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EXECUTIVE SUMMARY

Enhancing and Improving Communication With the Field

During 2016, JUSTNET, the website of the NLECTC System, took on a new look and feel, and in 2017, several other major NLECTC System communication channels followed suit, as TechBeat, PoliceArmor.org and SchoolSafetyInfo.org all transitioned through major redesigns into more modern, more streamlined outlets that deliver information in the ways that today’s public safety professionals demand. In addition to those outlets, the five NLECTC system components continued to spread the word about innovations in technology through other channels such as:

- Face-to-face meetings and conferences.
- Video, social media and other virtual portals.
- Electronic publications including reports, magazines and newsletters.
The component centers also continued gathering information from the field on future technology needs, helping inform NIJ efforts in the areas of research and development as well as identifying best practices currently in use in the field.

As it has throughout its 21-year history, the NLECTC System has provided, and will continue to provide:

- Scientific and technical support to NIJ’s research, development, test and evaluation (RDT&E) projects.

- Support for the transfer and adoption of technology into practice by law enforcement and corrections agencies, courts and crime laboratories.

- Assistance in developing and disseminating equipment performance standards and technology guides.

- Assistance in the demonstration, testing and evaluation of criminal justice tools and technologies.

- Technology information, in addition to general and specialized technology support.

- Assistance in setting NIJ’s research agenda.

Justice Technology Information Center

The Justice Technology Information Center manages the JUSTNET, SchoolSafetyInfo.org and PoliceArmor.org websites, and produces monthly issues of TechBeat. You can read about the TechBeat redesign on p. 7, the SchoolSafetyInfo.org redesign on p. 23 and changes to PoliceArmor.org on p. 27.

JTIC serves as both the initial point of entry for criminal justice professionals and other interested parties, and the clearinghouse that disseminates information to those constituents. Requests for technology, information or materials via the “Ask NLECTC”
mailbox (asknlectc@justnet.org) or the toll-free line at (800) 248-2742 come through JTIC. Staff either fulfills the request immediately if it falls within JTIC’s unique areas of expertise or quickly moves it to the component center that can handle the request most efficiently.

JTIC’s unique areas of expertise include non-biased, science-based knowledge and expertise in equipment testing and standards (body armor, police vehicles, ballistic shields and others). JTIC uses that expertise to:

■ Conduct equipment testing programs, review and analyze testing data, and disseminate results.

■ Operate JUSTNET and manage the system’s social media outlets, including Twitter, Facebook and YouTube.

■ Disseminate print and online newsletters and bulletins, including TechBeat and JUSTNETNews.

■ Help NIJ identify and prioritize technology needs and requirements.

You can also read about current efforts to revise NIJ standards on p. 17 and efforts in support of NIJ’s UAS efforts on p. 45.

Justice Innovation Center for Small, Rural, Tribal, and Border Agencies

The Justice Innovation Center for Small, Rural, Tribal, and Border Agencies (JIC) has been charged by NIJ with identifying, evaluating and disseminating technology solutions that meet the operational challenges of small, rural, tribal and border law enforcement, courts and corrections agencies.

To fulfill this mission, JIC works to:

■ Identify unmet operational needs across SRTB corrections, courts and law enforcement agencies.
Compare shared needs across SRTB agencies to identify possibilities for overlap and the implementation of shared technologies.

Provide information on technology through case studies, pilots and evaluations to demonstrate how technology is currently being used to assist SRTB agencies in overcoming their unique challenges.

Identify and rigorously evaluate new technologies or solutions to assess their effectiveness and cost-effectiveness when used by SRTB agencies.

Support the adoption of innovations that meet the operational demands of SRTB justice systems.

Provide feedback to NIJ on the existing needs of SRTB agencies and where technology is either working or failing to meet those needs.

You can read more about JIC efforts on p. 49.

**Criminal Justice Priority Technology Needs Initiative**

The Criminal Justice Priority Technology Needs Initiative is carrying out a research effort to assess and prioritize technology needs across the criminal justice community. The fundamental goal is to enable innovation in the U.S. criminal justice community — from incremental changes in the way agencies do daily tasks by increasing their efficiencies and solving their current problems to transformational changes that make it possible for them to do entirely new things or accomplish objectives in new ways. You can read about the Center’s activities on p. 55.

**National Criminal Justice Technology, Research, Test and Evaluation Center**

The National Criminal Justice Technology, Research, Test and Evaluation Center conducts focused research, testing and evaluations of non-forensic technologies intended to enhance the capabilities of state and local law enforcement and corrections agencies. Working closely with practitioners, the Center strives to inform the field concerning technology and related issues in an innovative, sustainable, efficient and effective manner. The Center conducts
market surveys, determines technical performance of selected technologies and conducts operational assessments and impact assessments to determine practical outcomes for practitioners of NIJ-funded R&D programs and other technology developments. RT&E Center efforts span areas as diverse as digital evidence management and facial recognition; you can read about the center’s activities on p. 63.

Forensics Technology Center of Excellence

The Forensics Technology Center of Excellence (FTCoE) improves the practice of forensic science and strengthens its impact through rigorous technology corroboration, evaluation and adoption, effective knowledge transfer and education, and comprehensive dissemination of best practices and guidelines to agencies dedicated to combating crime. You can read about several of its efforts starting on p. 75.
A New Era for *TechBeat*

Since its inception in 1995 as the flagship publication of the NLECTC System, *TechBeat* has undergone a number of format changes to keep in step with publishing trends. During that time, it has changed from 8.5 x 11 black-and-white publication to a graphic-heavy color publication, from a print publication to an online-only publication, and most recently to its latest revamp in fall 2017 as an HTML publication with links to archives and social media, and of course, original writing on the latest innovations in public safety technology.

Available at https://techbeat.justnet.org/ in its newest format, *TechBeat* has also morphed, over the years, from an occasional publication to a quarterly publication, then to a semi-monthly and its now-monthly publication schedule.

The new format streamlines the production process while emphasizing a more modern look and feel. From a main page, readers can now follow links directly to stories that interest them, rather than paging...
through an interactive file set up with print publication functionality. And this new version functions seamlessly across a variety of platforms and devices, eliminating the need to download apps to read the latest news on the go.

“TechBeat has been the award-winning flagship publication of the NLECTC System for more than 20 years,” says JTIC Director Lance Miller. “During that time, we have strived to produce a publication that provides key decision-makers in the criminal justice community with timely, informative and relevant stories on emerging technologies and agencies who are on the leading edge of implementing those technologies, many times in innovative and cost-effective ways. Additionally, we have adapted with the times and worked to deliver TechBeat in impactful and user-friendly formats. This latest format reflects the wide variety of methods that our readers use to access and consume our content, while also streamlining production costs.”

Interested readers can subscribe to TechBeat at https://justnet.org/subscribe.html to receive the newsletter directly in their mailboxes, or they can visit JUSTNET, the website of the NLECTC System, to read new issues.
Highlights

JTIC is the NLECTC System's focal point for information dissemination; staff relay requests for information and assistance to the NLECTC Center, subject-matter expert or other agency that can best meet the request. From the position of the system hub, JTIC provides law enforcement, courts and corrections professionals with an entry portal to the system and its component centers through JUSTNET, the “Ask NLECTC” e-mail address (asknlectc@justnet.org) and the toll-free line at (800) 248-2742. These channels help JTIC fulfill its primary mission to offer criminal justice decision-makers many ways in which to obtain information about relevant technology and related matters of interest.

JTIC’s ongoing efforts also support NIJ’s standards development and implementation and its Compliance Testing Program (CTP) (for more information about these activities, see “Michigan State Police Vehicle and Motorcycle Evaluations Help Inform Purchasing Decisions” on p. 17). The CTP ensures the safety and effectiveness of several types of equipment used by the public safety community.

EXHIBIT 2: JUSTNET ACTIVITY

<table>
<thead>
<tr>
<th></th>
<th>Sessions</th>
<th>Users</th>
<th>Pageviews</th>
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</thead>
<tbody>
<tr>
<td>85,808</td>
<td>56,893</td>
<td>238,237</td>
<td></td>
</tr>
</tbody>
</table>
Highlighted activities by JTIC staff include:

- Wrote several original articles published in external periodicals, including:
  
  
  
  
  


- Designed, wrote and produced 10 issues of *TechBeat* (combined issue was produced for July/August and no issue was produced in September during the format transition). At the

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**EXHIBIT 4: JUSTNET VISITS BY COUNTRY**

<table>
<thead>
<tr>
<th>Country</th>
<th>Visits</th>
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<tbody>
<tr>
<td>United States</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
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<tr>
<td>Mexico</td>
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<tr>
<td>Indonesia</td>
<td></td>
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<tr>
<td>UK</td>
<td></td>
</tr>
</tbody>
</table>

| 0            | 20,000  | 40,000  | 60,000  | 80,000  |

NLECTC Annual Report 2017
end of 2017, *TechBeat* had 15,452 subscribers, a decline from the previous year due to a review of the mailing list to validate email addresses. A total of 297 new addresses were added.

- Managed JUSTNET, the website of the NLECTC System, which had 85,808 sessions by 56,893 users and 238,237 pageviews during the year.

- Managed PoliceArmor.org, a subsite that provides overall information on both ballistic- and stab-resistant armor for field officers, and includes links to the CTP information on JUSTNET. PoliceArmor.org had 6,684 sessions by 4,415 users and 50,618 page views.

- Managed SchoolSafetyInfo.org, a website targeting school resource officers and school administrators that links to resources, a calendar of events, funding opportunities and original articles on free/low-cost school safety activities. Staff wrote 19 articles for the website and produced Volume 5 in the *Sharing Ideas and Resources To Keep Our Nation’s School Safe* series, which compiles one year’s worth of articles posted to the site. SchoolSafetyInfo.org had 10,148 sessions by 7,797 users and 51,491 page views.

- Processed 18 “asknlectc” email box external request referrals and 922 internal information request referrals, as well as 267 toll-free telephone internal information referrals and 14
external information referrals. Compared to 2016, the number of toll-free telephone internal information referrals more than doubled (up from 117), while other counts held nearly steady.

- Through the CTP, provided oversight and administration for the testing of 144 (up from 116 in 2016) models of ballistic-resistant body armor and two models of stab-resistant armor; also conducted follow-up inspection and testing of 164 models of ballistic-resistant body armor. However, the number of stab-resistant models declined from 17 in the previous years as manufacturers anticipated the release of the revised standard.

- Provided meeting coordination, subject-matter expertise and/or technical writing/editing support for two onsite Special Technical Committee meetings on ballistic-resistant body armor, one STC meeting on firearms, one focus group meeting on UAS and one focus group meeting on offender tracking systems.

- Exhibited at 21 national law enforcement and corrections conferences, distributing 4,445 items from inventory. An additional 505 NLECTC System publications were distributed by other agencies at three additional conferences.

- In conjunction with the Michigan State Police, conducted evaluations of 2018 model year police vehicles (20) and motorcycles (seven, one an electric bike) from seven manufacturers.

- Handled 23 non-conference-related requests for publications.

- Designed, edited and/or produced 58 publications.

- Recorded 1,191 contacts/transactions, including requests for information, technology assistance and subscriptions.

- Processed 71 School Safe app requests and 665 Safeguarding Houses of Worship app requests.

- Coordinated 338 total (approved, rejected and new) requests for Field Search software. Since its launch in 2006, 8,258 requests have been received and the software has been downloaded a total of 13,208 times. Certified Field Search instructors provided basic Field
JTIC’s Facebook page had the following activity:

- **Fans**: 645
- **Impressions**: 50,427
- **Link Clicks**: 2
- **Engagements**: 30

**Most engaging post**: Watch, Examining Evidence-Based Policing Practices and Programs, a video series produced by JTIC, a program of the National Institute of Justice (NIJ). It features speakers from the first ASEBP conference.

**Other posts included**: Read JUSTNET-News, JTIC’s weekly news highlights. Subscribe to receive JNN in your inbox. It’s FREE. Find the current issue here; Read the NIJ Director’s Corner, Improved Officer Safety in 2017 — and Beyond; January is National Human Trafficking Prevention Month. See the resources available through NCJRS here.

**EXHIBIT 6: JUSTNET FACEBOOK STATISTICS**

Search training to 77 criminal justice personnel and staff approved 291 requests for the Field Search software.

- Managed the Corrections Technology Resource Center, which has a total of 769 registered users to date. The knowledgebase contains 1,822 documents.

- Produced 52 issues of JUSTNETNews, a weekly summary of news from the NLECTC System, NIJ and other agencies within the U.S. Departments of Justice and Homeland Security; abstracts of mass media articles relating to criminal justice technology; and current funding opportunities and upcoming events. At the end of 2017, JUSTNETNews had 14,447 subscribers, a decrease from the previous year due to a review of the list to remove invalid emails. A total of 297 new addresses were added.
Disseminated information to the criminal justice community via the JUSTNET Facebook page (with 645 fans and 50,427 impressions) and Twitter feed (with 654 followers and 256,720 impressions) in 2017. JUSTNET’s YouTube channel had 10,475 views with 31,413 minutes watched. Original videos produced during the year included:

- Driving Innovation and Improvement: Michigan State Police, Police Vehicle Evaluation Program (law enforcement version).
EXHIBIT 8: YOUTUBE STATISTICS

JTIC’s YouTube activity included the following:

- 10,475 video views
- 31,413 minutes watched

Original videos produced during the year included:
- Driving Innovation and Improvement: Michigan State Police, Police Vehicle Evaluation Program (law enforcement version).
- Driving Innovation and Improvement: Michigan State Police, Police Vehicle Evaluation Program (manufacturers version).
- An SRO Talks About Female Body Armor (video).
- Officer Can’t Even Imagine Not Wearing His Body Armor (video).


— An SRO Talks About Female Body Armor (video).

— Officer Can’t Even Imagine Not Wearing His Body Armor (video).

For additional information on the Justice Technology Information Center, contact Mark Greene, NIJ Policy and Standards Director, at Mark.greene2@usdoj.gov.
Every fall since 1975, the Michigan State Police (MSP) have evaluated patrol vehicles and published the results in the annual Police Vehicle Evaluation [Model Year] report. Along the way they’ve added motorcycle evaluations, Internet publication and starting in 1981, the sponsorship of the National Institute of Justice and the National Law Enforcement and Corrections Technology Center System. Fleet administrators and other law enforcement administrators can, and do, use data from the evaluations to help inform their purchasing decisions.

