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Executive Summary

The Forensic Technology Center of Excellence (FTCoE) is a cooperative agreement with the National Institute of Justice (NIJ) that supports the implementation of new forensic technology by end users. Services and resources are customized to support forensic service providers, such as crime laboratories, corrections and court agencies, death investigation agencies, and other criminal justice practitioners, to combat crime. Through these efforts, the FTCoE increases the capacity of State and local law enforcement to effectively and professionally serve the public in matters involving forensic science and crime.

The FTCoE has been able to disseminate NIJ-funded research and deliver technology assistance and Web-based technology-transfer workshops to over 10,000 registered practitioners during the period January 1, 2012, through November 30, 2013.

In addition, the FTCoE disseminated NIJ-funded research through workshops at the 2012 American Academy of Forensic Sciences (AAFS) Meeting in Atlanta, GA; the 2013 AAFS Meeting in Washington, D.C.; and the 2013 International Association of Identification in Providence, RI.

The current FTCoE hosted two Technology Working Group (TWG) events in the Washington D.C. area. In support of NIJ's research and development program, the FTCoE developed performance metrics and conducted an evaluation of NIJ-funded research to identify future technology-transfer opportunities.

The FTCoE evaluated 8 new technologies; sponsored 6 technology-transfer events, including 2 hands-on workshops; supported outreach to 42 events; and made 19 presentations on forensic technology to the forensic science community.

In addition to the activities to date, some planned activities for 2014 are included in this summary. It should be noted that over the past 24 months of operation, the FTCoE has only been funded with the FY 2011 awarded funds.



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Research and Development Programs

The Forensic Technology Center of Excellence (FTCoE) assists the National Institute of Justice (NIJ) in defining program objectives, assessing ongoing research and development (R&D) projects, finding relevant technology efforts for NIJ collaboration, and participating in national and regional groups that support the adoption of technology. The FTCoE conducts relevant, focused studies to support program development and participates in relevant technical conferences and symposia.

Performance Metrics on NIJ R&D Funded Projects 2005–2011

This database stores information that will be used to describe and monitor, provide performance metrics for, and evaluate NIJ-funded R&D projects over time. Initial data include data on dissemination activities, technology-transition activities to date, and future technology transition plans. This database will provide for the sharing of valuable information across the forensic science community; a mechanism for grantees to publicize their research achievements; a formal method to evaluate NIJ grants with regards to technology-transition potential; and a mechanism for NIJ to more easily provide award information for stakeholders. The database is available as ACCESS and SQL server Web-based infrastructures.

NIJ R&D Portfolio Technology Transitioning Evaluation & Planning

The following tasks were conducted as part of the technology transitioning and planning for the NIJ portfolio:

- Complete triage of the NIJ R&D Portfolio management for transitioning Research to the application of high potential projects (2009–2011 Awards).
- Continue to implement individualized technology plans for high potential 2009–2011 awards.
- Start Triage process for 2006–2008 Awards and 2009–2011 Awards that were held for maturation or more information to develop.



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Technology Working Groups (TWGs)

TWGs are practitioner-based committees from local, state, tribal, and federal agencies and forensic laboratories. The forensic science TWGs meet annually to help identify and prioritize the technology requirements and research needs of the various forensic science disciplines. TWGs, in coordination with the FTCoE and NIJ, identify technology gaps in a portfolio area in terms of operational requirements and desired outcomes. They also assist in the review of ongoing efforts, facilitate outreach, and coordinate demonstration opportunities.

The following two meetings were held by FTCoE as part of TWG activities:

- TWG Meeting, March 26–29, 2012, Washington, D.C. Approximately 50 attendees
- TWG Meeting, November 12–14, 2013, Washington, D.C. Approximately 50 attendees.

