50th Anniversary — Looking Back, Looking Forward,” part of the agency’s “Research for the Real World” series of webinars.



The current NIJ director, Dr. David Muhlhausen, gave opening remarks and moderated a brief question-and-answer session at the end of the discussion. In his opening presentation, Dr. Muhlhausen pointed out that 50 years ago, 9-1-1 didn’t exist, no one had heard of license plate readers and no one was conducting rigorous research to help law enforcement. That began to change in 1967, when the President’s Commission on Law Enforcement and Administration of Justice released a report calling for increased support to state and local police departments. In 1968, out of this effort came the Law Enforcement Assistance Administration (LEAA), an agency within DOJ that administered federal funding to state and local law enforcement agencies and funded educational programs and research. NILECJ, which became NIJ, was part of LEAA; the name changed in December 1979.

### **The Panelists**

- James “CHIPS” Stewart, presently Director of Public Safety and Senior Fellow for Law Enforcement with CNA Analysis & Solutions, served as NIJ director from 1982 to 1990, the longest-serving NIJ director. Mr. Stewart also served as Commander of the Oakland Police Department’s Criminal Investigations Division and as a White House Fellow and Special Assistant to the United States Attorney General.
- Chief Hank Stawinski, Prince George’s County (Md.) Police, became chief in 2016 after serving 23 years with the department. His father was also a Prince George’s police officer. He is a member of the Police Executive Research Forum (PERF).
- John H. Laub, presently Distinguished University Professor in the Department of Criminology and Criminal Justice at the University of Maryland, College Park, served as NIJ director from July 22, 2010 to Jan. 4, 2013.
- Chief Scott Thomson of Camden County, N.J., is a native of Camden who emphasizes community policing. He has been chief since 2013, and previously was chief of the former Camden Police Department beginning in 2008. Chief Thomson began his law enforcement career in 1992. He serves as President of PERF.

### **NIJ Past**

Both former directors discussed NIJ's accomplishments during their tenures while putting those retrospectives in context with today's work.

Mr. Stewart said that in 1982, policymakers had a poor view of social science. He saw that NIJ had great promise, but needed to demonstrate that rigorous research could help police and corrections agencies: "We were doing detailed surveys that no one in the field ever read unless they heard there were going to be questions on an exam about it."

One of the earliest projects that the agency took on during his tenure involved working with the police departments in Newark, N.J., and Houston on increasing people's perception of safety. *Reducing Fear of Crime in Houston and Newark: [A Summary Report](#)* indicated that if officers spend more time talking with people, they can reduce the fear of crime and possibly, crime itself. This research, Mr. Stewart said, was a first step in shifting the focus from policy analysis to helping the real world. He also noted that during his tenure, NIJ did work to make corrections facilities less formidable and more impenetrable, as well as advancing use of DNA as physical evidence and research on conducted energy weapons, what we term today as Conducted Energy Devices (CEDs).

Dr. Laub, who took over as head of the agency 20 years after Mr. Stewart's departure, characterized NIJ's mission as unique, and added: "Research must be rigorous, but it also must be really valued by practitioners. Given this, NIJ faces a two-fold challenge — generating rigorous knowledge, and disseminating relevant and usable knowledge to those practitioners."

NIJ generates rigorous scientific research and disseminates relevant information, which helps translate research into policy and practice, Dr. Laub said, but it's a two-way street, with the scientist developing new tools based on practitioner feedback about needs. During his tenure, Dr. Laub said that mass incarceration and crime rates declined, and NIJ funded new programs to combat human trafficking and continued partnering with the National Institute of Standards and Technology to further DNA research.

## **NIJ Present**

The two law enforcement practitioners discussed their experiences working with NIJ, and how that collaboration helped their departments make sound policy decisions based on research results.

Chief Stawinski said that for too long, law enforcement agencies made decisions based on anecdotal evidence as opposed to applying sound research and scientific principles. In Prince George’s County, the department has achieved drastic reductions in crime rates by tossing out preconceived ideas about when and where crime was spiking, and using data to determine the actual times and places where the department needed to focus.

“Policing is not [only] about catching the criminal — it’s also about applying social science to fundamentally understand causation of crime,” Chief Stawinski said. “Safe people lead better lives. They lead a safer world into existence. I thank NIJ for their support in helping us work toward this future.”