Lt. Mike McCarthy of the MSP Training Division’s Precision Driving Unit says that MSP publishes and shares evaluation data so that “first, fleet managers can see how the vehicles compare to one another and second, manufacturers are driven to produce better vehicles so it’s safer for the police industry. Each manufacturer gets to look at their performance data such as the acceleration of the vehicles, the vehicle’s ability to turn and the vehicle’s ability to brake. They use it to try to improve their products by either making them turn better, or slow down quicker, or accelerate faster.”
“Once we’re done compiling the results, they become available to police agencies around the country who can use them to make good educated decisions about which police vehicle best meets their needs,” says Lt. Jim Flegel of the MSP Traffic Services Section. “We use a closed course environment that simulates real-world driving conditions to test all the capabilities they would need on an emergency run or a pursuit.”

In 2017, the agency evaluated 12 vehicles and seven motorcycles manufactured for the 2018 model year. That report includes photos and descriptions of all vehicles evaluated, including a specified section of highlights from the manufacturer. Subsequent sections provide methodology and data for vehicle dynamics evaluation, acceleration and top speed evaluation, braking evaluation, ergonomics and communications evaluation, and fuel economy. MSP evaluates all vehicles with a clean roof, meaning there are no overhead lights or light bars, spotlights, radio antennas, sirens or other emergency equipment, and with the manufacturers’ original tires.

MSP evaluates the vehicles for acceleration, top speed and braking at the FCA Proving Grounds in Chelsea, Mich., making speed and distance measurements with GPS-based equipment. MSP makes four acceleration runs – two in each direction – to 20 mph on the high-speed oval to account for wind conditions. The last acceleration run goes until top speed is reached. Evaluation also includes 20 braking stops from 60 to 0 mph with a 3-mile 45-mph cooling run at the halfway point. The deceleration rate published is an average of all 20 stops.

MSP assesses vehicle dynamics two days later at the Grattan Raceway in Grattan, Mich. This testing involves four troopers from MSP’s Precision Driving Unit who drive each car eight laps around the raceway. A cooling off period between each run allows the vehicle to be fueled and the brakes to cool. MSP records speeds via a timing loop embedded in the raceway and transponders mounted to the vehicles.

MSP evaluates motorcycles at both locations as well, for dynamics, acceleration and top speed, and braking ability. The same GPS-based equipment and loop and transponder system is used to evaluate the motorcycles. The final report can be found not only on the MSP website (http://www.michigan.gov/msp/0,4643,7-123--16274--,00.html), but also on JUSTNET (www.justnet.org), the NLECTC System website.
“The purchase of patrol vehicles is one of the largest expenditures a law enforcement agency faces. Police fleet administrators have to weigh a lot of factors when selecting a vehicle, including size, engine and transmission combinations, and other performance-enhancing options, all of which can affect a vehicle’s overall capabilities,” says Alex Sundstrom, NIJ Compliance Testing program manager. “Whether an agency operates in an urban, suburban or rural area and the type of climate also figure into the decision.”

Through JUSTNET, which is operated by the Justice Technology Information Center for the NLECTC System, access is provided to the results for evaluation purposes only. Posting the reports does not constitute an endorsement of any of the vehicles or motorcycles included in the evaluation results. In addition to an archive of earlier reports dating back to 1998 (which may prove useful to administrators looking to purchase used vehicles), JUSTNET also features a two-part video series titled “Driving Innovation and Improvement: Michigan State Police Vehicle Evaluation Program,” one of which specifically explains the value of the program to manufacturers.

To access the latest report, go to https://justnet.org/compliant/Vehicle-Testing.html.

**Ballistic- and Stab-resistant Body Armor Standards Revisions Near Completion**

NIJ plans to release revised versions of its standards for ballistic-resistant body armor, stab-resistant body armor and ballistic-resistant materials during the 2018 calendar year.

**Ballistic-resistant body armor.** Version 0101.07 builds on lessons learned during nine years of testing conducted under the current (0101.06) standard. Significant changes address the specific needs of female officers and update the types and calibers of ammunition used during testing to reflect the threats faced by officers on the street.

“In line with our goal of increasing officer safety, NIJ 0101.07 will include a testing protocol for shaped, or female, armor that will result in increased confidence in its performance,” says Dan Longhurst, standards coordinator for the NIJ Compliance Testing Program (CTP), which is administered by the Justice Technology Information Center (JTIC). “The test method includes buildup in the bust area and uses a different shot pattern to fully test the female armor designs.”
Female (shaped) armor will be tested against the same ammunition used to test planar (not shaped) armor. In fact, the same table of ammunition will also carry over to testing of ballistic shields and other ballistic materials. Adoption of this new ballistic threat document will ensure greater consistency across all ballistic-related standards, Longhurst says.

“As the several different committees met, it became clear that the threats, although changing and developing over time, are the same regardless of the equipment being used, so it made sense to test the various types of equipment against the same threats,” he says.

In addition to updating the threats against which armor has tested, the new standard also changes the nomenclature of the threat levels. Level II, IIIA, III and IV will be retired and the naming convention will become NIJ HG (handgun) 1, NIJ HG 2, NIJ RF (rifle) 1, NIJ RF 2 and NIJ RF 3.

*NIJ 0101.07 Ballistic Resistance of Body Armor* was developed through an NIJ Special Technical Committee (STC) made up of criminal justice professionals and testing experts, with guidance and support from NIJ and CTP staff.

**Stab-resistant body armor.** A similar STC also met over an extended period of time to develop the revisions included in *NIJ 0115.01 Stab Resistant Body Armor Standard*, where the title change from *Stab Resistance of Body Armor* indicates one of the major changes.

“During our discussions with criminal justice professionals, it became clear that corrections officers believe that their existing vests provide protection against both edged-blade and spike threats, therefore the STC decided to require all vests to provide both types of protection rather than continuing to separate knife and spike protection,” Longhurst says. “Also, because inmates don’t have access to hardened steels and are not able to develop finely honed machined edges and points when they fashion contraband weapons, the draft standard includes two classes, one of which offers protection against inmate-made weapons and one of which affords additional protection against sharper/machined commercial-grade weapons.”
The revised 0115.01 also incorporates testing specific to female vests and implements use of a conditioning process prior to testing, similar to that added to the ballistic-resistant standard in the current version, 0101.06.

**Ballistic-resistant shields.** A new ASTM standard on ballistic-resistant shields is being developed through the ASTM standards development process, which uses a working group of criminal justice professionals, lab representatives and manufacturers. It should be published in early 2018.

**American Society of Testing and Materials Homeland Security E54 Committee Meeting.** From Jan. 29-Feb. 2, JTIC staff attended the ASTM Homeland Security E54 Committee meeting in Norfolk, Va. NIJ is actively working with ASTM to move many of the technical/procedural aspects of NIJ’s equipment performance standards to ASTM, where they will be developed and/or maintained through ASTM’s ongoing standards development/management process. As an example, NIJ’s standards for ballistic-resistant body armor reference detailed ASTM instructions for setup and calibration of test equipment and fixtures. These instructions will be converted into ASTM standards, and future editions of the NIJ Standard will incorporate them by reference. These requirements will be reviewed and updated on a continuing basis by ASTM, which has a larger infrastructure and capacity to manage this type of technical/calibration standards development, and will allow NIJ to focus limited resources on ensuring standards meet broader operational and performance requirements specified by end users.

For additional information on the Compliance Testing Program, contact Mark Greene, NIJ Policy and Standards Director, at Mark.greene2@usdoj.gov.
SchoolSafetyInfo.org Gets a New Look

In the first months following the shooting at Sandy Hook Elementary School in December 2012, JTIC, at NIJ’s direction, developed SchoolSafetyInfo.org to address a recognized need to provide school administrators and school resource officers (SROs) with one location to access a wide variety of school safety information.

Launched with a handful of articles written in early 2013 and links to established federal and nonprofit resources, the site has grown in the past five years to include more than 100 articles and a robust selection of carefully vetted resource organizations and materials. By late 2016, it became apparent that the site had grown so large that it needed a new method of organization and site navigation. The JTIC Web team paired that reorganization with the adoption of a more modern look and feel, and the revamped website launched in early November 2017.
EXHIBIT 9:
SchoolSafetyInfo.org’s New Look
“The goal was targeted enhancements that would render well on any device, and speed up access to the most relevant information available,” says JTIC Deputy Director Ron Pierce. “The new graphics also help showcase the volumes of success stories and other resources available on the site.”

The site includes articles on model programs and best practices, apps, training and more, and in addition to spotlighting the most recently added articles, the revamped site organizes all articles by category in an easy-to-navigate table format. It also offers access to resources grouped in the areas of prepare, respond and recover, breaking them out to indicate which resources are free, which come from federal government agencies and so on. A calendar of events provides information on upcoming school safety-related conferences and training.

“JTIC staff update SchoolSafetyInfo.org on an ongoing basis, keeping the calendar of events up to date, adding new resource organizations and materials, and posting new success stories,” Pierce says. “It serves as a clearinghouse of information and contacts for law enforcement and other public safety officials as they work to keep schools as safe as possible.”
The site also provides links to the *Sharing Ideas and Resources to Keep Our Nation’s Schools Safe!* Series, an annual compilation of all articles posted to the site in the previous 12 months. Volumes are published each June, just prior to the annual conferences of several associations for school safety law enforcement professionals. Volume 5 was released in June 2017; all five volumes can be downloaded from [https://schoolsaftyinfo.org/library/5-volumes-school-safety.html](https://schoolsaftyinfo.org/library/5-volumes-school-safety.html).

Another popular feature of the site is School Safe – JTIC’s Security and Safety Assessment App for Schools. Launched in late 2015, the app takes users step-by-step through buildings and school grounds to identify and address trouble spots. The free app allows SROs and school administrators to conduct a physical campus assessment by walking around and answering a series of simple questions using a hand-held device. Available in both iOS and Android versions, access to the app can only be obtained after requestors have been vetted by JTIC staff. During 2017, staff processed 71 requests for the app.

JTIC staff also added 19 new articles to SchoolSafetyInfo.org and kept resources, funding opportunities and calendar of events listings current. The site registered 10,148 sessions by 7,797 users and 51,491 page views.

For additional information on the Justice Technology Information Center’s school safety programs, contact Mark Greene, NIJ Policy and Standards Director, at Mark.greene2@usdoj.gov.
Law Enforcement, Houses of Worship Come Together for Safety and Security Planning

The Safeguarding Houses of Worship (SHOW) app, released in October 2016, helps HOW develop a safety and security plan tailored to their specific needs. Produced with NIJ funding, SHOW is available only to law enforcement agencies, which in turn share download codes with HOW in their jurisdiction. Agencies that have become involved in spreading the word about SHOW have found training sessions like one held in October 2017 in Frederick County, Md., to be an extremely effective way of sharing the information: when the overview presentation ended, nearly everyone in the room clustered around Frederick County Deputy Sheriff Hal Jones to view an up-close demonstration of the app’s capabilities and get a download code.

“The SHOW app provides something for us to give to the faith-based community to work with in preparing themselves. Too often, other processes are law enforcement-centric and do not result in a shared
product,” says Lt. Mark Landahl, Homeland Security Commander for the Frederick County Sheriff’s Office. “With SHOW, the shared nature of the process and the intuitive design of the app allow the faith-based community to work through the processes themselves with law enforcement and other emergency services providers as support resources. It provides ownership and support to organizations seeking to prepare themselves for emergencies ranging from routine medical events to serious active threats.”

Although SHOW provides guidance in planning for active threats, it doesn’t stop there, assisting HOW in planning for weather events and what Lt. Landahl termed “traditional emergencies” such as missing children and medical incidents. The app encourages HOW to take inventory of the resources available in the faith-based community; plan what to do before, during and after an event; and hold drills to practice their plans.

“How face a challenge in that they have a mission to be open and welcoming, but they have to balance this with a need for safety and security,” Landahl says. He also encouraged attendees to be aware of other resources such as CPR and first aid training, overdose response training and training for the general public on dealing with an active threat, which may be available online or through a local law enforcement agency.

Pastor Barbara Kershner Daniel, senior pastor of Frederick United Evangelical Reformed Church of Christ, which hosted the event, says that she thought her congregation was well prepared, but after seeing the presentation, she realized her congregation of 400 still has some planning to do: “We do have a plan for health emergencies and one for missing children, but we need to do much more. We need to be thoughtful and intentional about our planning and also informing the congregation of our plans in case of an emergency. At the presentation, we also realized being prepared doesn’t mean we have to give up on our faith values and our outreach to the community.”

Jamea Gouker, administrator at MorningStar Family Church in Thurmont, was among the attendees at the event who later expressed interest in using the SHOW app.

“I’ve been telling our pastor we need to be aware and we need to think about situational awareness,” says Gouker, formerly a member of the Army’s Special Forces Command. “I’ve taken several online workshops and trainings, because of all the events happening in churches
that you hear about on the news. It’s unfortunate, but in this day and age, you always need to be prepared, and the app will be a good way to tie all the pieces I’ve already created together.”

Although all of the HOW representatives in attendance, like Kershner Daniel and Gouker, were enough aware of the need to attend the event, not one had actually begun to develop a plan. Now, with assistance from SHOW and the Frederick County Sheriff’s Office, most are already well on their way.

More information on the Safeguarding Houses of Worship app and how law enforcement agencies can become involved in working with HOW in their jurisdictions to promote safety and security planning can be found on JUSTNET at https://www.justnet.org/resources/Houses_of_Worship.html. A related video can be found at https://www.youtube.com/watch?v=CBW75cOuvGw.
New Look Developed for PoliceArmor.org

JTIC staff created and launched a revamped version of PoliceArmor.org, the NLECTC System’s “one-stop shop” for information on body armor, in 2017. Staff developed has a new, easy-to-navigate interface that seamlessly integrates PoliceArmor.org, which targets practitioners in the field, with the Compliant Products List and other information on the NIJ Compliance Testing Program located on JUSTNET. In addition to providing access to vital information on the compliance status of ballistic- and stab-resistant body armor, PoliceArmor.org includes body armor FAQs; information on selection and fit, including a checklist and related videos; and reports on recent body armor saves in the news. With the launch of the redesigned site, JTIC staff also implemented a marketing campaign to inform practitioners that PoliceArmor.org was created and designed to meet their specific needs.

