RFID TECHNOLOGY IN FORENSIC EVIDENCE MANAGEMENT: AN ASSESSMENT OF BARRIERS, BENEFITS, AND COSTS

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After reviewing this poster, attendees will learn about the findings of a study conducted by the *Technical Working Group on Biological Evidence* to evaluate the usefulness of RFID in forensic evidence management. The report entitled, *RFID Technology in Forensic Evidence Management: An Assessment of Barriers, Benefits, and Costs* is scheduled for publication in the fall of 2014.

In August 2010, the National Institute of Standards and Technology and the National Institute of Justice convened the *Technical Working Group on Biological Evidence Preservation* to create best practices and guidance to improve the storage and preservation of biological evidence after collection through post-conviction proceedings. While the best practices handbook was being produced, an assessment of automated identification technologies was conducted to evaluate its usefulness in maintaining the integrity and reducing the loss or premature destruction of forensic evidence.

Forensic science laboratories and law enforcement agencies have increasingly used automated identification technologies (AIT) such as barcoding and radio frequency identification (RFID) to track and manage assets such as forensic evidence, firearms, and personnel. RFID uses radio waves to perform automatic data acquisition. Several methods of identifying objects using RFID exist today, but the most common is to store a serial number that identifies an item, and perhaps other information, on a microchip attached to an antenna, which enables the chip to transmit the stored information to a reader. Conceptually, RFID and barcodes are similar; both are intended to provide rapid and reliable item identification and tracking capabilities. However, the value of RFID is evident in the differences between them. Although both barcodes and RFID tags can be read at a distance, ultra high frequency and battery assisted RFID tags can be read at far greater distances, can be scanned much faster, and can be automatically scanned, unlike barcodes, which require some deliberate action. In effect, an RFID tag automatically announces itself to a nearby reader by means of its radio signal. The continuous stream of data available with RFID technology increases accuracy and can track tagged items in real time. Also, RFID tags can be read and written in large numbers. Rapid, bulk interaction with the tags can increase the speed and accuracy, support real-time status information, and reduce the costs of the supporting process. By taking advantage of the inherent features of RFID, more powerful applications can be created that can take action at a distance. The RF nature of RFID enables users to establish zones where activity can be monitored automatically. RFID-enabled applications can be engineered in such a way that the movement, number, and specific type of items, as well as timing and frequency of events, can all be monitored at a distance. For example, taking the inventory of a property and evidence room can be done with a single RFID read and without handling each item individually.

The poster will discuss the benefits, costs, and potential barriers to implementing RFID within property and evidence rooms as well as recommendations on strategic next steps to improve the implementation of RFID for forensic evidence management by local, state, and federal stakeholder. The presenter will also discuss the need for standards and thorough business process analysis to serve as a foundation for successful implementation and technology development in the future.