Latent Print Development and Identification Survey

The International Association for Identification
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Robert Ramotowski
International Representative
International Association for Identification

Didier Meuwly, PhD
ENFSI Fingerprint Working Group Quality Correspondent
Netherlands Forensic Institute, The Hague, The Netherlands
Why was the ENFSI-FPWG Survey Done?

- For Europe, EU Initiative 2009/C174/03 mandated changes in forensic laboratory practices.
- The Initiative was passed to ensure that results of laboratory practices in one EU country are equivalent to those from another.
- This was to be achieved through accreditation with International Standard EN ISO/IEC 17025.
- It applies to DNA and fingerprints.
- By the end of 2014, the Council shall assess the extent to which member states have complied with this Framework Decision.
The ENFSI-FPWG Survey

- To gauge the current status of laboratories in Europe, a survey was conducted by the ENFSI-FPWG from September 24 – October 6, 2012 for the standards and practices of the identification and development disciplines.
- 36 (42) valid responses were received for the development survey
- 36 (48) valid responses were also obtained for the identification survey
The ENFSI-FPWG Survey – The GUI

Welcome
dmeuwly@gmail.com
My Account  Logout

You are here > Manage Surveys > Survey List

Survey folder:  All  Manage folders

<table>
<thead>
<tr>
<th>Survey (click to preview)</th>
<th>Created</th>
<th>Status</th>
<th>Edit</th>
<th>Options</th>
<th>Reports</th>
<th>Collect</th>
<th>Clear</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status of the practice and the accreditation in the fingerprint field within the ENFSI laboratories - Survey 2012 - A</td>
<td>9/18/2012</td>
<td>Closed</td>
<td></td>
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<td>36</td>
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<tr>
<td>Status of the practice and the accreditation in the fingerprint field within the ENFSI laboratories - Survey 2012 - B</td>
<td>9/21/2012</td>
<td>Closed</td>
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<td>36</td>
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</tbody>
</table>
Overall Survey Results – Laboratory Accreditation

**Percentage of laboratories in 2012 (%)**
- Non accredited
- Planned within 3 years
- Accredited from less than 3 years
- Accredited from 3 to 6 years
- Accredited from 7 to 12 years
- Accredited from more than 12 years
- Other

**Percentage of laboratories in 2012 (%) vs Percentage of laboratories in 2015 (%)**
- Without accreditation
- Under accreditation
The ENFSI-FPWG Detection Survey
The Detection Survey – Literature Source

The Detection Survey

- Acid dyes (AB1, AV 17, AY 7)
- Basic violet 3
- DFO
- Ninhydrin
- Physical developer
- Powders
- Small particle reagents
- Solvent black 3 (Sudan Black)
- Superglue (CA Fuming)
- VMD
- UV Imaging
- IR Imaging

- Multispectral imaging
- ESDA
- 1,2-indanedione
- MMD
- Oil Red O
Detection Survey
Results
Detection Survey Results – Dyes
### Detection Survey Results – “Other” Dyes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1.</td>
<td>Amido black</td>
</tr>
<tr>
<td>2.</td>
<td>Amido Black - for blood; Cristal Violet, Wet Powder - for sticky tapes (sticky side); Basic Yellow 40 - after the Superglue</td>
</tr>
<tr>
<td>3.</td>
<td>Rhodamine 6G - Basic Yellow 40</td>
</tr>
<tr>
<td>4.</td>
<td>SUDAN BLACK - SIRCHIE CAT.NO.LV504</td>
</tr>
<tr>
<td>5.</td>
<td>eg. Hungarian Red, Coomassie Blue</td>
</tr>
<tr>
<td>6.</td>
<td>Amido black Basic Yellow 40</td>
</tr>
<tr>
<td>7.</td>
<td>Leuco crystal violet</td>
</tr>
<tr>
<td>8.</td>
<td>Basic Yellow - 40 Basic Red - 28</td>
</tr>
<tr>
<td>9.</td>
<td>Hungarian red</td>
</tr>
<tr>
<td>10.</td>
<td>Oil Red O</td>
</tr>
<tr>
<td>11.</td>
<td>1,8 Diaza-9-Fluorennon Zink-Indandion Safranin Ninhydrin</td>
</tr>
<tr>
<td>12.</td>
<td>ninhydrin</td>
</tr>
<tr>
<td>13.</td>
<td>Amido Black (AB) Basic Yellow 40 (BY)</td>
</tr>
<tr>
<td>14.</td>
<td>Basic Yellow</td>
</tr>
<tr>
<td>15.</td>
<td>Wet Powder</td>
</tr>
<tr>
<td>16.</td>
<td>Amido Black</td>
</tr>
</tbody>
</table>
Detection Survey Results – Powders
Detection Survey Results – Chemical Methods