For additional information on the SHOW app and PoliceArmor.org, contact Mark Greene, NIJ Policy and Standards Director, at Mark.greene2@usdoj.gov.
Conference Summaries

NLECTC System staff attended numerous conferences during the year, networking with attendees, promoting NLECTC services to booth visitors, distributing materials and giving presentations. Highlights of conferences attended by the NLECTC System centers follow:

**January**

**Consumer Electronics Show & Conference.** RT&E Center staff attended the Consumer Electronics Show in Las Vegas on Jan. 4-7. The Center also presented a paper at the IEEE Consumer Electronics Conference titled “Massive MIMO for Dynamic Spectrum Access.” That event took place Jan. 8-11, also in Las Vegas.

**Shooting, Hunting and Outdoor Technology Conference.** JTIC staff attended the SHOT Show in Las Vegas from Jan. 16-20, where they met with numerous body armor and firearms manufacturers to discuss industry questions regarding NIJ standards on ballistic- and stab-resistant armor and semi-automatic handguns.

**Sandy Hook: A Parent’s Perspective – A Law Enforcement Perspective.** JTIC staff attended a seminar put on by the Maryland Center for School Safety on Jan. 18. The discussions included speakers from the sponsoring Sandy Hook survivors’ organization as well as local school safety experts. JTIC staff was given a few minutes to discuss the School Safe app with attendees and distribute promotional cards for the app.

**Meeting with Arlington Diocese Risk Management.** JTIC staff met with the risk manager from the Diocese of Arlington on Jan. 25 to discuss and demonstrate the School Safe and Safeguarding Houses of Worship apps for distribution to the diocese’s 76 churches and schools.

**Metropolitan Washington Council of Governments’ Police Technology Subcommittee Meeting.** JTIC staff attended the bi-monthly meeting of the Metropolitan Washington Council of Governments’ Police Technology Subcommittee meeting on Jan. 26. The main topic of the meeting was using GIS-based situational awareness software around the Washington, D.C. region.
February

National Sheriffs Association Winter Conference. JTIC staff exhibited at the NSA Winter Conference from Feb. 5-6, in Washington, D.C. There were several thousand attendees, most of whom were decision makers within their agencies. Attendees who visited the JTIC booth exhibited a great deal of interest in School Safe – JTIC’s Security and Safety Assessment App for Schools and the Safeguarding Houses of Worship app, as well as unmanned aircraft system (UAS) resources.

American Academy of Forensic Sciences Conference. From Feb. 14-17, JTIC staff exhibited at the 2017 AAFS Conference, which targets coroners, crime scene personnel (both sworn and civilian) and academia in the forensic science field. Staff spoke to approximately 150-200 people in attendance, who were briefed on NIJ’s current programs that support those fields, such as the National Missing and Unidentified Persons System (NamUs), available funding for research and new publications pertaining to sex assault evidence collection kits. During the event, the FTCoE assisted NIST in hosting the annual Organization of Scientific Area Committees Public Status Reports and Open Discussions. At this opening meeting, attendees learned about OSAC’s recent activities and priorities, including the latest projects, task groups, research needs and planned outcomes. Speakers also provided status updates on specific standards or guidelines.

The FTCoE hosted a workshop titled “Behind the Curtain: Understanding the Basic Science and Testimony of Latent Prints” at the American Academy of Forensic Science Meeting in New Orleans, La., on Feb. 13. The workshop focused on assisting the legal community to better understand the basic scientific principles behind friction ridge comparisons. Participants received tools to help them critically evaluate friction ridge testimony, which will in turn allow them to better advocate for the science, challenge the science or fulfill a gatekeeping role, as needed. More information about the workshop, including workshop objectives and the agenda, can be found at https://forensiccoe.org/workshop/basic-science-and-testimony-of-latent-prints/.

The FTCoE hosted a workshop titled “Navigating the Sea of Resources for Sexual Assault Programs” at the American Academy of Forensic Science Meeting in New Orleans, La., on Feb. 14. This workshop impacted the forensic community by highlighting how federal resources in the United States can advance victim-centered support programs, investigations and forensic services that aid sexual assault programs, especially the processing of untested sexual assault
kits (SAKs) and other forensic evidence. Featuring the FTCoE director, the workshop also included federal agency representatives, laboratory practitioners, researchers and technology advocates providing varying perspectives on the ongoing transformation of sexual assault investigations and forensic services using evidenced-based practices. More information about the workshop can be found at https://forensiccoe.org/workshop/navigating-the-sea-of-resources-for-sexual-assault-programs/.

Unmanned aircraft Systems Public Safety, Emergency and Disaster Response Conference. On Feb. 27-March 1, JTIC staff attended the UAS Public Safety, Emergency & Disaster Response Conference hosted by the Virginia Department of Emergency Management in Charlottesville. The conference covered operational needs, technological solutions, operational applications and case studies related to the use of UAS by law enforcement, fire and EMS, and emergency and disaster management.

March

DHS EMERGE Accelerator Program Event. On March 1, the JTIC Outreach Coordinator participated in a U.S. Department of Homeland Security Science and Technology Directorate EMERGE Accelerator Program event in Washington, D.C. DHS funds the technology companies that participate in the EMERGE program to fill public safety capability gaps. The current EMERGE award recipients have a wearable solution. At the meeting, the technology companies interacted with first responders and obtained feedback on their products. These technologies will allow responders to do their jobs more safely, efficiently and effectively.

DHS Emergency Alerting System Assistance to Mauritius. On March 15, the JTIC Outreach Coordinator participated in a U.S. Department of Homeland Security/U.S. Department of State webinar to explain a project involving assistance to the government of Mauritius in setting up an emergency alerting system throughout the three-island nation. This nation is prone to typhoons and does not have an emergency alerting system in place to notify its citizens of impending weather emergencies. The webinar solicited input from various subject-matter experts.

First Responders Resource Group Meeting. On March 23, the JTIC Outreach Coordinator participated in a U.S. Department of Homeland Security Science and Technology Directorate FRRG meeting in Washington, D.C. Participants at these FRRG meetings help identify high-
priority technology gaps that will eventually lead to the development, testing and transitioning of critical technologies to aid first responders. These technologies will allow responders to do their jobs more safely, efficiently and effectively.

**From Cradle to Cane: Investigation of Crimes Against Vulnerable Victims.** The FTCoE assisted forensX, LLC and the Shaken Baby Alliance in hosting a three-day conference in Charleston, S.C., on March 21-23. This conference focused on crimes against the most vulnerable victims – children, the elderly and people with disabilities. Conference topics included the impact of abusive head trauma on the family, forensic pathology of child abuse, human trafficking and forensic entomology. The FTCoE made a portion of this conference available live online during the event. A total of 131 onsite and online attendees participated in the event.

**National School Boards Association Conference.** On March 24-27, JTIC staff exhibited at the National School Boards Association annual conference in Denver, Colo., placing special emphasis on promoting the School Safe app and Field Search software. Field Search is now being promoted for schools as a resource to search school-issued laptops and tablets for inappropriate content. There was a great deal of interest in School Safe, with many attendees sending co-workers to the JTIC booth for information.

**April**

**Sea, Air, and Space Conference.** On April 4, the JTIC Outreach Coordinator represented the center at the Sea, Air, and Space Conference in Oxon Hill, Md., which showcases developments in military and space technologies. One of the new technologies included a biometric sensor being developed by the Marine Corps that will alert in-field medical staff if individuals’ body temperature, breathing and heartbeat are elevated, putting them at risk for a medical emergency. Technologies such as these have potential for use by public safety as well as military personnel.

**Texas Chiefs of Police Association Annual Conference.** JTIC staff exhibited at the Texas Chiefs of Police Association Annual Conference in The Woodlands on April 11-12. Two pilots from neighboring Tomball, Texas, also staffed the booth. Their NJU-funded gyroplane was scheduled to be at the exhibit hall, but logistical and weather issues prevented it from being brought to the conference hotel. Staff emphasized promotion of the SHOW and School Safe
apps, as well as an article on Tomball’s gyroplane from a 2012 issue of TechBeat. The pilots spoke to NIJ’s low-cost aviation portfolio and the affordability of gyroplanes for small and medium-sized departments.

**American Society of Crime Lab Directors Symposium.** More than 500 people attended the annual ASCLD Symposium held April 29-May 4, in Dallas. FTCoE participated in the symposium in a variety of ways. The FTCoE director presented a talk titled “The Forensic Technology Center of Excellence – Continuous Improvement of Laboratory Efficiency, Technology Implementation, and Leadership Excellence.” The FTCoE also showcased a new booth in the exhibitor hall. Staff recorded several podcasts for Just Science, a podcast for forensic science professionals and anyone with an interest in learning more about how crime laboratories are working to do their jobs better, produce more accurate results, become more efficient and solve more crimes. Additionally, on April 26, prior to the start of the symposium, the FTCoE hosted an ASCLD webinar on DNA standards and guidelines. The symposium is designed for leaders and managers in the forensic laboratory field, and includes workshops, plenary sessions and poster sessions covering laboratory technology, performance, and staff mentoring and training.

**May**

**California Association of Criminalists Spring 2017 Seminar.** The California Association of Criminalists’ Spring 2017 seminar, hosted by the San Francisco Police Department criminalistics laboratory, took place May 9-12 in San Francisco. More than 150 forensic scientists, primarily from the West Coast of the United States, attended the meeting, which featured presentations on challenging and interesting cases and new advances in forensic sciences, and workshops on diverse disciplines including firearms, DNA, toxicology and crime scene processing. FTCoE staff presented a talk at the general session titled “The Forensic Technology Center of Excellence—Continuous Improvement of Laboratory Efficiency and Technology Implementation.”

**Armed Forces Communications and Electronics Association Annual Law Enforcement and Public Safety Technology Forum.** On May 10, JTIC participated in the AFCEA Annual Law Enforcement and Public Safety Technology Forum in Washington, D.C. This forum invites government and industry executives to engage, learn and collaborate around the priorities,
gaps and program opportunities for law enforcement, homeland security and public safety agencies.

**National Police Week Survivor Conference.** JTIC staff exhibited at the National Police Week Survivor Conference in Alexandria, Va., May 13-16, distributing JTIC and BJA publications related to body armor with great success. Staff also discussed the CTP with numerous attendees.

**Civil Disturbance Unit Personal Protective Equipment Standards Meeting.** On May 16-18, JTIC staff provided subject-matter expertise and technical writer/editor support at a Civil Disturbance Unit Personal Protective Equipment standards development meeting in Washington, D.C. Equipment demonstrations held as part of this meeting were filmed by JTIC and OJP communications staff to become part of a new video to promote the group’s work to improve CDU equipment by developing performance standards.

**International Association of Chiefs of Police 2017 Technology Conference.** The RT&E Center technical lead conducted a joint presentation with the Montgomery County (Md.) Police Department’s Capt. Michael Wahl and Officer Scott Roth at the 2017 IACP Technology Conference on May 23 in St. Louis. The presentation, part of the Operational Track, was titled “Implementing Body-Worn Camera Systems: Considerations and Lessons Learned.” It focused on the body-worn camera market and how BWCS’ use in law enforcement has proliferated exponentially. It highlighted key issues and lessons learned regarding the planning, acquisition and implementation of a BWC program.

**Fairfax County Police Department Command Vehicle Rally.** JTIC staff attended the Fairfax County Police Department’s Command Vehicle Rally on May 26, in Chantilly, Va. Representatives from numerous federal, state and local police, fire and emergency management agencies, as well as the military, attended the event along with representatives from several communications companies. The JTIC outreach and technical services coordinator met with various agency representatives to discuss the program, as well as to hand out Federal Aviation Administration (FAA) drone incident reporting cards and the Law Enforcement Guidance Concerning Suspected Unauthorized UAS Operations white paper.
UAS Performance Standards Meeting. On May 30, JTIC staff attended a meeting at the NIST robotics lab to discuss standards for UAS performance and operator performance. The meeting was attended by representatives of NIJ, the U.S. Department of Homeland Security, the Federal Emergency Management Agency, the U.S. Marshals Service, the Maryland Transportation Authority Police and others. It focused on extrapolating the land robot testing protocols (bomb robots and DARPA test arena) to UAS performance to establish a protocol that could compare the capabilities of differing units in a non-subjective manner. This involved developing a series of aerial “tasks” that tax both the unit and the operator, and can also highlight operational limitations of devices. It also covered the implementation of an operator’s assessment to ensure that the law enforcement user has the required operator skills to use the technology effectively.

June

Opioid Misuse and Overdose Prevention Summit. The FTCoE Director attended the Opioid Misuse and Overdose Prevention Summit, sponsored by the North Carolina Department of Health and Human Services, on June 27-28, in Raleigh, N.C. The summit addressed opioid misuse, addiction and overdose, and featured presentations from national, state and local leaders on innovative policies, prevention efforts, social determinants and several other topics pertaining to the opioid crisis. The director sought to strengthen the FTCoE’s presence in efforts to address the opioid epidemic in the United States and to solicit feedback regarding topics to address in future FTCoE activities.

National Sheriffs Association Annual Conference. JTIC staff exhibited at the National Sheriffs Association Annual Conference in Reno, Nev., June 24-28. Staff from the FAA and officers from the Tomball (Texas) Police Department, who brought their gyroplane, also helped out in the booth. The majority of publications distributed were those related to body armor and the spring 2012 TechBeat article “Tomball Police Department Takes to the ‘Open Skies’.”

New Jersey Police/Security Expo Conference. Staff exhibited at the New Jersey Police/Security Expo Conference on June 26-28, in Atlantic City. Attendees were particularly interested in the School Safe and Safeguarding Houses of Worship apps; in addition, female attendees wanted more information on female body armor issues.
NIJ Panel Presentation. In June 2017, two RT&E team members attended a panel presentation at NIJ titled “Using Voluntary Standards and Conformity Assessment to Achieve NIJ’s Mission,” moderated by Mark Greene, Division Director, Policy and Standards.

