



CONCLUSION SCALE FOR INTERPRETING FINDINGS IN PROFICIENCY TESTS AND COLLABORATIVE EXERCISES WITHIN THE WG MARKS

DOCUMENT TYPE : WORK INSTRUCTION	REF. CODE: MARKS-CSPT- 001	ISSUE NO: 001	ISSUE DATE: 12 MAY 2005
---	----------------------------------	------------------	----------------------------

1. Introduction

Doing a comparative marks examination the forensic expert comes to a conclusion on the origin of the examined items. The practice until today is, that most forensic scientific labs have their own conclusion scale for this kind of examination. This is in most labs not a scale in percentages but in words.

All the conclusion scales have a number of levels: from three to thirteen levels. The highest level there is no doubt in the examiner's opinion; the items examined are coming from one source. The „middle“ level is inconclusive; the items can or cannot come from one source. The lowest level there's no doubt the items come from different sources. In between the highest and the „middle“ level there is an area where specific matching details are found. The same is valid for the level in between the „middle“ and the lowest.

2. Goal

The goal of the project „Harmonised Conclusion Scale“ of the ENFSI WG Marks is to create a conclusion scale which shall be used from all the participants of proficiency tests created by the WG Marks („work instruction“). This work instruction is in accordance with the „Guidance on the conduct of proficiency tests and collaborative exercises within ENFSI“ (Standing Committee for Quality and Competence (QCC)).

3. Interpreting Evidence

The project „Harmonised Conclusion Scale“ of the ENFSI WG Marks produced many discussions regarding the way of formulating conclusions not only in proficiency tests and collaborative exercises but also in forensic scientific expert reports. There were many fruitful discussions between advocates and opponents for using the Bayes‘ rule on the whole when interpreting evidence. However, not only between the „Traditionalists“ („Classical Approach“) and the „Bayesians“ but between these „Bayesians“ there are also different opinions: „Likelihood Ratio Approach“ on the one side and „Full Bayes‘ Rule Approach“ on the other side.

The opinion of the members of the Conclusion Scale Committee is that **only the legal systems within the particular countries** (and not a Standing Committee of ENFSI or not the Board of ENFSI) **may decide on approval regarding interpreting evidence of the forensic scientific experts reports.**

4. General Requirements for a Harmonised Conclusion Scale

The members of the Conclusion Scale Committee of the WG Marks are fully aware of the variation in Judicial Systems within Europe. The reporting of scientific findings and the way in which the expert interprets their findings will be driven by the requirements of the legal system within their country. It is therefore not surprising that various countries have developed their own scales. The Conclusion Scale Committee of the ENFSI WG Marks considers fundamental principles that underpin the evaluation of evidence.

5. Special Requirement for the Harmonised Conclusion Scale for Interpreting Findings in Proficiency Tests

The special requirement for the harmonised conclusion scale for interpreting findings in proficiency tests in marks cases is, that the proposed scale must allow to communicate results what ever method an examiner uses (Classical Approach, Likelihood-Ratio Approach, Full Bayes' Approach).

6. The Harmonised Conclusion Scale for Interpreting Findings in Proficiency Tests of the WG Marks

The harmonised conclusion scale for interpreting findings in proficiency tests of the WG Marks is demonstrated by a table with three columns and six levels / steps.

HARMONISED CONCLUSION SCALE OF THE ENFSI WG MARKS

Level	Likelihood Ratio (partial Bayes' rule)	Probability (full Bayes' rule)
1	Identification	Identification
2	Very strong support for proposition A Strong support for proposition A	Very probably
3	Moderately strong support for proposition A Moderate support for proposition A Limited support for proposition A	Probably
4	Inconclusive	Inconclusive
5	Limited support for proposition \oplus ($\oplus = \text{NotA}$) Moderate support for proposition \oplus Moderately strong support for proposition \oplus Strong support for proposition \oplus Very strong support for proposition \oplus	Likely not
6	Elimination	Elimination

(A) = hypothesis: the questioned tool produced the mark;

(NotA) = alternative-hypothesis: the questioned tool didn't produce the mark.

(here assumed: even prior odds)

7. The Use of the Harmonised Conclusion Scale of the ENFSI WG Marks

Experts, who are in favour of the „LR-Approach“, shall look at the middle column first. Experts, who are in favour of the „full Bayesian Approach“ shall look at first to the right column. In doing so, the „full Bayesian Approach Experts“ shall also mention in the report the assumed values of the prior probabilities of (A) and (NotA): „transparent prior probabilities“. In many two hypotheses cases it is assumed - after estimations by means of the PME-method -, that the prior probabilities of the two hypotheses are equally likely. After the „first look“ both expert groups shall look to the „level column“ on the left.

The „level number“ of this scale in the corresponding row is the result of the forensic scientific experiment, regardless if it is in favour of the „LR-Approach“ or in favour of the „full Bayesian-Approach“, or in favour of the „Classical Approach“, which is in cases of even prior odds incorporated in the „full Bayesian Approach“.

APPENDIX

WG	Working Group
LR	Likelihood Ratio
PME	Principle of Maximum Entropy