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## A European Toolkit for Microtrace Analyses

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## SHUTTLE ?

It's an acronym for

**S**cientific  
**H**igh-throughput  
**U**nified  
**T**oolkit for  
**T**race analysis by forensic  
**L**aboratories in  
**E**urope



Financed by the H2020 programme, eight European forensics laboratories have teamed up to develop a **toolkit**, which will render more **objective** and **scientific** the trace analysis.



## Why?

### Current trace analysis process :



Tapes Lifts

Collect many traces  
(fiber, shard, blood...)



Optical  
Microscopy

Experts have to scan the tape  
to determine the relevant trace

**Time  
consuming**



Selection and extraction  
of some trace evidences

Experts have to extract the  
relevant trace

**Possibility of  
damaging the trace**



Further analysis

Only the relevant trace will be  
subjected to further analysis

**Risk to missed  
interesting trace**

- **Need to enhance the current methodology for a better integration of forensic disciplines**
- **Need more objectivity**
- **Need a method less hazardous for the traces**



**SHUTTLE  
toolkit**



# SHUTTLE

## How?

**By combining 5 tools which will help to solve the current difficulties. Each of them, as well as their fluent interaction, is required for optimal operation.**



### Tapes Lifts

Collect many traces (fiber, shard, blood...), using a microscopic grade tape that can be directly use with the toolkit.



### Automated microscope

Acquire images of traces, do spectrometric colour analysis as well as a number of illumination modes, e.g. polarisation and UV illumination.



### Image processing

The algorithms will process the images acquired and classify the different types of traces present. A table that contains a number of parameter vectors for every trace (coordinates on the tape, colour, polarisation characteristics, morphology, and class (e.g. 'blood', 'fibre', 'glass', ...)).



### Database and search algorithms

The database will contain raw data acquired by the microscope and the algorithms. It is made in such a way that the data acquired can be related to data acquired by other techniques (e.g. FTIR, MSP, dye analysis, ...).



### Pattern recognition procedures

The search algorithms allow searches for similar samples in the database. It be used to calculate the evidential value of a result.

## Purpose of SHUTTLE

- Make a powerful and versatile toolkit which solve the major issues in forensic sciences.
- Improve the information exchange and the synergy between different criminal research laboratories to fight against international crime.

## More information

Project Management Office (ARTTIC)  
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SHUTTLE project website:  
[www.shuttle-pcp.eu](http://www.shuttle-pcp.eu)