July

International Association of Coroners and Medical Examiners Symposium. Two FFCoE scientists participated in a variety of ways – including booth operation, outreach and dissemination, and a presentation to the board of directors – at the International Association of Coroners and Medical Examiners’ annual training symposium July 23–27, in Las Vegas. Additionally, the Center developed a flyer detailing past FFCoE activities of interest for coroners, medical examiners and other professionals.

National Association of School Resource Officers Conference. JTIC staff exhibited at the 2017 NASRO Conference in Washington, D.C., July 23-24. Interest in Volume 5 of Sharing Ideas and Resources to Keep Our Nation’s School Safe ran so high that supplies needed to be replenished after the first day. Attendees also expressed interest in the School Safe app and It Can Happen Here. Several individuals who stopped at the booth said that on the strength of a presentation by a JTIC staff member at the 2016 event, they had downloaded and used School Safe with great success. Staff also elicited approximately 10 potential leads on new articles for SchoolSafetyInfo.org, which would also appear in 2018’s Volume 6 of Sharing Ideas and Resources. These contacts included Kristina Anderson of the Koska Foundation, keynote speaker and survivor of the 2007 shooting at Virginia Tech, and Coach Frank Hall, who is credited with saving lives by stopping an active shooter at Chardon High School in February 2012.

School Safety Advocacy Council Conference. JTIC staff exhibited at the School Safety Advocacy Council Conference in Las Vegas July 24-25. JTIC staff spoke with local police department school resource officers, school administrators and school board police department officers, promoting both the School Safe app and SchoolSafetyInfo.org. Staff also distributed Field Search information cards to assist school staff and SROs with school-issued laptops and tablets as a resource against cyber bullying and inappropriate website visits. This resulted in several requests for Field Search software by attendees.
August

**International Association for Identification.** The annual IAI Forensic Educational Conference took place on Aug. 6-12 in Atlanta. IAI is the oldest and largest forensic professional organization in the world, and the IAI Conference is the leading educational experience for forensic physical evidence professionals. The FTCoE participated in the conference in a variety of ways, including booth operation, and outreach and dissemination. Additionally, staff presented on “One Man’s Trash: A whitebox study into the factors driving latent print suitability decisions” and led a workshop on latent print testimony. The workshop considered some of the tough concepts that come up in court, including error rate, discriminability, certainty, variability, bias, uniqueness and the identification decision. Flyers highlighting recent FTCoE efforts of interest for attendees were disseminated at the booth, along with postcards highlighting an upcoming FTCoE workshop on bloodstain pattern analysis on textiles.

**Maryland School Safety Conference.** JTIC staff exhibited at the Maryland School Safety Conference in Annapolis on Aug. 14. Staff spoke with local police department SROs, school administrators and school board police department officers, promoting both the School Safe app and SchoolSafetyInfo.org, as well as distributing Field Search promotional cards to school staff and SROs with school-issued laptops and tablets for use as a resource against cyber bullying and inappropriate website visits.

**Next Generation Dx Summit.** The Next Generation Dx Summit took place Aug. 15-18, in Washington, D.C. The summit brings more than 1,000 international professionals together for networking and sessions covering several topics related to next generation sequencing (NGS), including clinical diagnostics, microfluids and forensics. Two FTCoE scientists attended the Summit’s second annual symposium on NGS for DNA Forensics held on Aug. 18. Symposium speakers discussed the role of massively parallel sequence data in forensic casework, a recently developed open source website for STR sequence data, microhaplotypes, using NGS results in court and several other topics. Of note, five of the eight presentations covered NIJ-funded forensic research.

**Rapid DNA Technology Forum.** The FTCoE hosted the Rapid DNA Technology Forum in Alexandria, Va., from Aug. 15-17. Rapid DNA technology has quickly advanced over the past several years with two commercially available systems being adapted to analyze the CODIS panel, and the introduction of the Rapid DNA Act of 2017, which became law on
Aug. 18. This forum provided more than 130 attendees from the forensic DNA community an opportunity to be updated on commercially available Rapid DNA technologies, hear lessons learned from several early adopters spanning local law enforcement and federal agencies, and discuss moving forward as a community. The attendees included representatives from several government organizations, including the FBI, NIJ, NIST, DHS and Combating Terrorism Technical Support Office, the American Society of Crime Laboratory Directors, practitioners and vendors. Senator Orrin Hatch, co-author of the recently passed Rapid DNA Act, also offered his thanks to the community in attendance at the forum through a welcome letter featured in the forum’s program.

**Midwest Security/Police Expo.** JTIC staff exhibited at the Midwest Security/Police Expo and conference in Tinley Park, Ill., on Aug. 15-16. The Expo served as the exhibit hall portion of the Illinois Association of Chiefs of Police Annual Conference. Staff placed emphasis on NIJ’s work with UAS systems, promoting the *Law Enforcement Guidance Concerning Suspected Unauthorized UAS Operations* white paper and the FAA UAS promotional cards. Staff also promoted Field Search to white collar detectives and SROs.

**Human Factors Sourcebook Working Group.** The FTCoE hosted a two-day working group meeting in support of the Human Factors in Forensic Science Sourcebook project at RTI International from Aug. 17-18. The goal of this sourcebook is to find areas in which human factors knowledge can be used to improve laboratory practice and to bridge the gap between existing knowledge and operational implementation. Working group members, both academics and practitioners, had productive discussions about the chapter content and flow, and brainstormed examples and ideas for inclusion. A second working group meeting will convene in March 2018 to discuss chapter drafts.

**American Correctional Association Conference.** JTIC staff exhibited at the American Correctional Association Conference in St. Louis, Mo., Aug. 20-21. The JTIC corrections subject-matter expert also helped staff the booth, promoting Field Search and various JTIC corrections-related publications. Staff also placed emphasis on the upcoming revision of the stab-resistant body armor standard. The corrections SME discussed the offender tracking standard and the upcoming related focus group meeting with conference attendees.
American Probation and Parole Association Conference. JTIC staff exhibited at the American Probation and Parole Association Conference in New York City on Aug. 27-29. The JTIC corrections subject-matter expert also helped staff the booth, promoting Field Search and various JTIC corrections-related publications and discussing the release of the NIJ offender tracking standard and the upcoming offender tracking focus group meeting with attendees. Attendees also experienced interest in information on body armor.

September

TacOps East Tactical Training Conference & Expo. JTIC staff exhibited at the TacOps East Tactical Training Conference & Expo in Crystal City, Va., on Sept. 6-7. CTP personnel spoke with East Coast police department SWAT team officers and promoted various body armor publications, as well as networking with body armor manufacturers.

Virginia Chiefs of Police Annual Conference. JTIC staff exhibited at the Virginia Chiefs of Police Annual Conference in Virginia Beach on Sept. 17-19. Staff promoted the Safeguarding Houses of Worship and School Safe apps along with NIJ’s UAS program. Staff also distributed other JTIC publications, including promoting Field Search for white collar detectives and school resource officers. JTIC staff had the opportunity to meet with conference attendees by going table to table and promoting the program and its resources. This “sales pitch” session worked well for JTIC, as several attendees followed up by visiting the JTIC booth for more on information on the topics discussed.

October

International Symposium on Human Identification. The annual International Symposium on Human Identification took place Oct. 2-5 in Seattle. ISHI is the largest conference to focus on DNA analysis for human identification, and close to 1,000 forensic professionals gathered from around the world to discuss the latest research, technologies and policies in the field. The FTCoE participated in the symposium in a variety of ways, including booth operation and outreach and dissemination. Staff disseminated flyers highlighting recent FTCoE efforts. Additionally, the deputy director moderated a focused table topic on rapid DNA analysis.
Montana Medicolegal Death Investigation Conference. The Montana Medicolegal Death Investigation Conference took place Oct. 4-6 at the University of Montana in Missoula. This conference provides individuals in the field of death investigation an opportunity to network and discuss the utilization of science, medicine and law to determine cause and manner of death. Conference topics included using social media as an investigative tool, cultural sensitivity in death notifications, entomology case studies and shooting reconstruction.

Association of the United States Army Annual Conference & Exposition. JTIC staff exhibited at the Association of the United States Army Annual Conference & Exposition in Washington, D.C., on Oct. 9. Staff attended this free conference to see how technologies used in the military may have a law enforcement or corrections use. These included a new through-the-wall sensor technology that, in addition to locating personnel inside a building, also creates a floor plan of the building and tracks personnel inside (to include vertically). The device has an application for SWAT teams and as personnel location technology.

Bloodstain Pattern Analysis Technology Transition Workshop. In collaboration with North Carolina State University, the FTCoE hosted the Bloodstain Pattern Analysis on Textiles Technology Transition Workshop on Oct. 11-13. Every year, millions of items of bloodstained clothing and other textiles are examined in forensic laboratories around the world, yet there is, to date, no standard or well-documented method for analyzing small bloodstains on these textiles. This is due in part to the great variety and complexity of textiles, which can deform easily but may also contain critical information about a bloodshed event. In this three-day, hands-on workshop, participants explored key properties of textiles that dictate how they interact with blood, how their manufacture alters these properties, how small bloodstains develop on textile substrates and how blood transfers from one surface to another. A total of 28 individuals attended the workshop. Of the 28 attendees, 26 were forensic science practitioners and two, retired police officers who currently teach BPA courses to practitioners.

Airborne Law Enforcement Association UAS Expo. JTIC staff exhibited at the ALEA UAS Expo on Oct. 17-20 in New Orleans, La. Staff promoted the FAA UAS reporting cards, the Law Enforcement Guidance Concerning Suspected Unauthorized UAS Operations white paper and the NIJ report Considerations and Recommendations for Implementing an Unmanned Aircraft Systems (UAS) Program. The JTIC UAS SOP/model policy was released during the conference, and staff promoted the document to attendees who visited the JTIC booth. This resulted in several requests for the policy from attendees.
International Association of Chiefs of Police Annual Conference and Exposition. JTIC staff exhibited at the IACP Annual Conference and Exposition Oct. 21-24 in Philadelphia, placing an emphasis on UAS. Staff from the FAA assisted in the booth with answering questions that attendees had regarding law enforcement use of UAS. Officers from the Delaware State Police, Arlington (Texas) Police Department, Stafford County (Virginia) Sheriff’s Office and Alameda County (California) Sheriff’s Office all assisted in the booth. They brought their agencies’ UAS as a static display and answered questions about how their agencies use UAS. Aerial footage of those agencies’ UAS in operation was displayed on a monitor in the booth. Staff promoted various related literature items from the FAA, NIJ and JTIC, handing out the majority of products brought. CTP staff met with approximately 15 program participants to discuss a variety of topics, including revision of the ballistic-resistant standard, revision of the stab-resistant armor standard and when each of these standards will be available for public comment. The FTCoE director gave a presentation titled “The Forensic Technology Center of Excellence – Continuous Improvement of Laboratory Efficiency, Technology Implementation, and Leadership Excellence.” Staff from the RT&E Center also attended the event.

International Forum for Drug and Alcohol Testing. The annual International Forum for Drug and Alcohol Testing took place Oct. 23-24, 2017, in Clearwater Beach, Fla. This forum brings professionals in the field together to discuss the state of global drug and alcohol testing. Session topics included drugs and road safety, testing in sports and the workplace, alcohol biomarker testing and current drug trends.

Frederick County (Md.) Sheriff’s Office SHOW App Presentation. On Oct. 26, the Frederick County Sheriff’s Office and the Frederick Evangelical Reformed United Church of Christ hosted approximately 50 individuals from local houses of worship for a presentation on, and demonstration of, the Safeguarding Houses of Worship app. The presentation was well-received and the majority of attendees asked for codes to download and use the app. JTIC staff attended the event.
November

**Northeastern Association of Forensic Scientists.** The NEAFS annual meeting took place Nov. 7-10 in Pocono Manor, Pa. This conference provided individuals in the field of forensics the opportunity to network and discuss recent advances and current research related to criminalistics, drug chemistry, DNA analysis, toxicology, trace evidence, arson and explosives. For this event, the FTCoE provided flyers highlighting the Center’s mission and accomplishments. This type of outreach and dissemination helps to strengthen the FTCoE’s presence in the forensic science community at a regional level.

**American Society of Criminology.** The ASC annual meeting took place Nov. 15-18 in Philadelphia. ASC is an international, multidisciplinary organization of criminal justice and criminology professionals who concern themselves with the latest research, policies and issues related to crime and delinquency. The theme for this year’s meeting was “Crime, Legitimacy and Reform: Fifty Years after the President’s Commission.” The FTCoE assistant director attended the conference to strengthen the FTCoE’s presence in the criminal justice community.
Growing Use of UAS Reduces Cost, Enhances Safety and Improves Efficiency

As first responder agencies’ interest in and use of unmanned aircraft systems (UAS) grows, they need information on technology, deployment, policies and training to ensure their programs are successful. Examples of uses of the technology by public safety agencies include search and rescue missions, tactical missions, crime scene analysis, traffic accident investigation, disaster response and recovery, monitoring fires and response to hazardous materials incidents. Use of UAS can reduce costs, enhance safety and improve the efficiency of first responder activities.

JTIC UAS-related activity during 2017 included the following:

- Produced A Template for a “Standard Operating Policy (SOP) Guidance for Law Enforcement Use of Small Unmanned Aircraft Systems (sUAS).” As technology advances and enhances first responders’ ability to use UAS, it is increasingly important to suggest program management guidance to standardize the integration of these systems, enhance operational activities effectively and ensure operational safety. This policy guidance is suggested for agencies to use as a general template for
developing and enhancing their internal management and operational activities regarding the integration of this technology. It should not to be construed as concise final program guidance for any agency, but rather, an example from which each agency can develop and implement its own unique sUAS program. The document is made available to agencies who send an email to asknlectc@justnet.org from a legitimate government agency/law enforcement agency email address (no Yahoo, Gmail, etc.).

