



HANDBOOK FOR PARTICIPANTS attending the

PRACTITIONER WORKSHOP

AUTOMOTIVE DIGITAL FORENSICS



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AUTOMOTIVE DIGITAL FORENSICS

This document provides important information for invited participants attending the CYCLOPES Workshop on 'Automotive Digital Forensics'.

1. Horizon 2020

Horizon 2020 is the European Union's research programme that covers a range of topics including secure societies, which has a budget of €1.7bn over the period of the programme up to 2020. The EU Commission recognise the value of impact in research and are now emphasising the need to involve end users in research programmes. This will enable the delivery of science and technology that makes a difference, rather than focussing on academic excellence alone. The programme covers a range of security topics including fighting crime and terrorism, borders and external security, digital security and critical infrastructure protection. For further information about the programme please go to: <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/secure-societies%E2%80%93protecting-freedom-and-security-europe-and-its-citizens>

2. The CYCLOPES Project

The CYCLOPES project is funded by the European Union's Horizon 2020 Programme (H2020), under the heading of, ***“Pan European network of practitioners and other actors in the field of security”***. The lead agency coordinator for this project is the Polish Platform for Homeland Security, with consortium members being made up of 21 partners from 14 countries. These are as follows:

- Netherlands Organisation for Applied Scientific Research (TNO)
- Sheffield Hallam University (CENTRIC)
- Stichting Dutch Institute For Technology, Safety & Security (DITSS)
- IANUS Consulting Ltd (IANUS)
- Cybercrime Research Institute GmbH (CRI)
- Austrian Standards International (ASI)
- Central Office for Information Technology in the Security Sector (ZITIS)
- Laurea University of Applied Sciences (LAUREA)

- University College Dublin, National University Of Ireland (UCD CCI)
- Home Office (HO)
- Provincial Police Headquarters in Gdansk (KWPG)
- Ministry of Interior of the Republic of Croatia (MUP)
- General Directorate for Combatting Organized Crime (GDCOC)
- Swedish Police Authority (SPA)
- Ministerio Del Interior (GUCI)
- Belgian Federal Police (BFP)
- State Police of Latvia (SPL)
- College of Policing (CPB)
- The National Police of the Netherlands (NPN)
- Malta Police Force (MPF)

CYCLOPES aim is to establish a network of different stakeholders across Europe, with a wide range of experience in the field of fighting cybercrime in order to:

- **Build and maintain an innovation-driven network of LEAs combating cybercrime - accelerating the EU's ability to counteract growing pressures of cyber threats**
- Create synergies between LEAs from MS and connect industry and academia by stimulating and sustaining dialogue on pressing security matters threatening the stability of Europe and Citizen safety
- Dedicated teams will scour markets, identifying solutions and research activities to highlight actions and innovative products to assist LEAs tackle the complexity of cybercrime
- The project will support the continued development of LEAs, working closely with practitioners to define current capacities and elicit capability gaps and requirements in crucial areas: procedures, training, legal and standardisation
- Identify priorities for standardisation; recommendations for innovation uptake and implementation; social, ethical and legal reports providing guidance and training suggestions for cybercrime investigators; dissemination of results through workshops, conferences, webinars, publications, policy papers and media.
- Create an ongoing dialogue with industries and academia who are delivering products and conducting research on solutions that fight cybercrime
- Synchronise with other activities and projects also working in the field of cybercrime. The CYCLOPES network will cooperate by exploiting the results of previous networks and initiatives, such as the European Network of Law Enforcement Technology Services

(ENLETS), Europol Innovation Lab, ECTEG, EACTDA, iLEAD, iLEAnet, iProcureNet and EU-HYBNET.

The focus of the project is on technical aspects rather than social research and representatives will be invited to become part of a community network which will be made up of a set of three CYCLOPES Practitioner Groups (PG's). Each of the PG's will be managed by consortium members from: Poland, Germany and Sweden with each group comprising of three subject specific topics. Please see table below for the PG's and their related subject specific topics.