NIJ-Funded Research Presentations and Dissemination

The FTCoE put strategies in place to dramatically increase the dissemination of NIJ-funded research to the practitioner community. These efforts are important in order to connect practitioners with new technology and transfer-technical knowledge that can raise the functioning and performance of the forensic science profession. For example, providing access to knowledge delivered in Web-based formats has increased the ability for more practitioners to access routine research updates without incurring the expense of travel or loss of productivity from extended time away from the laboratory. High-impact networking opportunities focused on the highlights of currently funded R&D awards have also been provided through the NIJ's Grantees Meeting, which is held annually at the American Academy of Forensic Sciences (AAFS) Meeting. This venue is the largest single annual gathering in the world of forensic scientists. The following dissemination events were conducted by FTCoE:

- **NIJ Grantees Meeting at the AAFS Meeting, February, 2012, Atlanta, GA**
 - The meeting was entitled ***“Forensics Without Borders – How NIJ Funded Research Impacts the World”*** and focused on how NIJ funded research affects forensic applications throughout the world.



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- The meeting had an onsite attendance of 91 and on online attendance of 34 for a total attendance of 125.
- **2012 Online NIJ-Funded R&D Series**
 - Topics included: Global Partnerships; Mathematics - Universal Language of Science; Ancestry and Origin; Mass Disasters and Global Security
 - 116 Registered, 69 completed¹
- **NIJ Grantees Meeting at the AAFS Meeting, February 19, 2013, Washington D.C.**
 - The meeting was entitled “*The Research After Eureka- How NIJ Funded Research Supports the Science of Forensics*” and focused on how NIJ funded research affects forensic applications throughout the world.
 - The meeting was provided onsite and online with a total attendance of 197.
- **2013 NIJ-Funded Online R&D Research Series**
 - Workshop: *Straight to the Bone: Advances in Forensic Anthropology*; 517 Registered, 188 Completed
 - Workshop: *Falling into Decay: Postmortem Interval and Molecular Autopsy Part I and Part II*; 521 Registered, 249 Completed
 - Workshop: *Tarnished Gold Standard: Limited Quantity and Degraded DNA - Part I and Part II*; 311 Registered, 152 Completed
 - Workshop: *Pills and Particles: Toxicology and Linking Trace Evidence*; 257 Registered, 142 Completed
 - Workshop: *Latent Fingerprints: Developing Methods and New Technology*; 350 Registered, 215 Completed
 - Workshop: *Fingerprint Identification: Reliability and Accuracy*; 356 Registered, 233 Completed
- **NIJ Grantees Presentations as part of the IAI Meeting, August 6, 2013, Providence, RI**
- **NIJ Grantees Meeting at the AAFS Meeting February 20, 2014, Seattle, WA**

¹ **Note:** “Completed” denotes attendees who have fully utilized all components of the curriculum (e.g., quizzes, certificates of attendance, handouts) through the live instance or the archival offering. This number does not capture all attendees who received training because they did not fully complete all components of the curriculum.



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Adoption of New Technology and Technology Transfer

The FTCoE supports the implementation of new forensic technology by end users and facilitates the effective improvement and utilization of new technology by identifying best practices and protocols. The FTCoE provides technology assistance and support to forensic practitioners and criminal justice agencies and can evaluate performance measures and technology assistance programs. Technical assistance and educational instruction is rendered to state and local agencies through on-site and Web-based knowledge-transfer opportunities.

- **Impression and Pattern Evidence Symposium, August 6–9, 2012, Clearwater, FL**
 - The meeting had an onsite attendance of 340 and an online attendance of 476 for a total of 816 attendees.
 - The online archival of the IPES had 2642 registered attendees and 1,385 completing the workshops.
- **Workshop: *New Advances in STR & Mitochondrial DNA*, May 21–23, 2013, Fort Worth, Texas**
 - 210 Registered 77 Completed, 32 On-Site Attendees
- **Workshop: *New Developments in Visualization, Enhancing & Documenting Physical Evidence Found at Crime Scenes*, June 11–12, 2013, Richmond, Virginia**
 - 351 Registered, 105 Completed, 24 On-Site Attendees
- **Continuing Education Conference: *Application of Higher-Resolution Mass Spectrometry in Forensic Toxicology*, September 23–24, 2013**
 - 389 Completed, 50 On-Site Attendees
- **Workshop: *Human Identification in Mass Fatality Incidents*, November 12, 2013, Washington D.C.**
 - 676 Registered 398 Completed, 40 On-Site Attendees
- **Online Impression and Pattern Evidence Workshop Series**
 - Latent Fingerprints: Reducing Erroneous Exclusions, November 20–21, 2013
 - 459 Registered, 345 Completed
- **Additional Workshops planned for 2014**
 - Technology Transition Workshop, Duquesne University, Tentatively scheduled March 2014