- Developed a draft *Small Unmanned Aircraft Systems Online Training Curriculum*, envisioned as an online training guide to provide the law enforcement, fire and first responder communities with an opportunity to acquire the requisite regulatory, aeronautical and operational knowledge and sUAS program familiarity to serve as sUAS pilot training equivalent to the pilot ground school curriculum. It is designed to educate first responders on the overall complexities associated with being a pilot. The end goal is to make the document, when final, available online to agencies through the Federal Law Enforcement Training Centers.

- Supported the trial of the above-mentioned curriculum at several in-person sUAS ground school training sessions at various sites to groups of first responders (e.g., Maryland Transportation Authority, Dundalk, Md.; Rappahannock Regional Criminal Justice Academy, Fredericksburg, Va.; and U.S. Secret Service training center in Maryland).

- For the Federal Aviation Administration, printed 3,000 copies of the FAA Basic Law Enforcement Response D.R.O.N.E reference card, designed for law enforcement officers dealing with suspected illegal UAS operations. ([https://www.faa.gov/uas/resources/law_enforcement/media/faa-uas-drone-le-referencecard.pdf](https://www.faa.gov/uas/resources/law_enforcement/media/faa-uas-drone-le-referencecard.pdf))

- JTIC has engaged with several leading law enforcement agencies with existing exemplary sUAS programs to do exploratory evaluations of the efficacy of this new technology indoors when used to support tactical operations/indoor building searches. At the conclusion of this effort in 2018, a report detailing the findings of this evaluation will be made available to the law enforcement community.

- Published several UAS-related articles in issues of *TechBeat*, including an article, in consultation with the FAA, on actions law enforcement can take when encountering suspicious UAS operations, and a list of resources for information on UAS.
Attended the Unmanned aircraft Systems Public Safety, Emergency and Disaster Response Conference hosted by the Virginia Department of Emergency Management in Charlottesville in late February/early March. The conference covered operational needs, technological solutions, operational applications and case studies related to the use of UAS by law enforcement, fire and EMS, and emergency and disaster management.

In May, attended a meeting at the National Institute of Standards and Technology (NIST) robotics laboratory to discuss standards for UAS performance and operator performance. The meeting was attended by representatives from NIJ, the U.S. Department of Homeland Security (DHS), the Federal Emergency Management Agency (FEMA), the U.S. Marshals Service, the Maryland Transportation Authority Police and others. It focused on extrapolating the land robot testing protocols (bomb robots and DARPA test arena) to UAS performance to establish a protocol that could compare the capabilities of differing units in a non-subjective manner. This involved developing a series of aerial “tasks” that tax both the unit and the operator, and can also highlight operational limitations of devices. It also covered the implementation of an operator’s assessment to ensure that the law enforcement user has the required operator skills to use the technology effectively.

In July, attended a NIST assessment of commercially available sUAS devices for U.S. law enforcement use. A number of vendor devices underwent NIST-designed tests to ensure a direct comparison of capabilities. Capabilities assessed included video/photographic quality, image latency, flight stability and maneuverability, rain tests, endurance and communications. Representatives from DHS, FEMA, the U.S. Marshals Service, the Bureau of Alcohol, Tobacco, Firearms and Explosives, New York Fire and Rescue, Alameda County, Delaware State Police, Metropolitan Washington Police and other law enforcement agencies witnessed the testing. Results from this comparison will assist law enforcement agencies with selecting systems for use by their agencies.

In August, attended a meeting hosted by the Delaware State Police showcasing its UAS Use and Operations Tool. The meeting demonstrated the tool to a nationwide audience to gather feedback and ideas to optimize it for use by law enforcement agencies across the country. The tool logs all UAS mission data in addition to performing risk assessments.
In December, attended and wrote a summary report on a three-day Selection and Implementation of Unmanned Aircraft Systems (UAS) Technology for Law Enforcement – Focus Group meeting. The meeting brought together law enforcement and corrections professionals from around the United States to discuss and exchange information on their agencies’ use or desired use of UAS, the status of their UAS programs, lessons learned, and trends and issues surrounding the technology. Staff established a SharePoint site for focus group participants to post and share their PowerPoint presentations and other information.

For additional information on the Justice Technology Information Center’s UAS efforts, contact Joe Heaps, Physical Scientist, at (202) 305-1554, email Joseph.Heaps@usdoj.gov.
Technology makes significant contributions to the effectiveness, efficiency and safety of the criminal justice system. Work to develop new technologies—and to find new ways of using existing technologies—can improve the efforts of law enforcement, the courts and corrections agencies in many ways. However, the development and application of technology in these sectors can be challenging. For a variety of reasons, this challenge is felt most acutely in small, rural, tribal and border (SRTB) areas.

The NLECTC System includes a center to help agencies in SRTB areas identify and implement technology to improve their functioning: the Justice Innovation Center for Small, Rural, Tribal, and Border Agencies (JIC). The JIC mission is to identify, evaluate and disseminate information on technology solutions that meet the operational challenges of SRTB communities.

To accomplish its goals, JIC gathers information on the challenges facing SRTB agencies, identifies technology solutions that may address those challenges and evaluates those technology solutions in real-world situations. These activities will provide actionable guidance to

**Tech Highlights: Spotlighting Innovative Technologies in the Real World**

JIC identified a number of agencies implementing innovative technologies that were willing to share their stories. By the end of 2017, 16 such Tech Highlights have been published online, eight in 2017. These short technology reviews demonstrate how SRTB agencies are making technologies work for them. JIC plans to publish a report containing all 16 tech highlights, as well as lessons learned, in early 2018.

**Resolving Traffic Tickets Online in East Lansing, Mich.** While courts often reduce charges to motorists who receive traffic tickets but have otherwise clean driving records, requiring motorists to appear in person can impose a hardship to those who would need to travel long distances or who work or attend school during the day. The East Lansing District Court has addressed this challenge by implementing an online ticket resolution process, allowing motorists to submit a statement online; these statements are then reviewed by a judge. This has dropped the time for resolution of these cases from 30-45 days to two, and freed up court staff for more complex cases.

**Remote Surveillance for Port Security in San Diego County, Calif.** Concerned about a possible terrorist attack following the October 2000 suicide attack on the *USS Cole*, the San Diego Harbor Police applied for, and received, grant funding from the U.S. Department of Homeland Security’s Port Security Grant program to deploy surveillance cameras around the San Diego Bay. The cameras monitor both recreational ramps and the regulated marine terminals perimeter and access points. The cameras and analysts provide additional eyes for officers in the field, and can help guide law enforcement to an incident location, leading to faster response times, better situational awareness, round-the-clock coverage and recorded evidence in any subsequent investigations or court cases.

**Telemedicine in Jefferson County Jail, Wash.** Isolation, understaffing and budget constraints can limit correctional facilities’ access to healthcare for inmates. The Jefferson County
Jail has successfully implemented telemedicine to allow inmates to access healthcare via videoconference. The system was inexpensive to implement, since it relies on existing technology, and has saved money because inmates no longer have to be transported to healthcare providers for all of their healthcare needs. It also allows for more efficient triage in crises, as assessments can be made via telemedicine instead of relying on emergency room visits.

**Jail Management System in Barnwell County, S.C.** Small and rural jails often face challenges managing data on inmates, which may be stored in paper files and difficult to retrieve. The Barnwell County Detention Facility turned to a jail management system (JMS) that was affordable because it piggy-backed on the local sheriff’s records management solution. The JMS has improved efficiency and reporting accuracy, and has made records easily available.

**Segways in Forsyth, Ga.** Despite its small size, Forsyth receives a high number of visitors. The city’s police department has begun patrolling the main square on Segway electric scooters, which have attracted considerable interest from both locals and visitors, giving people a natural topic of conversation with the officers who ride them. Segways have become a great tool for community engagement and increasing police presence and community gatherings.

**Videoconferencing in South Dakota.** Staff training in a large rural state can be resource-intensive if participants have to travel to participate. In South Dakota, the State Court Administrator's Office has begun offering short training courses via videoconference, thus reducing travel time and expenditures. The state has now found a good balance between offering longer in-person training on more intensive topics, and shorter 60- and 90-minute courses via videoconference.

**The Criminal Research Information Management Evaluation System (CRIMES): A Comprehensive Records Management System for Smaller Police Agencies.** While records management system (RMS) is an important tool for law enforcement agencies, costs can be prohibitively expensive, especially for small agencies. Sam Houston State University has developed a shared RMS – the Criminal Research Information Management Evaluation System (CRIMES) – used by 54 agencies in Texas. The system was developed on a not-for-profit basis and each participating agency benefits from low licensing fees. CRIMES provides modules such as computer-aided dispatch, incident reporting, database searches and applications for...
booking and jail management. It also supports research on criminal justice and training of law enforcement officers in using technology for analysis and decision-making.

**Remote Monitoring Systems in Community Corrections in Virginia.** The travel time spent conducting home, employment or sobriety checks in rural areas means probation officers either have less contact with their clients or fewer clients. Blue Ridge Court Services in Virginia is addressing that problem through using a suite of remote monitoring technologies, including GPS-enabled ankle bracelets, remote mobile alcohol monitoring, in-home alcohol monitoring and voice recognition monitoring. Using these technologies, BRCS is able to conserve resources and manage a large caseload effectively.

**How to Best Survey SRTB Agencies About Their Needs**

In 2016, JIC conducted four “convenience sample” surveys to ask SRTB agencies about their needs and experiences in terms of records management, body-worn cameras (law enforcement agencies only), working with mentally ill populations and budgets. In 2017, JIC built on this work by piloting methods of developing a panel survey (a group of respondents who would be surveyed over time) and making recommendations about how a future panel survey could be established. The resulting report, *Feasibility of a Survey Panel of Criminal Justice Agencies: For Small, Rural, Tribal, and Border Law Enforcement, Courts, and Institutional and Community Corrections Agencies*, identified several key findings:

- Response rates in the three pilot email surveys of SRTB criminal justice agencies were broadly comparable to those observed in other email-based surveys.

- Deployment of a web-based survey demonstrated that it was possible to use a technological solution that could automate numerous tasks and improve privacy arrangements without any concomitant losses in respondent engagement.

- Testing of three methods to recruit panel participants yielded very poor results. The most successful method, email, resulted in a response rate of 7 percent, with even lower rates achieved via mail and phone. Further, these low values capture only the percentage of respondents who agreed to join the panel, without any guarantee that they would respond to any subsequent panel surveys. To address these challenges, appropriate incentives for respondents may merit exploration.
Recruitment activities for any future SRTB panel must decide whether to pursue a probability sampling strategy or not. The option of probability sampling is hampered by the fact that there are currently no readily available sampling frames for small, rural and border courts and community corrections agencies.

Finally, JIC recommended two alternative future courses of action for efforts to establish a SRTB survey panel: (1) narrowing the survey population to cover one type of agency only (e.g., small courts), and (2) expanding the scope of the panel to include non-SRTB agencies for contrast.

Field Studies: Evaluating What Works

Finally in 2017, JIC continued work on a number of field studies in which JIC researchers work with SRTB agencies to conduct evaluations of how well technologies are working and what results they have achieved. As of the end of 2017, these are all still in progress and include:

Time Use Study. JIC researchers have visited seven SRTB criminal justice agencies to better understand how staff members in these agencies spend their time. The project is working to build a data collection tool that allows staff to report their various daily activities, and the data collected will be used to investigate whether certain types of tasks would benefit from the implementation of technology to improve efficiency.

Civil Litigation Services in New Mexico. JIC is working with the non-profit New Mexico Legal Aid Society to evaluate the use of a screening tool that allows better matching of requests for legal assistance for low-income clients with available services around the state. This tool should reduce time spent on intake and increase time spent providing representation, as well as minimize duplicate case intake among various service providers. Based on a client survey and other administrative data, JIC will evaluate the impact of this online triage system on the efficiency and effectiveness of the services received, as well as overall system efficiency and effectiveness.

Remote Supervision of Low-Level Probationers in North Carolina. North Carolina developed a risk assessment tool to assess the recidivism risk of all new probationers. Based on these scores, the state implemented a web-based probation monitoring tool for low-risk offenders to more efficiently use their limited resources. JIC researchers are evaluating whether
probationers continue to receive an appropriate level of supervision, even though some are supervised by officers with larger caseloads of less-risky probationers.

Remote Arraignment in New Jersey. In some courts in New Jersey, persons being arraigned can choose to appear via video monitor rather than traveling to the courthouse in person. However, there is some evidence from prior work that bail decisions for those appearing remotely might be different from decisions made for those appearing in person. JIC researchers will evaluate the impact of remote appearances during arraignment using quasi-experimental methods. They will analyze observational data from arraignment proceedings to determine if defendants who appear over video receive bail decisions similar to those made for individuals who appear in person.

For additional information on the Justice Innovation Center, contact Mark Greene, NIJ Policy and Standards Director, at Mark.greene2@usdoj.gov.
Addressing Practitioner Needs With Assistance From the Field

The Criminal Justice Priority Technology Needs Initiative is a partnership between the RAND Corporation, the Police Executive Research Forum, the University of Denver and RTI International to identify technology, policy and practice needs for the criminal justice community on behalf of NIJ. The partnership identifies and discusses the needs and priorities of the criminal justice community in order to foster greater innovation and foresight on issues surrounding introduction or integration of new, transformational technology within the system.

The Initiative released a number of projects during 2017. Brief summaries of each follow in the subsequent sections.

Law Enforcement Advisory Panel Findings

The release of Fostering Innovation in Law Enforcement: Identifying High-Priority Technology and Other Needs for Improving Law Enforcement Operations and Outcomes completes the Initiative's
criminal justice sector-level needs identification efforts, complementing similar analyses and reports developed for the judicial and corrections systems in previous years. Selected practitioners served on an advisory panel in two sequential sessions, the first focused on operational policing issues, and the second, on strategic level and administrative concerns.

The needs identified by the Advisory Panel fell into four main themes:

■ A demand for practices and technologies to improve practitioners’ knowledge of technologies and how to use them. At the core of needs under this theme was a call for a virtual information repository; that is, a single source for capturing and sharing law enforcement information.

■ A call for practices and technologies to improve police-community relations. Very high interest in this theme is being driven largely by the tensions raised in recent years in the wake of officer-involved shootings.

■ A need to improve information sharing. This includes identifying the most useful information to avoid the problem of information overload.