The chart illustrates the use of various chemical methods:

- **No use**
  - DFO
  - Ninhydrin
  - Cyanoacrylate
  - Vacuum Metal Deposition
  - Physical Developer

- **Use - HOSDB**

- **Alternative use**
Detection Survey Results – Imaging

- UV imaging
- IR imaging
- Multispectral imaging

No use
- UV imaging: 10
- IR imaging: 30
- Multispectral imaging: 18

Use - HOSDB
- UV imaging: 16
- IR imaging: 5
- Multispectral imaging: 13

Alternative use
- UV imaging: 8
- IR imaging: 2
- Multispectral imaging: 10
Detection Survey Results – Alternate Methods

- ESDA
- Indanedione
- MMD
- Oil Red O

No use

Use - HOSDB

Alternative use
Detection Survey Results – Method Accreditation

**Bar Chart 1:**
- Without accreditation
- Planned within 3 years
- Under ISO 17025 accreditation
- Other system

**Bar Chart 2:**
- Without accreditation
- Under accreditation
Detection Survey Results – Method Accreditation

- Without accreditation:
  - Methods performed in 2012: 11%
  - Methods performed within 2015: 29%
  - Percentage of laboratories in 2012: 43%
  - Percentage of laboratories in 2015: 51%

- Under accreditation:
  - Methods performed in 2012: 43%
  - Methods performed within 2015: 29%
  - Percentage of laboratories in 2012: 57%
  - Percentage of laboratories in 2015: 49%

- Accreditation:
  - Percentage of laboratories in 2015: 89%
In 2011, ASCLD-International published a series of supplemental requirements. Section 5.4.5.4 states:

“Prior to implementation of a validated method new to the laboratory, the reliability of the method shall be demonstrated in-house against documented performance characteristics of that method. Records of performance shall be retained for future reference.”

This new requirement is subject to interpretation, but one possible implication is that every new or modified method or piece of equipment will have to undergo validation testing under that particular laboratory’s conditions regardless of whether or not the new method or piece of equipment has been externally validated.
The ENFSI-FPWG Identification Survey
The Identification Survey – Literature Sources

<table>
<thead>
<tr>
<th>EFPWG Best practice manual</th>
<th>SWGFAST</th>
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<tbody>
<tr>
<td><strong>ENFSI</strong></td>
<td></td>
</tr>
<tr>
<td>Best Practice Manual for Fingerprint Examination</td>
<td>SWGFAST documents are published here for review. For the convenience of interested parties, the documents are often reformatted and published by forensic organizations to permit wider dissemination. Please note that some formal changes and occasional formatting errors may occur during the conversion for publication. Left-click (or open in your browser) or right-click (to have it on your computer's page) to the right of the document title. Click “Export” on the right-hand side of the document to see the archived file, and “Download” to download them. Comments on documents that are DRAFTS FOR COMMENT must be submitted in MS Word format by clicking “Send” or “Comment.” For details, go to “Comments.”</td>
</tr>
<tr>
<td><strong>European Fingerprint Working Group</strong></td>
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</tbody>
</table>
Detection Survey Results
The Identification Survey
The Identification Survey – Analysis Phase

Knowledge of the background information of the case:
- Information known
- Information unknown

Sequential unmasking - Knowledge of the reference material:
- Mark encoded with knowledge
- Mark encoded without knowledge

Assessment of fingerprint ridge impression on basis of:
- 1st level of details
- 2nd level of details
- 3rd level of details
The Identification Survey – Analysis Phase (Features)

- Anatomical properties of the skin
- Morphology of hand or foot
- Transfer conditions
- Friction ridge pliability
- Transfer matrix
- Development techniques
- Recording / preservation techniques
- Substrate
- Environmental conditions
The Identification Survey – Analysis Phase (Documentation)

- If the impression is not suitable for comparison, the examination stops and:
  - Features and tolerances documented and reported
  - Features and tolerances documented but not reported
  - Features and tolerances nor documented neither reported
  - Other approach