	Cybercrime: Affecting People Directly (PG1) Sweden	Cybercrimes: Affecting Systems (PG2) Poland	Digital Forensics (PG3) Germany
Year 1	'Social Engineering to enable Cybercrime' 30-31 March 2022 Stockholm	'Cybercrime related to Remote Desktop Protocols and similar technologies' 10-11 February 2022 Gdańsk	'Mobile devices & wearable technologies' 15 December 2021 Held online
Year 2	Investigations involving cloud services February 2023 TBC	Cryptocurrency November 2022 TBC	Automotive digital forensics 20-21 September 2022 Munich
Year 3	TBC	TBC	TBC
Year 4	TBC	TBC	TBC
Year 5	TBC	TBC	TBC

During the 5-year lifetime of the CYCLOPES project, each of the 15 topics will be the subject of a Practitioner Workshop, which will be held in various countries across the EU.

The purpose of the workshops are to:

- Bring together practitioners and technical specialists from Law Enforcement Agencies (LEA's) across all member states
- Provide a unique forum in which constructive dialogue on common issues will be encouraged
- Harvest innovative and unified ideas and technological solutions, and direct future research.

3. Automotive Digital Forensics

Automobile are involved in a great deal of modern criminal activity, either directly in the case of vehicle theft and getaway cars, or indirectly as a normal means of transportation leading to a crime. Additionally, luxury cars are a typical commodity obtained with the spoils of criminal activity.

As the computational capacity of vehicles continues to grow, cars are reaching the point of becoming 'computers on wheels'. The wealth of data they collect and share offers a significant opportunity for Law Enforcement. The question arises: how can this data be obtained and exploited in a criminal investigation?

What is automotive forensics in the context of a digital investigation?

Automotive digital forensics can be seen as securing/ acquiring digital data related to a vehicle that can be of relevance in a judicial investigation. In the context of a digital investigation, this is a very broad subject that accumulates several different investigative disciplines and techniques.

The most obvious is data stored locally in the vehicle. Local data can be found in different forms:

- Diagnostic data/fault codes
 - Diagnostic data is usually obtained through the OBD port. This data is not always relevant in an investigation but can be used to verify a VIN or to determine the time of a theft and the distance the car has driven.
- Data from key fobs
 - Key fobs can contain potentially useful data, giving information about the car to which the fob is coupled (e.g. odometer readings).
- Crash data through an Event Data Recorder (EDR)
 - Data in the Event Data Recorder can be found in the airbag module after a (near) crash event and consists of +/- 5 seconds before an event. Speed,

break usage, steering wheel angles, occupied seats and seatbelt usage, as well as other data can potentially be recovered.

- Data from the infotainment/telematics system
 - The infotainment system can contain a significant volume of data, for example: system information, location data (last destinations, tracklogs), paired devices (Bluetooth address, phonebooks, call logs, messages) and event data (engine start/stop, doors open/close, lights on/off).