■ A need to improve forensic capabilities. Many needs here concerned remediating forensic backlogs and a lack of resources.

Additional high-priority needs that emerged from the panel’s discussion and prioritization included needs related to personal equipment and practices for its use, policies and use cases for unmanned aircraft systems, needs focused on dispatch center operations, active shooter concerns, and requirements and technologies to help safeguard officers’ physical and mental health.

Reducing Mortality in Correctional Facilities

In May 2016, the Initiative convened an advisory panel to explore the issue of mortality in correctional facilities. The panel produced a list of high-priority needs to reduce inmate deaths.
The panel, split into two breakout groups focused on jails and prisons, assessed needs relating to five sources of mortality: homicide, suicide, accidents, drug or alcohol intoxication, and illness or disease.

High-priority needs identified by members of the panel included:

- Facilities should provide medical and mental health services at a community-level standard of care.

- Correctional facilities need to better manage organizational and cultural conflicts between security and care objectives.

- Medical, mental health and substance abuse care all need greater capacity, both within facilities during incarceration and in the community after release.

- The availability of medication-assisted therapies and drug overdose countermeasures should be expanded.

- Best practices in suicide risk assessment and prevention need to be formally adopted.

- More and better data are required to develop targeted interventions to reduce mortality.

- Compliance with national standards for medical screening and care provision should be better incentivized and supported.

- The conduct of internal death reviews, including multidisciplinary participation, needs uniformity.

- Discharge planning and “warm hand-offs” to community-based health providers should be more effective.

- Greater electronic information sharing between and among correctional institutions and community-based health providers could improve care and reduce inmate mortality.
Corrections Futuring Effort

In an effort to identify the current challenges facing the corrections sector and envision key desired improvements, the Initiative identified and interviewed experts from within the corrections sector. Staff asked interviewees about the key obstacles or challenges they saw in corrections, as well as collecting descriptions of key elements of a better system. Participants were encouraged to consider how to build a new corrections system today, based on current levels of knowledge and unconstrained by the legacy investments in existing facilities and processes.

The results reflect both the constraints faced by corrections given its role in the criminal justice system and opportunities for change. The corrections sector has limited control over who enters the system, with judicial and policy decisions driving correctional populations. However, it does control system management, and panel members identified a range of ways they felt the sector could be better focused on facilitating positive behavioral change in offenders. Participants identified three types of changes: new programs and improved education and training for corrections staff, elimination of revenue-generating correctional operations and cultural change to prioritize rehabilitation over punishment. They also identified many opportunities for corrections to take advantage of developments in science, technology and evidence-based practices to create alternatives to incarceration, guide the investment of scarce resources and engage communities in initiatives to reduce recidivism and support offender reentry.

Law Enforcement and Wearable Technologies

The Initiative completed an analysis of technology patents to examine emerging technology trends and identify opportunities for application of wearable technologies in law enforcement. The results of the study demonstrated that technologies in this area are improving very rapidly and wearable technologies currently on the market (at reasonable cost) could benefit law enforcement officers. These include flexible batteries and wireless charging tools. Newer technologies in development include mesh networking to provide connectivity and sensors for officer physiological state or health status that could be integrated into current equipment. There is also the potential for advances in other technologies such as networking and communications that could advance in-field capabilities.
Policy questions related to these technologies must be addressed, however. Integration of new wearables into existing technology – e.g., officer ballistic vests – would change the form factor and appearance of officers in the field. Moving these technologies into the criminal justice technology market requires the sector to think through how to engage with technology providers to make sure that their needs are reflected in company’s research and development efforts, or the resulting product may not reflect their unique requirements.

In addition to efforts completed during the project year, the Initiative has a number of continuing efforts and forthcoming products, described in subsequent sections.

**Addressing the Implications of Juror and Public Mobile Device Use in the Courtroom.** A workshop held in February 2017 examined policies and practices designed to restrict the impact of electronic media use on court proceedings. The workshop included presentations from practitioners and discussions on developing, implementing or evaluating the impact of social media for witness or jury intimidation and on the use of electronic devices by jurors to conduct their own research or otherwise potentially bias jury deliberations.

**Challenges With Digital Evidence Held in Remote Datacenters.** The growth of cloud computing, and especially the routine extraterritorial nature of data held in the cloud, has introduced multiple challenges in recent years for law enforcement, privacy advocates, commercial companies and cybersecurity professionals alike. A workshop held in May 2017 examined the legal, procedural and technical challenges surrounding digital evidence held in remote data centers and produced a prioritized list of needs for improvement in the effectiveness of law enforcement investigations involving remote datacenters, thus mitigating intrinsic burdens; clarified policies, procedures and technologies that will help protect privacy rights; and called for improved cooperation between law enforcement and cloud service providers in a way that mitigates burdens and engenders public trust in both.

**Corrections Workforce Needs.** The Initiative’s March 2017 workshop examining corrections staffing issues explored issues regarding corrections workforce recruitment, selection, on-boarding, retention, leadership development, misconduct, and health and safety concerns. The effort produced a prioritized set of needs.
Managing Serious Mental Health Concerns in an Institutional Corrections Environment. In June 2017, the Initiative held a topical workshop on critical needs for addressing institutional corrections management of individuals suffering from serious mental health conditions. The effort assembled a panel of health and corrections professionals from a range of organizations and correctional systems, and identified a set of needs to improve mental health care provision to individuals in custody.

Social Media and Network Analysis Needs in Law Enforcement. As the platforms for, and use of, social media have become ubiquitous in society, including inevitably among offenders and organized crime networks, social media is becoming a key source of information on both threatened and actual criminal activity. There have been multiple high-profile cases where, after a violent act has already been perpetrated, investigators found what appear to have been indicators or “warning signs” that potentially could have been detected and followed up on. The field of social network analysis, which studies the relationships between people and assets and can, among other things, identify those with “central” roles in criminal networks, naturally provides methods for analyzing social media data for investigative purposes. This panel brought together a group of experienced practitioners and analysts to identify needs both regarding law enforcement capability to use social media data effectively and appropriately, and the related techniques of social network analysis to inform investigation and crime prevention.

Law Enforcement Video Analytics and Sensor Fusion Needs. Recent years have seen a surge in the number of cameras in the field. Displays of Internet-enabled security cameras can be readily seen when walking into a technology store, as can displays of UAS with cameras. From a law enforcement perspective, there have been several decades of departments installing and manually monitoring closed-circuit television cameras. In this workshop, the Initiative brought together a representative, highly experienced group of professionals to develop a roadmap for innovation in video analytics and sensor fusion technologies in
support of public safety. The road-mapping effort included developing key business cases for employing video analytics and sensor fusion in public safety; core cyber security, privacy and civil rights protections; and needs for innovation.

**Law Enforcement Investigative Needs for Crime Involving the Dark Web.** In this December 2017 workshop, the Initiative assembled a panel of law enforcement practitioners, prosecutors, investigators and civil liberties experts to examine issues related to investigation of crimes with a nexus to the Dark Web – the portion of the Internet protected by encryption and anonymization technologies that plays a prominent part in some types of crime, including drug, weapons, human and other contraband trafficking. The workshop identified needs for addressing key challenges in carrying out Dark Web-involved investigations, legal issues and concerns surrounding those efforts, technical concerns, and civil rights and liberties issues associated with investigative efforts.

**Building an Online Community for Justice Professionals.** The Initiative sought to create a website that could enable justice professionals to exchange information with each other about new technologies and their own technological needs. This would, in turn, aid the Initiative in understanding the needs and challenges of the community and how new technologies could address them. Work on building the website is ongoing, with a usable version expected in the first half of 2018.

**Assessing the Systemic Impact of Meeting Criminal Justice Needs.** The Initiative is involved in an effort to develop a model of the criminal justice system to explore the potential cascading effects of meeting criminal justice needs identified in other elements of the project. Work is ongoing and expected to conclude in 2018.

For more information on the Criminal Justice Priority Needs Initiative, contact Program Manager Steve Schuetz at (202) 514-7663 or by email at Steven.Schuetz@usdoj.gov.
Developing and Sharing Knowledge

The National Criminal Justice Technology Research, Test and Evaluation Center (RT&E Center) conducts focused research, testing and evaluations of non-forensic technologies intended to enhance the capabilities of state and local law enforcement and corrections agencies. Working closely with practitioners, the Center strives to inform the field concerning technology and related issues in an innovative, sustainable, efficient and effective manner. The Center conducts market surveys, determines technical performance of selected technologies, and conducts operational assessments and impact assessments to determine practical outcomes for practitioners of NIJ-funded R&D programs and other technology developments. RT&E Center efforts span areas as diverse as digital evidence management and facial recognition.

The RT&E Center’s activities inform NIJ’s technology research, test and evaluation efforts to enhance the capabilities of state, local, tribal and territorial criminal justice agencies. The RT&E Center also supports NIJ’s efforts to develop and share knowledge with practitioners,
policymakers and researchers regarding technologies or technology-related issues for purposes of improving criminal justice policy and practice. The activities of this center vary from year to year depending on the needs of NIJ’s science and technology RT&E efforts.

The RT&E Center is staffed by the Johns Hopkins University Applied Physics Laboratory (JHU/APL, http://www.jhuapl.edu/), the JHU Division of Public Safety Leadership and the JHU Bloomberg School of Public Health (http://www.jhsph.edu/). The Center conducts multiple concurrent projects using a core management team and project-specific scientists and engineers working in coordination with criminal justice end users and additional subject-matter experts.

The RT&E Center had 12 projects active in 2017. Seven were completed during 2017 and five continue into 2018.

**Special Topic: Project 16-4: Testing Wearable Sensors for Law Enforcement and Corrections Applications**

The Center conducted an evaluation of the potential for commercially available body-worn sensors to enhance the safety and well-being of law enforcement and corrections officers, who often find themselves in stressful and dangerous situations. Using wearable sensors can be an invaluable tool by monitoring physiological status such as heart rate and respiration to ensure safe and healthful working conditions. These sensors will have high utility if they can monitor or enhance officer safety by providing real-time monitoring and communication to a central location. For example, this will allow a dispatcher to call for an ambulance or backup if an officer is down.

This study tested five commercial-off-the-shelf wearable sensors to help NIJ determine the feasibility of law enforcement officers and correctional officers wearing the sensors (e.g., comfort) and whether the data measured by these sensors may provide some utility to the law enforcement and corrections communities.

To obtain background information and select the sensors to evaluate, the Center took a three-pronged approach. Team members conducted an extensive literature review, gathered information from subject-matter experts and attended conferences to obtain end user
feedback. These efforts were intended to ensure the results are well balanced and that information delivered is pertinent to potential wearable sensor users.

The team then developed three “use cases,” or scenarios, for conducting the testing:

- Everyday use, an officer on day-to-day duties.
- Physical stress, an officer conducting a short chase, a long chase and/or grappling with compound movements while wearing the sensors.
- Officer down, injured or medically incapacitated.

The five sensors tested were down-selected from a list of 134 candidates, chosen to include the most common devices in the wrist-worn category, mid-range runner’s devices with chest straps and a high-end chest-strap system.

1. Hexoskin Smart Shirt.
4. Fitbit Surge.
5. Apple Watch Series 2.

The next stage of the study was to acquire the sensors, develop the test plan and obtain approval from the Johns Hopkins Medicine Institutional Review Board for the required human subject research.

Initial testing was for device functionality, investigating vendor documentation, data output storage and any other issues that might impact performance in applicable environments. Characterization testing included sensor accuracy, comfort and wearability, and connectivity range.
Range determination was conducted without test subjects. There were 38 participants for the human subject testing. For wearability and comfort, subjects self-reported on comfort and wearability using a standardized questionnaire. Participants wore the device during three work days and filled out the questionnaire each day. Sensor readings were recorded twice each day and an emergency medical technician took readings at the same time using standard methods.

For operational testing, the subjects participated in physical activities aligned with the use cases, including a quarter-mile run, 100-yard sprint and up to 20 pushups. Pulse and respiration rates were taken from the sensors and from the participant, both seated and standing, before and after each activity. An emergency medical technician recorded the results.

Study results indicate that wearable sensors are not yet ready for law enforcement or corrections officer use. The accuracy of the systems and the data that the current ones collect is of limited value at this time. Therefore, the community may need a sensor designed specifically for it, rather than using the more common fitness trackers available in the current market, in order to maximize the effectiveness of this technology to the community. Furthermore, many of the systems do not provide the operational real-time monitoring and communication back to a central location that are necessary for it to be effective in the field. Buildings, cars or other obstructions may also interfere with the system’s being able to report back to the vehicle or phone.

The study also reported on considerations for integration of wearable sensors into current systems, and legal implications such as data ownership, privacy, wearable sensor data use in court and related litigation.