- If the impression is suitable for comparison, the examination continues and:
  - Features and tolerances documented and used
  - Features and tolerances not documented but used

- In our laboratory we use for documenting the features and their tolerances:
  - GYRO
  - Photoshop
  - PiAnoS
  - Other
The Identification Survey – Comparison Phase

In our laboratory we compare the impression that are of:

- Value for comparison
- Value for identification

In our notes we:

- Describe explicitly each similarity and difference
- Describe globally the similarities and differences
- Do not describe the similarities and differences
- Use another approach
The Identification Survey – Comparison Phase (Documentation)

- In our laboratory we use for documenting the similarities and differences:
  - GYRO
  - Photoshop
  - PiAnoS
  - Other

![Bar chart showing the tools used for documenting similarities and differences](chart.png)
The Identification Survey – Comparison Phase (Framework)
The Identification Survey – Comparison Phase (Framework)

- **In our laboratory we use a probabilistic approach:**
  - Yes: 3
  - No: 27

- If using a probabilistic approach we report a posterior probability:
  - Yes: 4
  - No: 26

- If using a probabilistic approach we report a likelihood ratio:
  - Yes: 6
  - No: 24
The Identification Survey – Comparison Phase (Numerical Standards)
In 1914, Locard formed his famous “Tri-partite Rule”.

- Prints with more than 12 points and that are clear and sharp are identifiable.
- The second part of the rule stated that when there are 8-12 points in common, then:
  
  “Certainty is a function of clarity, sharpness of the mark, the rarity of its type, the presence of pores, the perfect identity of papillary ridges and grooves thickness, the direction of lines and the angular value of bifurcations.”

- The third part of the rule implies that when less than 8 points are in common, the print “does not provide a certainty, but only a presumption proportional to the number of points and their clarity/sharpness.”
The Identification Survey – Verification Phase

- All the conclusions resulting from the evaluation phase are verified:
  - Yes
  - No

- Only some conclusions resulting from the evaluation phase are verified:
  - The conclusions of identification are verified
  - The conclusions of exclusion are verified
  - The inconclusive conclusions are verified
  - Another approach is used to verify
The Identification Survey – Verification Phase

- In our laboratory the verifications are done:
  - Necessarily by by another signed-off examiner
  - Not necessarily by by another signed-off examiner

- The person that performs the verification:
  - Verifies the report (textual data)
  - Verifies the complete case independently
  - Verifies the case in another way
The Identification Survey – Conflict Resolution

- “(1) The case goes to 2 examiners who do not know the case/conflict. (2) If not solved it goes to another bureau of the same organization (different city)”
- “If no agreement a 3rd and 4th expert”
- “Decision made by leading examiner”
- “The case is submitted for a 2nd verification to another examiner. A meeting is then organized where the conclusions of the different participants are presented and motivated. Examiners go through their conflicting results and form a common conclusion. If they cannot reach a common conclusion, the matter will be referred to the head of the team for decision. Examination results and conclusions are documented in Laboratory Information Management System.”
- “Fight!”
The ENFSI-FPWG Survey – Conclusions

- The majority of laboratories in the EU will be ISO 17025 accredited by the deadline of 2015.
- In practice, by 2015 the majority of development techniques are and will be performed without accreditation.
- Interestingly, ISO 17025 accreditation covers laboratories that are using very different examination procedures that are sometimes conflicting.
What’s Next?

- The IAI (International Representative) in conjunction with the ENFSI-FPWG (Quality Correspondent) have decided to re-issue the surveys to the IAI membership.
- The surveys are still being refined for use by non-ENFSI membership.
- When the surveys are complete and ready for distribution, announcements will be made through a variety of platforms, including the IAI website (www.theiai.org); the Complete Latent Print Examination website (www.clpex.com); Ed German’s Latent Print Examination website (www.onin.com).
- Survey launch will most likely be in early 2014.
- In order to maximize the potential for these surveys, respondents are encouraged to provide as much detail as possible (the time required to complete each survey should be in the 10-15 minute range).
Questions/Contact Information

Robert Ramotowski
International Representative
International Association for Identification
Washington, DC 20223
+1-202-406-6766 (tel)
+1-202-406-5603 (fax)
robert.ramotowski@usss.dhs.gov