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- Technology Transition Workshop at Johnson County Sheriff's Office Criminalistics Laboratory (Olathe, Kansas), Tentatively scheduled May 2014

Technology Assistance

The FTCoE assists early-adopter law enforcement, crime laboratory, forensic service provider, corrections, and other criminal justice agencies with the use of new technologies or the adaptation of existing technologies to enhance their effectiveness, efficiency, and safety. The FTCoE provides expertise for the criminal justice community's ongoing efforts to continuously improve operations through the adoption of new tools and methods. Community databases, national information networking and resource procurement, evaluation of technology needs, and knowledge sharing are just a few examples of how the FTCoE provides technology assistance. FTCoE technology assistance activities include:

- **Y-STR Database – University of Central Florida**
 - This comprehensive, online Y-STR reference database of more than 13,000 haplotypes provides tools for laboratories to obtain the Y-STR haplotype frequencies needed to calculate matching or paternity probabilities with confidence intervals based on five forensically relevant ancestries. The database is accessed by DNA practitioners for criminal casework. (<http://www.usystrdatabase.org/>).
- **ASCLD Forensic Service Provider Data Collection**
 - This effort is being conducted in partnership with ASCLD to assist them in completing their collection of data from practitioners in states that lack resources and to assist in formulating observations from data with respect to the number of forensic providers in each state and their accreditation status. The collection portion of this effort is scheduled to be completed in December 2013, and report preparation will follow into early 2014.
- **Emerging Drug Stakeholders Meeting, October 23–24, 2012**
 - 30 Attendees. Held in Washington, D.C.
- **Workshop: *Advanced Medical Imaging in Medicolegal Death Investigation***
 - 924 Registered, 411 Completed



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- **Workshop: *Applications of Higher Resolution Mass Spectrometry in Drug Testing***
 - 676 Registered, 389 Completed
- **Workshop: *Using Genetic Results to Identify Human Remains***
 - 531 Registered, 195 Completed
- **Workshop: *Gaining Speed with “Fast GC,” Practitioner's Perspective***
 - 150 Registered, 99 Completed
- **Supported 6 scientific working group meetings, including– Toxicology (SWGTOX) and SWGSTAIN Meetings,**
 - 110 attendees

Technology Evaluation

The FTCoE determines national significance of forensic science technology, advancements, and needs. We evaluate novel forensic technologies and efficiency programs and disseminate findings and recommendations through publications and course offerings to the practitioner community. Technology evaluations performed by FTCoE include:

- **Mobile ID Fingerprint Device Technology Evaluation**
 - The FTCoE is conducting this technology landscape with support from Scientific Working Group members and TWG members. The final report will include key findings, practitioner insights, technology gaps, and current available technologies and is expected to be delivered in January 2014.
- **Evaluation of a next-generation DNA testing platform— the Ion Torrent—University of North Texas Health Sciences Center (UNTHSC)**
 - This project is an evaluation of novel next-generation sequencing tool, the Ion Torrent. The evaluation plan will include development of strategies and protocols for instrument adoption in forensic laboratories. Identified technology adopters will test and refine the strategies initially developed by UNTHSC. Release of an evaluation report is expected in early 2014.
- **Interpretation of Organic and Inorganic Gunshot Residue, West Virginia University**
 - This project is an evaluation of existing technologies for novel analysis and probabilistic interpretation of organic and inorganic gunshot residue. This project



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is currently in the testing phase and is scheduled for completion and final report release by December 31, 2013.