**Projects Completed in 2017**

**Project 14-2. Performance Management Information System.** The Center conducted an operational evaluation of a prototype early intervention system called PMIS, developed specifically for the Broward County Sheriff’s Department of Corrections by RAND Corporation. The system demonstrated an ability to predict involuntary separation for certain classes of officer behavior, but was determined to be infeasible for operational use. The Center made recommendations for requirements and implementation of alternative early intervention systems. *Final Report: Operational Evaluation of Corrections Early Intervention System*
## EXHIBIT 13:
WEARABLE SENSOR COMPARISON

<table>
<thead>
<tr>
<th>TEST</th>
<th>APPLE WATCH SERIES 2</th>
<th>FITBIT SURGE</th>
<th>GARMIN FORERUNNER 230</th>
<th>HEXOSKIN SMART SHIRT</th>
<th>ZEPHYR BIOHARNESS™3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pulse Accuracy</strong></td>
<td>Mean with 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute Error</td>
<td>7.8 ±1.4</td>
<td>12.5 ±2.7</td>
<td>8.8 ±1.5</td>
<td>3.8 ±0.9</td>
<td>8.7 ±2.6</td>
</tr>
<tr>
<td>Relative Error</td>
<td>10.0% ±1.7%</td>
<td>19.7% ±5.1%</td>
<td>11.5% ±2.1%</td>
<td>5.4% ±1.3%</td>
<td>11.1% ±3.3%</td>
</tr>
<tr>
<td><strong>Respiration Accuracy</strong></td>
<td>Mean with 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute Error</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>7.8 ±0.9</td>
<td>4.7 ±0.7</td>
</tr>
<tr>
<td>Relative Error</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>51.8% ±5.9%</td>
<td>33.5% ±5.7%</td>
</tr>
<tr>
<td><strong>Wearability</strong></td>
<td>Scale of 1-5 (1=least favorable, 5=most favorable), Mean with 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1. Donning Ease</td>
<td>4.8 ±0.1</td>
<td>4.5 ±0.3</td>
<td>4.1 ±0.4</td>
<td>4.4 ±0.2</td>
<td>3.5 ±0.3</td>
</tr>
<tr>
<td>Q2. Exercise Comfort</td>
<td>4.3 ±0.3</td>
<td>4.0 ±0.4</td>
<td>4.1 ±0.4</td>
<td>4.4 ±0.3</td>
<td>4.3 ±0.3</td>
</tr>
<tr>
<td>Q3. Movement Ease</td>
<td>5.0 ±0.0</td>
<td>4.4 ±0.3</td>
<td>4.4 ±0.3</td>
<td>4.6 ±0.2</td>
<td>4.4 ±0.3</td>
</tr>
<tr>
<td>Q4. Stability</td>
<td>4.9 ±0.1</td>
<td>4.2 ±0.4</td>
<td>4.2 ±0.4</td>
<td>4.6 ±0.2</td>
<td>4.0 ±0.3</td>
</tr>
<tr>
<td>Q5. Workday Comfort</td>
<td>4.9 ±0.2</td>
<td>4.2 ±0.4</td>
<td>4.0 ±0.4</td>
<td>4.4 ±0.3</td>
<td>3.7 ±0.3</td>
</tr>
<tr>
<td><strong>Connectivity (ft.)</strong></td>
<td>Range in feet Until Reported Loss of Signal, Mean with 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unobstructed</td>
<td>227 ±23</td>
<td>230 ±15</td>
<td>267 ±33</td>
<td>37 ±4</td>
<td>4752 ±0</td>
</tr>
<tr>
<td>1-Car Obstruction</td>
<td>167 ±17</td>
<td>156 ±13</td>
<td>221 ±26</td>
<td>23 ±2</td>
<td>452 ±19</td>
</tr>
<tr>
<td>2-Car Obstruction</td>
<td>230 ±16</td>
<td>130 ±14</td>
<td>73 ±9</td>
<td>25 ±2</td>
<td>460 ±12</td>
</tr>
<tr>
<td>Wall</td>
<td>69 ±4</td>
<td>116 ±8</td>
<td>77 ±6</td>
<td>15 ±11</td>
<td>200 ±7</td>
</tr>
</tbody>
</table>

1 Wall only (no car) for Hexoskin; Hexoskin with wall + car had 0 ft. range
2 Zephyr connectivity surpassed the size of the test field (475 ft.)
NA = Those sensors do not capture respiration
Presented at Panel Session at the American Jail Association Conference & Jail Expo, April 2017.

Led by NIJ Corrections Program Manager Jack Harne, with RAND Corporation and Broward Sheriff’s Office: Development and Implementation of PMIS for a Jail Environment

Projects 14-4: MIT Crash Avoidance System Test & Evaluation. The Center conducted an operational evaluation of a prototype crash avoidance system, “Divert & Alert,” for detecting oncoming headlights and alerting an officer on the roadside of a potential threat of collision. The prototype system uses video analytics for detecting the threat and virtual flares using a laser device to divert the oncoming driver. The Center conducted laboratory and operational testing. During that testing, staff found that the laser could not be tested operationally, as it was found to be neither eye- nor skin-safe. The video analytics performed well, but
newer technologies were found to be more promising, including radar, LIDAR and emerging autonomous vehicle technologies.

The RT&E Center conducted field tests of the Divert & Alert prototype system at the Maryland Police and Corrections Training Commission driver training track in Sykesville, Md. NIJ Program Manager Brian Montgomery observed onsite.

*Final Report: Evaluation of MIT Crash Avoidance System*

**Project 15-2: Offender Risk Assessment Tool Study.** The Center identified, described and reviewed 12 Offender Risk Assessment tools and reported on their intended use, known validation studies, factors assessed, data collection methods, intended outcomes (as presented by vendor), implementation considerations and limitations.

Final Reports: *Offender Risk Tool Summary* and *Offender Risk Assessment Tool Report*

**Project 15-8: Operational Evaluation of Unmanned Aircraft Systems for Crash Scene Reconstruction (CSR).** The operational evaluation focused on the effectiveness and utility of unmanned aircraft systems (UAS) in reconstructing crash scenes in an operational setting: that is, how effectively they perform their assigned roles and whether they represent a substantive improvement over other methods in the context of the entire investigation. The scope of the study was limited to U.S. law enforcement agencies.

Michigan State Police (MSP), Illinois State Police (ISP) and Arlington (Texas) Police Department participated in the interviews. The Major Crash Assistance Team (MCAT) of Lake County Illinois provided written information. The RT&E Center worked with MSP, ISP and MCAT to collect operational performance data, and then analyzed the collected data.

The main finding of the study is that using UAS for CSR can significantly reduce the data collection time at a crash scene, resulting in shorter road closure times and officer on-scene times – provided logistical, administrative and technology challenges associated with UAS use are resolved. Operational data collected in the study shows that data collection by UAS is on average one hour shorter than data collection by a robotic total station and two hours shorter than data collection by a manual total station. However, these gains can be realized only if UAS can replace total stations. Although several agencies currently use UAS in crash investigations, they mainly use the UAS to obtain aerial photographs to complement total station measurements – not as a replacement for the total station.
Final Report: Operational Evaluation of Unmanned Aircraft Systems for Crash Scene Reconstruction

Project 16-1: Social Network Analysis Tools. This review was organized into three components: perform a literature survey of SNA and SNA tool use in the law enforcement community; conduct interviews with subject-matter experts (SMEs) in the law enforcement community; and conduct a technology foraging activity to gather standardized information about SNA software referenced either in the literature review or by SMEs during interviews. The report provides background on SNA and its relevance to law enforcement, the NIJ RT&E Center’s methodology for developing the review, and results from the review. A draft report will be finalized by the end of December.

Ongoing Projects

Project 15-5: Early Intervention Systems for High Stress Occupations. This study provides an overview of the commercial early intervention systems in use for law enforcement agencies, and provides perspective regarding similar systems in other high-stress occupations that involve shift work and other challenges to behavioral health.

Project 15-7: Prototype Computing Cluster for Managing Digital Forensic Evidence. This project is conducting testing and evaluation of the Digital Forensic Compute Cluster developed by RAND under a previous NIJ grant. The prototype parallelizes evidence ingestion and processing of digital evidence resident on computer hard drives. It can be run on a standalone computer cluster or in the Amazon Web Service cloud. This project has only recently gotten underway.

Project 15-9: Independent Verification and Validation of Network Data Collection Prototype. The Center is working with NIJ Program Manager Martin Novak to test a prototype system delivered to NIJ by Assured Information Security, Inc. The prototype is called the Wide-Scale Agentless and Rapid Collection of Digital Evidence (WARDEN). WARDEN supports data collection, normalization and analysis of collected data. It is designed for rapid deployment of custom scripts while using native system interfaces. Warden can extract information from selected hosts without the use of an agent by gaining remote access to the computer using
one of WARDEN’s transports. The system has been acquired and implemented in a virtual machine environment, and testing and evaluation are underway.

**Project 16-2: Video Conferencing Technology for Pretrial Hearings.** This study examines the role of video quality in teleconferencing systems used for remote pretrial hearings. The study of the effect of video quality on the outcomes of a video conference hearing is hampered by the lack of quantitative quality measures that align with actual human perception. Qualitative metrics may be suitable, but they are very expensive to conduct and difficult to analyze statistically. In this study, human participants will rate the quality of selected video clips under various conditions using a tailored Likert scale.

Video quality will also be measured by using three automated, quantitative methods. Two of these tools, SSIM and PEVQ, attempt to measure video quality in a manner consistent with human perception. The third, PSNR, provides a simple, but readily repeatable and well-understood metric, based on measurable network metrics without a human visual model. These tools were selected in part because they represent the three most widely accepted tools and partly because the RT&E Center already had access to a test configuration capable of measuring all three. Subjective and objective metrics will be analyzed to determine the best quantitative metric fit to the human quality of experience, and the adequacy of that fit for further research.

**Project 16-3: Evaluation of 360 Degree Video Cameras for Law Enforcement Applications.** The RT&E Center is investigating the capabilities and limitations of 360-degree video cameras for potential use by law enforcement agencies. By recording video in 360 degrees, proponents believe these cameras may provide a clear and comprehensive record of incidents and lead to increased transparency and legitimacy. Among those law enforcement agencies that use 360-degree cameras, there is a perception that they are a useful tool for law enforcement. The RT&E Center developed scenarios for field testing of selected 360-degree video systems of various types, including vehicle-mounted cameras and interview room systems. Laboratory testing was conducted to validate vendor specifications and other parameters: field of view, resolving power, dynamic range, aspect ratio and color fidelity. For field testing, study participants acted out the scenarios and other activities while being recorded with the selected systems. This human subject research received approval from the Johns Hopkins Medicine.
Institutional Review Board. Data collection and analysis have been completed and the final report is in progress.

**Project 16-5: Evaluation of Wireless Power Transfer Technology.** The Center is conducting an evaluation of selected commercially available technologies for wireless transfer of power for charging devices. The objective of the evaluation is to determine whether the currently available technology would be suitable, with further development, for charging law enforcement officers’ devices in a patrol car without the need to remove them and plug them in.

The project team has engaged with law enforcement subject-matter experts to understand and document the concept of operations and the functional requirements of in-car wireless charging systems. A literature search, including vendor information, will guide the team in selecting the specific systems to test. Metrics are being identified for the evaluation, including power level, time to charge, maximum range and related power level drop. They are also investigating safety concerns about using radio frequency energy for remote charging.

The testing methodology developed is intended to assess the following:

1. Are there commercial-off-the-shelf solutions for wireless transfer power systems in patrol vehicles?
2. If not, are there solutions that can be quickly engineered to meet the operational need?
3. Are these systems more effective than other methods commonly in use in terms of time to attach to a charger and time to charge the device?
4. Do these systems perform as advertised to meet the operational need?

**Project 6FR: Testing of Facial Recognition Algorithms.** The RT&E Center is testing three distinct algorithms developed by Carnegie Mellon University for face detection, facial recognition or matching, and periorcular reconstruction, whereby a facial image with only the region around the eyes visible is “grown” into a full face. The algorithms are being tested individually.
The facial detection testing has been completed, using the “Challenge Set 3” dataset acquired from the Intelligence Advanced Research Projects Activity (IARPA) and applying the associated protocols. Other facial recognition algorithms that have scored highly in competitive assessments are being tested as well to provide comparative benchmarking in the style of the IARP Janus Program. For broader investigation of the algorithms capabilities, open source datasets recommended by the facial recognition community and associated datasets are included in the testing.

Data collection and analysis has been completed for the CMU detection algorithm and work has begun on the periocular reconstruction algorithm. The team has developed a modular framework for running the various algorithms against the various datasets.

For additional information on the RT&E Center, contact Bill Ford, NIJ Research Division Director, at William.Ford@usdoj.gov.
Using a Wide Variety of Methods to Bring Technology Information to the Field

Using vehicles as varied as podcasts, a constantly evolving database of glossary terms and a conference on a newly emerging technology, the Forensic Technology Center of Excellence continued its mission to bring information about innovations in forensics to the field.

Online Glossary Helps Professionals “Speak the Same Language” About Sexual Assault (Reprinted from January 2017 TechBeat)

Conference after conference, peer review after peer review, committee after committee, the conversation remained the same: “is that what that term means? I always thought it meant…”...”We’ve been sitting on the same working group for years, and I just learned that a lawyer uses that term differently than nurses do.”...”I’ve never heard it called that before!”

In November 2016, the Forensics Technology Center of Excellence (FTCoE) launched an online Multidisciplinary Sexual Assault Glossary
that will help medical, law enforcement, forensic and legal professionals “speak the same language” when discussing sexual assault. Throughout 2017, staff continued to add additional terms and update the database on an ongoing basis. Produced in cooperation with the Center for Nursing Excellence International (CFNEI), the glossary was developed with input from multidisciplinary subject-matter experts who suggested terms, as well as writing and reviewing definitions. The FTCoE and CFNEI used a consensus model to approve content and definitions.

“It’s a really nice product. I didn’t realize until we started the project that no resource like this existed,” says Jeri Ropero-Miller, FTCoE director. “professionals from the various disciplines involved in investigating sexual assault hear these terms thrown around, and they don’t always understand how they are meant.”

Rachell Ekroos, chief executive officer and founder of CFNEI, explains that when she entered the forensic nursing field in 2000, she discovered that finding reliable resources for terminology and definitions that she could use to communicate with advocates, prosecuting attorneys and law enforcement proved quite a challenge: “It kept coming up at every conference that we needed a resource, we needed a glossary. A group of us started a spreadsheet and built on it, but we could never figure out how to get that out to the masses.”

In 2014, the FTCoE received direction from NIJ to begin an initiative focusing on sexual assault response, and a conversation between Ropero-Miller and Ekroos at a conference led to deciding that development of the much-needed glossary fit perfectly into that initiative. And although by fall 2016 the team had enough terms to go live, adding terms to the database is a project that never really reaches completion.

“It will continue to be updated on an ongoing basis. If you look for a particular term and it’s not there, there’s a portal right there on the database page where you can submit suggestions for inclusion. And we’ll continue to solicit suggestions from the field at conferences, through meetings and through social media,” Ropero-Miller says.

The glossary currently contains more than 1,000 terms, synonyms, acronyms and terminology variations plus a growing number of illustrations, images and links. The website tells users to
check back often for updates, Ropero-Miller says, and the team has plans to create an email list so that users can receive notification when significant updates occur: “We didn’t want to put it up with only a few hundred terms, and find that users are getting bored with it and not coming back. We wanted it to be substantial enough that professionals would find it useful right away.”