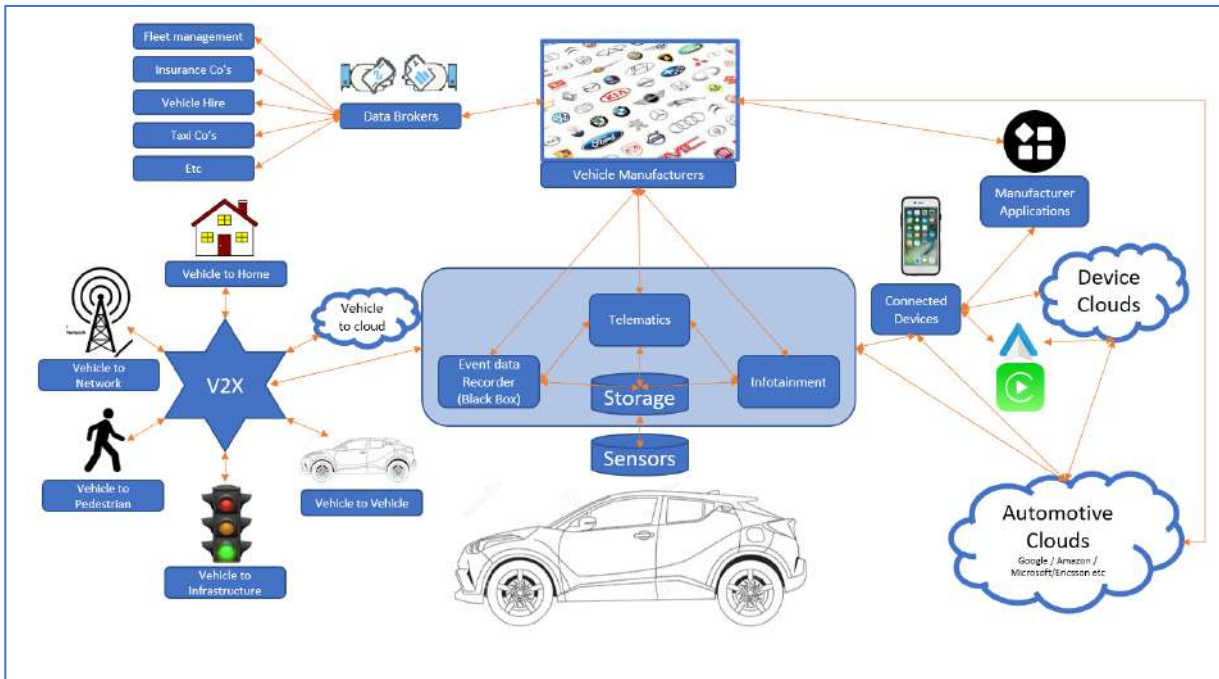
Many of the new vehicles coming to market are equipped with a data connection. This can allow the end-user to pair a phone application to the car giving them the ability to see where the vehicle is, check its status, and open and close its doors. In addition, most recent vehicles can send diagnostic or commercially 'interesting' data back to the manufacturer. This wealth of data stored on manufacturer servers could be exploited by investigators if cooperation with the manufacturer can be established.

Due to data being transported to remote servers, a data connection needs to be available in a vehicle. Modern vehicles make use of a 2g/3g/4g/5g module to communicate with cell networks, similar to mobile phones. If an investigator can obtain an IMEI or IMSI number coupled to a vehicle, queries can be made to phone operators in order to obtain useful data such as the cell towers a vehicle has connected to.

This workshop

The previous CYCLOPES practitioner workshop within the Digital Forensics theme looked at mobile devices and wearable technologies. There is some overlap in the techniques used to exploit these devices and the techniques employed in the field of automotive digital forensics. This practitioner workshop seeks to build on the previous workshop and explore different ways of obtaining and analysing data related to vehicles.

'Connected Vehicles' present a vast amount of examination opportunities to aid criminal investigations by LEAs therefore, due to the duration of this workshop (1.5 days) discussions will focus on the area of vehicle data highlighted in the center of image below.



There will be an opportunity to discuss the examination opportunities outside of this highlighted area, e.g. connected devices, vehicle manufactures and service providers, on the second day of the workshop however, due to time constraints this will be brief.

