Integrating LIMS
and evidence management

The next logical step toward complete evidence status

By Robert Galvin

Bar coding as part of automated evidence management solutions is at the heart of establishing reliable evidence tracking.

While the property room in a police department is usually the sole overseer of evidence, the forensic lab—located either inside or outside of the department—shares this responsibility, too. The lab performs testing and analysis of evidence, and then documents findings. Without the ability to automate its operations, a forensic lab can quickly become overwhelmed and backlogs of evidence can balloon. Most lab testing is time-sensitive since so much evidence is tied to pending court cases. For these cases, the software's ability to generate reports on the results of evidence testing is critical.

Automating lab—evidence room and integration needed

Automating the forensic lab is crucial for increasing productivity and saving time for other tasks. Many crime labs are acquiring technology platforms called Laboratory Information Management Systems (LIMS). These applications provide the ability to collect the necessary data from scientific study and evaluation of evidence, and aid in the delivery of the results for court proceedings. Through automation, a LIMS delivers results from evidence analysis within the agency's own crime lab, relieves evidence backlogs, increases test and analysis speed, and boosts productivity with quicker, more accurate results.

Even though many crime labs have a LIMS in place, they are still faced with the disconnect that exists between their LIMS and the law enforcement agency's evidence management system. In other words, these systems are not integrated. Why should they be? The evidence management system controls all evidence items, their status and the chain of custody, including digital assets such as photos, videos, animations, and audio recordings.

KCPD LIMS lab aids auditing, statistical analysis

An inadequate, mainframe LIMS in the Kansas City, Missouri Police Department Crime Lab fueled a growing number of problems: partial chain of custody and notes on evidence items were on paper;

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only one person at a time could view a case file; managing back-logs of evidence was extremely difficult; and information could not be easily shared without using more time and paper. The crime lab chose Forensic Advantage LIMS software. So far, the crime lab has been able to tap most of the software's features, including:

- ◼ Evidence tracking
- ◼ Chain of custody
- ◼ Case processing
- ◼ Laboratory reports
- ◼ Testimony monitoring
- ◼ Resource management (for tracking all lab chemicals)
- ◼ Instrumentation
- ◼ Analysis Results Discover

According to Jennifer Howard, DNA technical leader and LIMS administrator at the crime lab, an important benefit of the new software is a vastly improved documentation process for tested and analyzed evidence, which has also proven to be a big time saver. Howard quickly points to important benefits with the new LIMS: "Auditing our evidence vault to see what evidence is present and should be present, statistical analysis of what our case output and backlogs are, as well as consistent documentation within our case records."

Evidence management software installed after LIMS

Early on, Howard concluded that integrating the Forensic Advantage LIMS with the police department's evidence management system would be a crucial milestone. But this could only happen if the property room's operations were also electronic. Luckily, in 2013, KCPD acquired the EvidenceOnQ evidence management software program after battling with three disparate and incompatible systems—one an ARS/RMS system

for officers to write reports and record property entries; another a multi-copy paper system for recording information on property; and yet one more system an aging mainframe database. The inefficiencies arising from this patchwork of systems absorbed huge chunks of time and jeopardized chain of custody.

Once EvidenceOnQ was deployed, evidence management operations improved immensely, said Capt. Mark Terman, who at the time oversaw the program's adoption and installation. Today, there is tighter chain of custody, and auditing has become one of the most valued capabilities in the software. "We can now look at an (evidence) bin and very quickly tell if it has what it's supposed to have inside," Capt. Terman said. "The software had to track evidence through a chain of custody; you had to be able to find evidence efficiently." Checkmark on both of these requirements. And EvidenceOnQ even interfaces smoothly with the police department's ARS/RMS systems that officers still use.

Seamless chain of custody is the goal of integration

With the KCPD property room's evidence management system now paperless and ensuring solid chain of custody, LIMS administrator Howard feels integration of that system and the LIMS can move ahead. What advantages does Howard see for integration?

"It's a matter of having an accurate, easily maintained chain of custody," Howard explained. "If our laboratory is not recovering the evidence, then we want to ensure a seamless chain of custody for that evidence item from the time of collection to the lab and back to the property and evidence unit. If we're not integrated, all of this has to be done manually. Any time you have manual data

entry, you have the potential for human error," Howard added.