Chief Stawinski said he makes it a goal to try to get more practitioners involved in working with research efforts. Chief Thomson, in a similar vein, described himself as a professional reformer, saying that society is changing and policing needs to change with it. When he started taking help from others and actively enlisting help, good things began to happen. He also realized that change could not come unilaterally from the police department; it had to come from the community as a whole.

“A lot of the work with NIJ got us to a point where we understood the block and we actually started reducing crime. We knocked on doors and talked with people,” Chief Thomson said. “I heard a woman say that her child used to be afraid of the police; now he wanted to be one. This change did not happen by accident. We applied what we learned from evidence-based studies and abandoned tradition.”

## **NIJ Future**

Following the presentations, Dr. Muhlhausen and members of the audience asked the panelists questions. (Note: Another obligation caused Chief Stawinski to leave before the Q&A.) Highlighting that exchange were comments from participants about what NIJ has been doing right and what needs to change in the future:

- Mr. Stewart: I encourage you to be more responsive. It’s hard to wait 18 to 24 to 36 months for a report on what happened. Do more *Research in Brief* or other quick turnaround documents. The biggest challenge is to be more relevant. (Dr. Muhlhausen pointed out the new “Notes from the Field” series that focuses not on research, but on the experiences of a particular chief (<https://www.nij.gov/publications/Pages/notes-from-the-field.aspx>).
- Dr. Laub: In order to supply the research, we need to know what the field needs to know.

Also, NIJ has not done a good job of telling its story. Use this 50<sup>th</sup> anniversary as a springboard.

- Chief Thomson: A lot of times practitioners have a hard time articulating what they need. The researchers need to get out in the field, the way Dr. Muhlhausen did with coming to Camden and riding along in a squad car.

At the end of the day, a quote from Mr. Stewart early in the event perhaps summed it up best: “This ‘Research for the Real World’ event is not only an important title, but an important motto. This is 50 years of improving justice and saving lives — the research done here has real impacts in saving people’s lives.”

To further mark the 50<sup>th</sup> anniversary, NIJ also plans to release several “Director’s Corner” articles on its website, NIJ.gov, where Dr. Muhlhausen will discuss NIJ’s past and future. Articles will appear periodically throughout the remainder of the year. There will also be a special issue of the *NIJ Journal* later in 2018.

*Correction: An earlier version of this article incorrectly stated that the first grants given out by the National Institute of Law Enforcement and Criminal Justice averaged \$100. That information has been removed from the article.*

*Article photo: National Institute of Justice*

*Main photo:*



## Enhancements to the National Missing and Unidentified Persons System

*National Institute of Justice*

The National Institute of Justice and the University of North Texas Health Science Center have provided several major updates to the National Missing and Unidentified Persons System (NamUs).

NamUs is a national information clearinghouse and resource center for missing, unidentified and unclaimed person cases across the U.S. Funded and administered by NIJ and managed through a cooperative agreement with the Center in Fort Worth, Texas, NamUs resources are provided at no cost to law enforcement, medical examiners, coroners, allied forensic professionals and family members of missing persons.

Feedback from stakeholders across the United States helped inform the updates. Updates include streamlined user registration, enhanced case search and matching, improved access to cases and tools from one central dashboard and increased security. In addition to the search

database application, the suite of NamUs resources include technology, forensic and analytical services, investigative support, and local, regional and online training programs.

For more information, go to [namus.gov](http://namus.gov).

*Main photo: ASDF\_MEDIA/Shutterstock.com*



## How Workplace Conditions Affect Forensic Scientists

*National Institute of Justice*

An article and report that discuss work stress and job satisfaction of forensic scientists are available from the National Institute of Justice.

The article, *Conditions Affecting Forensic Scientists' Workplace Productivity and Occupational Stress*, is based on a study by Michigan State researchers that measured the prevalence of stress, satisfaction and prospective stressors through a survey of 899 forensic scientists across the U.S.

About 60 percent of scientists surveyed reported they were emotionally drained by their work, and more than 60 percent said they were under a lot of pressure, according to the article. Despite the stress, 85.6 percent of respondents reported being either somewhat satisfied or very satisfied with their jobs.

To read the article and access the report, click [here](#).

*Main photo: Elnur/Shutterstock.com*