- **Magneto-Optical Sensors for Firearms Evaluation, Midwest Forensic Resource Center (MFRC)**
 - This project evaluates the of the Magneto-Optical (MO) sensor technology to determine the technical capabilities of this device, along with the sensor technology's ease of use and speed. It will determine the potential of the technology to restore obliterated serial numbers for firearms. This project began in May 2013 and is currently scheduled to be completed and a final report submitted by December 31, 2013.
- **Evaluation 2D/3D crime scenes Scanners – Virginia Commonwealth University (VCU)**
 - This project began in October 2012 and is scheduled to be completed in November 2013. The evaluation phase of the project was completed in June 2013, and the technology-transfer workshop was held that same month. The evaluation report was submitted to NIJ in July 2013, and after approval, was published on the FTCoE website. A detailed report for Technology Adapters is scheduled to be completed and released in December 2013, with a Web-based roundtable discussion to follow in 2014.
- **Familial DNA Software Options – University of North Texas Health Sciences Center (UNTHSC)**
 - Initiated in September 2013, this project will create a document for state and local agencies (e.g., forensic laboratories, law enforcement agencies), legal professionals, and policy makers that addresses current approaches, issues, and positions involved in using or not using familial DNA searches in criminal investigations. The purpose of the document will be to provide an independent and dependable informational resource on familial DNA testing, including policies and practices that should provide guidance for jurisdictions considering adopting a familial searching program. The anticipated completion date for this report will be May 2014.

Outreach

The FTCoE functions as a trusted partner to forensic science practitioners and criminal justice agencies. Awareness of research, development, testing, and evaluation programs; FTCoE services and



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products; and technology adoption is vital to the increased capacity and efficiency of forensic service and criminal justice providers to effectively and professionally serve the public. The FTCoE's presence at national and regional technical conferences and symposia, through exhibiting and presentations, helps to reach practitioners as an essential dissemination strategy. In addition to on-site technical meeting participation, FTCoE has extended its outreach efforts to include the live streaming of online offerings of on-site sponsored events, and is also providing archived Web-based access to these sponsored events. The communities' awareness of the FTCoE mission and goals through outreach and dissemination is critical to enhancing partnerships and collaborations with reputable organizations, criminal justice practitioners, and forensic science practitioners. Outreach activities include:

2014

- AAFS Meeting, February 17–22, Seattle WA
- ASCLD Meeting, May 3–8, Pheonix, AZ
- MAAFS Meeting, May 19–23, University Park, PA
- IAI Meeting, August 10–16, Minneapolis, MN
- SOFT Meeting, September 29–October 3, Grand Rapids, MI
- ISHI Meeting, October 7–10, Phoenix, AZ

2013

- AAFS Meeting February 18–23, Washington, D.C.
 - Breakfast Seminar entitled “Grant Funding Opportunities in Forensic Science for Academic Programs (BS1)”
 - Presentation: “Forensic Technology Center of Excellence,” Dr. Jeri Roper-Miller
- NC IAI Meeting, April 16–18, Cary, NC
- Drug Enforcement Agency (DEA) and National Institute of Standards and Technology (NIST) Workshop: ***Emerging Trends in Synthetic Drugs***, April 30–May 1, 2013
 - Presentation: “Demo of Online Database Resources for the Identification of Novel and Emerging Drugs,” Dr. Peter Stout
- ASCLD, May 5–9, Durham, NC



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- Workshop: ***A View of the New DNA Technologies and Their Potential Impact on the Next Generation Forensic Laboratory***, Dr. Bruce Budowle and Dr. Art Eisenberg
- Technology Session: ***ASCLD Technology Session: An Introduction to Efficiency- Boosting Technologies for Crime Laboratories***, FTCoE Presentation by Dr. Jeri Roper-Miller; session moderated by Beth Kroupa
 - Presentation: “Gaining Speed with ‘FAST GC’,” Dr. Peter Stout
 - Presentation: “Update on the Next Generation of DNA Typing Technologies,” Dr. Bruce Budowle
 - Presentation: “Crime Scene Technologies: Present and Future,” Jeff Gurvis
 - Presentation: “R&D Update: An Empirical Study to Improve the Scientific Foundation of Forensic Firearm and Tool Mark Identification Utilizing Consecutively Manufactured Glock EBIS Barrels with the Same EBIS Pattern,” Gabriel Hernandez
 - Poster: *Resources for Responding to the Challenge of Emerging Drugs. Where is the Information Your Analysts Need?* Dr Megan Grabenauer
- Crime Laboratory Backlogs: Policy Forum, May 21, Washington, D.C.²
 - 445 Registered Online, 269 Completed
- NIJ Law Enforcement Technology Institute Aviation Day, June 4–5, Annapolis, MD
- AFTE Meeting, June 23–28, Albuquerque, NM
 - Presentation: “Caught in the Cross Fire: Firearm and Toolmark ID in the Era of Criminal Justice Reform,” John Collins
- IAI Meeting, August 4–10, Providence, RI
- Investigating Sexual Violence: Policy Forum on September 12, Washington, D.C.
 - 732 Registered Online, 453 Completed
- Midwestern AFS Meeting, September 30–October 4, Dayton, OH
 - Presentation: “The Role of Forensic Science in Overturned Convictions- Lessons and Opportunities,” John. Collins
- ISHI Meeting, October 7–10, Atlanta, GA
- International Association of Forensic Nursing, October 21–24, 2013, Anaheim, CA.
- California Association of Criminalistics, October 21–25, 2013, Modesto, CA.