Without integrating the LIMS and evidence management systems, Howard worries that too many steps and tasks will be unnecessarily duplicated. Integration, she concludes, would remove such duplication. By integrating the two systems, when the crime lab completes work on a piece

At Left: An analyst at the Kansas City, Missouri, PD Crime Lab examines a microscope slide for the presence of sperm. Above: Another lab analyst studies evidence for biological fluid using UV light technology.

of evidence, the evidence management system can be alerted automatically that the evidence is ready for pickup at the lab. "This removes human error and the duplication of data entry," Howard said. "It also will allow us to better query on where an evidence item is or its status."

Data error concerns

Presently, KCPD's EvidenceOnQ software may show an evidence item is at the lab, yet it cannot show if the item has been put into the LIMS or if the evidence has been processed and is ready for pick-up. However, Howard indicates that in July, integration of these two systems should begin.

This whole movement concerns Kim Webley, CEO of FileOnQ, Inc., which offers EvidenceOnQ. Webley strongly supports integration of all assets tied to the property room, crime lab and even digital evidence units. "You want to be able to seamlessly transfer metadata about a piece of evidence with 100 percent accuracy from the evidence management system to the LIMS," Webley offered. "This is so important because if there is data that is differentiating or has to be hand-keyed into the LIMS

Jennifer Howard, KCPD Crime Lab DNA Technical Leader and LIMS administrator, prepares an extracted DNA sample.

from some kind of handwritten property report or evidence submission form, there's a high likelihood of error."

Webley raises another concern: without integration, the crime lab could possess a piece of evidence not yet tested, but for which the case tied to it has been adjudicated. Therefore, without knowledge of the adjudication, the lab would probably still test and analyze the evidence item, wasting precious time and resources, and incurring major expense. What's more, Webley said, "This could become a legal problem if the case has been adjudicated and the lab results contradict the adjudication (for example, a case being downgraded to a misdemeanor or upgraded to a felony)."

One-point access, better workflows

Kirk Canty, LIMS Manager for the Georgia Bureau of Investigation, sees additional advantages by having automated LIMS and evidence management software integrated. "One big benefit is that the user would only need to access one system," Canty said. "He or she could access the evidence management system and get everything needed without having to consult the LIMS." Canty also believes that integration not only would allow information sharing for evidence status between the crime lab and evidence room, but that workflow for both of these operations would be greatly improved, too.

"This is two-way communication," Webley added. In the case of Kansas City Police Department, "The LIMS is tracking the lab's own process to the completion of evaluating a piece of evidence. When the status of that evidence item changes, the LIMS can deliver this status to EvidenceOnQ electronically and instantly," Webley added. "So, the single point of access for information can be the evidence management system, which is what the officers go to. This single point can deliver to them the status of where evidence is in real time within the lab."

Improved reporting on lab results

Another compelling reason for integration of LIMS and evidence management systems at law enforcement agencies is to streamline the flow of case work among the key stakeholders who need to know the status of evidence quickly

and with the highest accuracy: prosecuting and defense attorneys, and crime investigators. "It's about communication on what's happening in the lab or how long it will take to get any type of notification or results back on evidence being analyzed," offers Brady Mills, president of the American Society of Crime Lab Directors (ASCLD) and who also is assistant lab director for the Texas Department of Public Safety. "These are all pieces of information that investigators or attorneys need, so automating would help both sides (the lab and the aforementioned stakeholders)." Mills noted there are times when criminalists and attorneys need to have information regarding evidence quicker than a lab can provide it. Integration, he added, would speed up this process.

Higher reporting consistency, shorter cycle times

The Texas Department of Public Safety uses the JusticeTRAX LIMS. It has proven valuable by giving the department's network of 13 labs spread all over Texas a centralized database. Additionally, the software allows e-mailing of lab reports to local, county and state agencies, and to attorneys bringing cases to trial. It also provides smoother workflows within teams at the scattered labs while case processing is performed. And since reporting is the core of any LIMS, the software enables lab personnel to create reports as they enter data into the LIMS for greater consistency. Cycle times for evidence processing are shortened, too, relieving backlogs, in some cases where, say, a drug case is done in 30 days instead of 90 days.

Whether a LIMS is used in conjunction with an evidence management system within just one agency or at a state lab network, integrating these two systems yields numerous efficiencies, saves time, and tightens chain of custody. Simply, integration is the next wave in assuring more finite handling of evidence. Says Webley, the FileOnQ Inc. CEO: "The chain of custody that the lab has through its LIMS is only a partial view. But if this could be integrated with the evidence management system and into its

chain of custody, key stakeholders could observe a complete picture of evidence status end-to-end, at any time and from nearly any locale." ■

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