LEAN SIX SIGMA ENGINEERING FOR IMPROVED LABORATORY THROUGHPUT AND EFFICIENCY

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The South Carolina Law Enforcement Division (SLED) Forensic DNA laboratory sought to improve the turnaround time for the analysis of prioritized violent crime casework (shorten the cycle time). Improving the low side performance variability among individual DNA analysts was an ongoing focus in the continuous process improvement efforts of the lab. The project objective was to shorten the average cycle time from 83 to 35 days by overhauling the Case Management process. The process improvements could result in more analysts meeting or exceeding the monthly productivity benchmark, improving overall laboratory output. Full results of this work will be presented.

A working group encompassing representatives from all critical phases of the end-to-end DNA analysis process was formed. A Lean Six Sigma Engineer facilitated the group's efforts as they utilized Six Sigma tools to define project scope, metrics, stakeholder requirements, key process inputs and variables, and a critical assessment of the "Current State". Process Mapping was utilized to deconstruct the flow of evidence, the flow of information/data, and the decision-making process. Multiple simulations were run and analyzed, producing a validated solution. Finally, the team designed a transition plan mitigating all process and chain of custody risks. The transition phase began 5/1/09 and the process improvement was launched 6/1/09 and has been successfully sustained by the lab. The entire process took 11 weeks from design (define phase) through launch (control phase) and occurred concurrently with normal work flow.

With the utilization of Lean Six Sigma Engineering, SLED's new Case Management Process achieved the target result of a 35 day cycle time for prioritized casework. Additionally, productivity has improved by 30% (in the first 60 days), helping reduce the case backlog. Importantly, the feedback from key stakeholders (submitting agencies, analysts, lab management, and prosecution teams) is positive. Therefore, we conclude that leveraging rigorous process mapping and simulation analysis has improved our prioritized case cycle time by 42%.