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- Presentation: “Forensic Technology Center of Excellence: Making it Real...Moving Technology from R&D to Your Laboratory,” Dr. Jeri Roper-Miller
- SOFT Meeting, October 27–November 1, Orlando, FL
 - Presentation: “Significance of Research and a SWGTOX RDTE Overview,” Dr. Jeri Roper-Miller

2012

- AAFS Meeting, February 20–25, Atlanta, GA
- CHIA Meeting, March 6–9, 2012
- North Carolina Division of the IAI Meeting, March 20–22, 2012, Wilmington, NC
- Indigent Defense Services, April 14, 2012, Durham, NC
- Southwestern Association of Toxicologists, May 3–5, 2012, San Antonio, TX
- MAAFS Meeting, May 14–18, Ellicott City, MD
 - Presentation: “Overview of RTI and the FTCoE,” Dr. Michael Baylor
- Midwestern Association of Crime Lab Directors, May 15–16, 2012, Columbus, OH
 - Presentation: “Research Triangle Institute: Web Based Training, Forensic Technology Center of Excellence and More,” Beth Kroupa
- American Bar Association Criminal Justice Section, June 1, New York
- NIJ Conference, June 18–20, Washington, D.C.
 - Presentation: “Research Triangle Institute: Center for Forensic Science Forensic Technology Center of Excellence and More,” Drs. Michael Baylor, Art Eisenberg, Michelle Peace, Fred Fochtman
- IAC&ME Meeting, June 24–26, Las Vegas, NV
- AFTE Meeting, June 24–29, Buffalo, NY
- NIJ Law Enforcement Technology Conference, June 27, 2012, Stevensville, MD
- AFDA Meeting, June 28–29, San Antonio, TX
- SOFT Meeting, July 1–7, Boston, MA
- IAI Meeting, July 22–28, Phoenix, AZ
- NIJ Law Enforcement Technology Institute Airport Demonstration Day, September 12
- Tennessee Valley Corridor Forensics Symposium, September 13, 2012



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- Presentation: “The Evolving World of Forensic Science—American Academy of Forensic Sciences,” Dr. Jeri Roper-Miller
- Biometric Consortium Conference and Technology Expo, September 18–20, 2012 Tampa, FL
- Chief Learning Officer Symposium, September 19–21, Colorado Springs, CO
 - Presentation: “Take Your Learning to the World and Make the World a Bit More Just While You’re At It,” Dr. Peter Stout
- Midwestern AFS Meeting, September 24–28, Milwaukee, WI
- IACP Meeting, September 29–October 3, San Diego, CA
- Southern AFS Meeting, September 30–October 4, Pensacola, FL
- NAME Meeting, October 5–10, Baltimore, MD
- Southwestern AFS Meeting, October 21–26, Scottsdale, AZ
- Northeastern AFS Meeting, November 12–17, Saratoga Springs, NY
- Forensics@NIST, November 28–30, Gaithersburg, MD
- National Association of Prosecutor Coordinators, December 6, 2012, Nashville, TN
 - Presentation: “Leveraging the Best in Forensic Science: 21st Century Solutions and Attitudes,” John Collins
- NFA Symposium Law Enforcement Innovation Center, December 14, 2012, Nashville, TN
 - Presentation: “The Technology Advantage: Leveraging 21st Century Solutions Today,” Beth Kroupa