In addition to adding more terms, Ekroos says she would like to see additional acronyms, cross-references to variants of the same term, illustrations and sample sentences indicating how terms would be used in the various professional disciplines.

“My goal is to create a web-based resource that bridges the language gap between the disciplines,” she says.

For her part, Ropero-Miller looks for expansion into terms related to areas such as human trafficking and drug-/alcohol-incapacitated sexual assault, and even street terms and slang. Ekroos adds she would eventually like to see a further expansion to take in other areas related to violence across the life cycle, including child and elder maltreatment and collective violence. That way, no matter what type of violence an incident involves, there could be effective communication among multi-disciplinary professionals.

In the meantime, both the FTCoE and CFNEI will promote the existing glossary through social media, through the Internet, through conferences and through other means of outreach. Because of the project’s soliciting input from the field, professionals knew about the glossary’s existence before it went live, and they were more than ready to begin looking up terms on activation.

“We have received extensive feedback about its usefulness and ease of access,” says Ekroos, “including hearing good things from rural providers, prosecutors and investigators who don’t do this full-time and are anxious to make sure they use terms correctly. If we’ve heard anything that could be called at all negative, it’s ‘When will you have more?’ ”

To access the FTCoE Multidisciplinary Sexual Assault Glossary, visit https://www.forensiccoe.org/Our-Impact/Focusing-on-Special-Initiatives/Sexual-Assault/The-Multidisciplinary-Sexual-Assault-Glossary.
FTCoE Launches Podcast Series (Reprinted from July 2017 TechBeat)

It’s just a forensic scientist driving to work at the lab. It’s just an off-duty officer out for her evening walk with her earbuds in. It’s just a college student taking a break from studying for his pathology final.

It’s Just Science, a new podcast series produced by the FTCoE, and they’re all listening, learning and catching up on information on innovative forensic technology.

Launched in May 2017, the weekly podcast series started off with a 13-episode season, “Numbers,” which featured topics such as optical topography, DNA mixtures, human factors and subjective probability. Subsequent seasons focused on case studies, research and development, and leadership. The idea for the series came to Dr. John Morgan, senior director for the Center for Forensic Science at RTI International, because he wanted to expand the audience for the many scientific and other innovations discussed at conferences that many forensic scientists or police officers can’t attend. When he brought the idea to FTCoE Director Jeri Ropero-Miller, she recognized that podcasts could complement the FTCoE’s other efforts, and “The FTCoE is really trying to look at additional mechanisms of dissemination that match the way people get their information. Some people like to go to presentations, some like to read, others like to listen to podcasts.”

According to the program’s early “ratings,” (the amount of site traffic generated), Just Science is going to be “just a success.” The Center has been leveraging other work to provide content, with Morgan seeking out leading professionals in the field to sit down for a chat at forensic science conferences. The focus is on researchers who have done NIJ-funded studies, but the reach includes prosecutors, investigators and victim advocates as well as crime laboratory leaders. Back at the FTCoE, staff turns the conversations into 30- to 45-minute podcasts that are available through most of the popular podcast delivery services.

“We’ll look at everything from vaping of marijuana to things having to do with opioids and how forensic science responds to drugs and crime in the second season,” Morgan says. “We’re looking for people to come to us and tell us about an interesting topic we should record, whether that comes in response to an announcement at a conference or through the form on the website.”
“Reaching out to attendees at a meeting has been very productive as far as helping us build a library. If someone wants to talk about a good subject that doesn’t fit into the series we’re currently developing, we’ll look for where it fits into a future series,” Ropero-Miller says. “We like having the guest and Dr. Morgan together at a meeting especially, because it produces better content as well as better sound quality.”

Morgan says he has found he enjoys doing the work of hosting the series, which he feels serves as a way for professionals who don’t attend a lot of conferences to pick up some of the information discussed at those events.

“The best part of a conference is talking to interesting people during the breaks and learning more about their work. The podcasts allow us to have those conversations and let others to listen in. It’s great for me to be able to talk to them and have these conversations in a way that everybody can benefit,” Morgan says.

“One of the recordings we did was with a law enforcement officer about Munchhausen by proxy syndrome, talking about a mother who deliberately makes her child sick. It was a fascinating case and kind of disturbing as well, of course. There’s no question that law enforcement professionals will learn a lot from the podcast series because it’s an easy way to make forensic science accessible,” Morgan says.

“We’re interested in topics that are of interest to law enforcement. We’d love to get their suggestions about topics that are relevant to both law enforcement and forensic science, like how they can use forensic science to develop investigative leads.”

For both forensic science and law enforcement professionals who want to learn more about a particular topic after listening to a podcast, the FTCoE offers access to additional related resources, presenter biographies and more on the Just Science subsite, as well as access to all of the “back episodes” of the series.

“As project director, I’m thoroughly pleased and amazed at how quickly it’s taken off,” Ropero-Miller says. “It just goes to show that people are very interested in forensic topics and this is yet another way that they’re willing to put in the time in to hear what their colleagues have to say.”

To watch any of the episodes of Just Science, visit http://forensiccoe.org/just-science-podcast/.
FTCoE Opioid Webinar Series Shares Knowledge, Promotes Collaboration (Reprinted from November 2017 TechBeat)

What do a veterinarian, a former district attorney and a nationally known author all have in common? They’ve all been guest presenters in the Forensic Technology Center of Excellence (FTCoE) webinar series on combatting the opioid epidemic in the United States.

The FTCoE launched the series in July 2017 and produced a total of 15 episodes in 2017. Archival versions of the events can be found on the FTCoE website for those who missed the live presentations or who just want to go back and hear the information a second time. Archival presentations go up within 48 hours of the live events, which have drawn up to nearly 600 registrants.

One of those full houses gathered online to hear Sam Quinones, author of Dreamland, talk about the research that went into creating his award-winning nonfiction bestseller. In addition to Quinones, a veterinarian who talked about the importance of canine officers carrying appropriate doses of naloxone for their dogs and a former district attorney speaking on legal aspects of the epidemic, presenters have included a number of toxicologists and research professionals talking about the more technical aspects of dealing with the epidemic.

“We didn’t want to focus on one specific area, and we’ve pulled in quite a few subject-matter experts from various disciplines,” says the FTCoE’s Josh Vickers. “We wanted to be sure we hit on all the angles of dealing with the epidemic.”

The webinars last approximately one hour, with a 45-minute presentation and a planned 15-minute question-and-answer session (although the one with Quinones ran longer). Vickers says the Q&As have helped draw out a great deal of valuable information such as how to get funding for the canine naloxone, and each webinar also includes information on how to contact the speaker for more information. No matter what the topic, results from post-webinar surveys have been overwhelmingly positive.

The idea to create a webinar series focusing on varied topics came from FTCoE Director Jeri Ropero-Miller, who says she found that over the past several years, conferences and summits on the opioid epidemic tended to have a very narrow, often state-centric, focus.
“They would focus on a certain component like treatment and rehabilitation or safety issues with first responders,” Ropero-Miller says. “There were only a few where different stakeholders came together to give a broader perspective and to talk about ways the people could interact to figure out better solutions.”

As with every emerging hot topic, the FTCoE looked for the best way to transfer knowledge about opioids, and with the need to bring various disciplines together, a webinar series with a wide range of presenters seemed like the best channel, she says.

“We not only brought in forensic practitioners, we brought in first responders, behavioral psychologists, social scientists and others,” she says. And although the center usually tries to stay with technical experts in various disciplines, scoring the interview with Quinones was a bonus that brought added popularity to the series.

“I was trying to get him to speak at a conference where I was on the planning committee, and that didn’t work out. However, I saw on his website that he would do Skype interviews for book clubs if they could guarantee at least 30 participants. I did a cold call and said I could deliver way more than 30 audience members, and he said he would do it. He’s not the type to do slides and a formal presentation, it really was just him sharing his story with us via webcam and it went really well,” she says.

Not only the Quinones episode, but all of the webinars, have drawn a wide-ranging audience that includes forensic professionals, law enforcement officers and others: “It’s a topic where there is a critical need for people to step across the lines so that everyone knows the different steps involved in responding to the epidemic and how we can all work together to be more proactive. There’s a need to understand what the different components are, what the challenges are and how we can collaborate to meet those challenges.”

To access the webinar archives, sign up for future events or just learn more about the series, visit https://forensiccoe.org/webinar/opioid-crisis-a-public-health-enemy-webinar-series/
Rapid DNA Forum Showcases the Technology
(Reprinted from January 2018 TechBeat)

If you only know about DNA testing from watching television, you may think that it goes “collect a sample, put it in a machine and boom! You have results.”

If you’re a forensic scientist, you know that the actual process is much more painstaking, includes more steps and takes much longer.

However, with the August 2017 passage of the Rapid DNA Act by Congress and the movement of Rapid DNA technology into the commercial market, the “television perception” has moved one step closer to reality.

Rapid DNA instruments automate and speed things up, allowing law enforcement officers trained in the process to take a cheek swab and use a Rapid DNA instrument housed in the station to come up with a result. This result can then be compared to the FBI’s Combined DNA Index System (CODIS) and used, for example, to provide preliminary identification of victims and eliminate or confirm investigative leads. Current best practices call for law enforcement agencies to send additional samples to a DNA lab for confirmation that an expert witness can testify to in court.

NIJ invested in early advances in Rapid DNA in 2008 via research related to the creation of microchips for the eventual miniaturization and speedy processing of DNA. By 2017, its evolution had reached the point where a bipartisan bill backed by the forensic science and law enforcement communities permitted the comparison of Rapid DNA results to CODIS. Coincidentally, this bill became law on Aug. 18, one day after the end of a three-day Rapid DNA forum hosted by the FTCoE. This forum brought together not only members of the law enforcement community, but also representatives from various federal government agencies, the American Society of Crime Lab Directors (ASCLD) and vendors.

“It was great to bring all of those stakeholders together so they could see each other’s points of view. Law enforcement sees the technology as something they can do themselves – sample in, answer out. ASCLD wants to make sure they don’t push its limits in a way that puts a law enforcement officer on the stand who lacks the technical expertise to testify about the
“results,” says Donia Slack, FTCoE associate director. “One of the things we did at the forum was showcase different use cases to emphasize the need to use this in tandem with results obtained from a crime lab.”

The forum gave the two commercial vendors the opportunity to present their technologies, including time for hands-on demonstrations, and gave participants time to exchange points of view and talk about the various ways in which the technology could be used.

“We gave law enforcement participants an opportunity to talk with FBI representatives about ‘Are we able to do this? How can we do that?’ says the FTCoE’s Sarah Norsworthy. “People have been talking about using it for years now and it’s finally at the forefront.”

In addition to being able to ask questions of the FBI representatives, law enforcement representatives also had the opportunity to talk with forensic scientists from ASCLD, which is presently working on developing best practices guidance on how to use Rapid DNA technology responsibly, and also to discuss technology applications such as:

- Pre-processing of sexual assault samples. Although much attention has focused on officers’ being able to take a cheek swab and process it immediately, the technology works with many types of casework samples.

- Identification of remains in mass fatality events. Because the instruments are portable, they could be taken into the field and used at the site.

- Improved border security. Using Rapid DNA technology could allow agents to quickly determine whether an individual has illegally crossed a border before or whether a group of individuals claiming to be a family are actually related, which has implications related to human trafficking.

“It was great to have all these people in the room and have them say, ‘Huh, I’ve thinking about it all one way and there are all of these other applications,” Slack says.

One drawback to implementing use of Rapid DNA is the cost, which puts the purchase price of an instrument out of reach for many medium and smaller law enforcement agencies.
“There are hefty costs and agencies will say ‘That sounds great but I don’t know if we can afford it,’ ” says Slack, noting that it costs approximately $100 to $150 to process each sample in addition to the purchase price of the instrument itself. “However, a DNA analyst pointed out to me that with the focus on violent crimes and sexual assault, when a high-profile case comes in, they have to stop everything they’re doing and process those samples. It interrupts the workflow on various instruments and disrupts individuals’ caseload. With Rapid DNA, they could start that sample running and continue with the rest of their day. In that case, the savings from enhanced efficiency would offset the cost of the processing.”

Norsworthy further notes that vendors are often willing to work with individual agencies on pricing, and will also provide initial training and assistance with setup.

Taking all of those factors into account – the need for crime lab backup, learning best practices, considering ways to use the technology and the cost – gives law enforcement agencies a lot to consider about the technology. Agencies also need to consider the recently released position statement from the American Society of Crime Lab Directors (http://www.ascld.org/wp-content/uploads/2017/11/ASCLD-Position-Statement-RAPID-DNA.pdf), which states, in part “at this time, ASCLD supports a position for database inclusion of single source known reference profiles only. ASCLD supports a position for continued database inclusion of crime scene samples after expert review, as provided by current DNA testing protocols in an accredited crime laboratory.” The FTCoE can help with those technology considerations with its recently released In-Brief, which can be downloaded from https://rti.connectsolutions.com/p9f9rm31iju/

**Highlights**

Other activities performed by the FTCoE in furtherance of its mission to provide current research and information to the forensic professional community are described in its 2017 report, which is available for download at https://www.justnet.org/resources/publications.html

For more information on the Forensic Technology Center of Excellence, contact Program Manager Gerald LaPorte at (202) 305-1106 or by email at gerald.laporte@usdoj.gov.
During 2017, the five centers of the NLECTC System provided ground-breaking research in the areas of forensics, law enforcement and corrections officer safety, the use of UAS by law enforcement agencies, cybersecurity, social media analysis and more. The center system also continued operation of NIJ’s internationally known Compliance Testing Program; outreach to the public safety community through conferencing, websites and publications; and spearheading efforts to revise and keep current a number of NIJ standards.

Through 2018 and beyond, the NLECTC System will continue to fulfill an ongoing mission to provide information on technology development and innovation to the criminal justice community. Through its component centers, the NLECTC System will continue to connect decision-makers in the law enforcement, courts and corrections communities with the latest information on NIJ’s RDT&E portfolio and other relevant technology developments. Its efforts inform and support NIJ in its mission to identify best practices, and sponsor research and development that will benefit the criminal justice community and address its most pressing needs. The component centers will continue to play a crucial role in enabling NIJ to help law enforcement, corrections, courts and other criminal justice agencies address their technology needs and challenges.