

## B23 Assessing the Performance of Fingerprint Laboratories Through Collaborative Exercises and Proficiency Tests: A Discussion Based on the European Experience

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**Learning Overview:** The goal of this presentation is to demonstrate which methodologies can be successfully used to evaluate the performance of latent print visualization and comparison laboratories while assessing the competence and the performance of the latent print experts.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by sharing the results of the performances of the fingerprint laboratories in Europe, assessed between 2004 and 2019 and collected through collaborative exercises and proficiency tests, organized by the European Network of Forensic Science Institutes (ENFSI) Fingerprint Working Group. Error rates and methods to calculate them will be widely discussed, presenting not only a realistic picture of state-of-the-art of the profession, but also a reliable methodology to assess its performance.

Since 2004, the ENFSI Fingerprint Working Group has started collaborative exercises and proficiency tests, in order to establish a robust methodology to measure the performance of its laboratory members. A large variety of test types have been designed and proposed, and results have been collected and discussed, giving some clear indications on the European Forensic Science Providers performances in latent print detection and identification tasks, showing a great difference between the results of the laboratories and identifying some weaknesses. Moreover, through the years, the critical review of the test types and the objective assessment of their inherent difficulties allowed determination of a robust methodology that can measure the capability of a laboratory (or of a fingerprint expert) to perform regarding a specific task.

The knowledge gained through the decades established, in 2016, a permanent Advisory Group within the ENFSI Fingerprint Working Group, with the task of managing an on-going testing program in order to ensure continuity and to plan testing in a way that meets the strategic objectives of ENFSI.

From the visualization perspective, a series of collaborative exercises have been carried out, some of them considered complex items constituted by different surfaces; some others tackled the issues of difficult surfaces, others went back to the basics, assessing the performance of the European laboratories toward very specific and simple tasks, which had failed in previous years' tests. An overview of the test designs will show the technical difficulties of the realization of consistent samples, and the presentation the results observed will provide a realistic description of the technical capabilities of fingerprint detection laboratories.

On the comparison side, during the evaluation of proficiency or competency tests, the attention is usually focused on the error rates. What are the different types of errors and what is their impact to the criminal justice system? Most of the time, the interest of the forensic stakeholders has been driven by the latent print expert's performance, while the most interesting parameter for the trier of facts is the forensic science provider's performance.

Thus, the aforementioned aspects will be thoroughly discussed, while enlightening attendees on how error rates are calculated, with an eye on what was reported in the 2016 President's Council of Advisors on Science and Technology (PCAST) Report.<sup>1</sup> Red flags will be disclosed to the audience and future corrective actions will be proposed. Moreover, interesting outcomes of the collaborative exercises and proficiency tests carried out within the ENFSI Fingerprint Working Group will be presented, thus demonstrating how the critical review of the results could improve the quality of the daily activities.

### Reference(s):

- <sup>1</sup> President's Council of Advisors on Science and Technology (PCAST). *Report to the President: Forensic Science in Criminal Courts: Ensuring Scientific Validity Of Feature-Comparison Methods*. (2016). Washington, DC: Executive Office of the President of the United States.

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### Latent Prints Labs, Performances, Error Rates