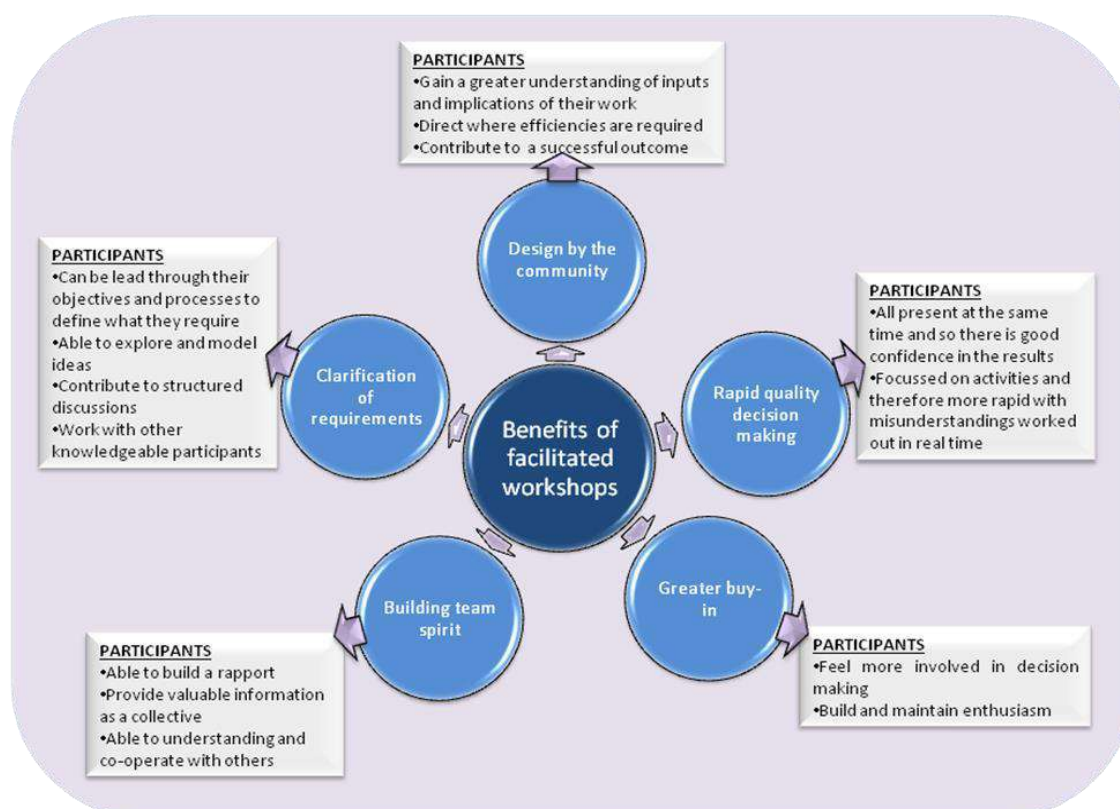
The **CYCLOPES** practitioner workshop 'Automotive Digital Forensics' provides an opportunity and platform to discuss how we as Law Enforcement Agencies experience and deal with the analysis of data recovered from vehicles, for example EDR, telematics and infotainment data. Furthermore, we will explore the state of play from different participating LEAs, what problems investigators face regarding the acquisition and decoding of data, and LEA needs concerning technology, legislation and standardisation.

The objectives of this workshop are to:

1. List the key techniques and technologies used by LEAs to investigate vehicle-related data.
2. Identify the limits and issues of the currently used technology
3. Identify other capability gaps and limitations currently experienced (formation, legislation, cooperation).
4. Develop common areas for innovation and the requirements for standardisation in the field of automotive digital investigations.

4. Automotive Digital Forensics – PRACTITIONER WORKSHOP

The success of the CYCLOPES project will be, to a greater part, down to the productive engagement with end-users. Therefore, the facilitated Practitioner Workshops have been designed to, not only benefit the project, but also be a useful and positive experience for the participant. The benefits to participants are shown the diagram below:



The workshops have been created to draw out specific and relevant information, and comprise of a number of structured activities which have a set of required themes and outcomes. However, these activities incorporate ‘flexibility’ so that participants can provide the steer and direction of the discussions, share information in real time and engage effectively with each other.

The objective of the CYCLOPES Automotive Digital Forensics Workshop is to bring together Law Enforcement Practitioners (LEP’s) from across the EU who are presently working in the police officer end-user environment in order to:

- Think and act as a community

- Translate and define the priorities into real solutions
- Reduce fragmentation of the discipline across the EU

Another important facet to the workshop is the facilitator, who will ensure that every participant will be given the opportunity to talk about their experiences, issues and problems concerning Automotive Digital Forensics within their own LEA. Then via the “multi-way” dialogue activities, practitioners will be able to identify where commonalities and synergies lay with colleagues from other LEA’s. Furthermore, participants, as a collective, can then determine what the end-user priorities are for the future.

5. Workshop Participants

CYCLOPES is looking to have representation from between 10 – 12 EU Member States for the workshop; therefore, spaces will be limited. As the workshops are practitioner lead, invitations will be offered to individuals who are able to; actively contribute to the discussions and activities, provide an end-user perspective and provide directive to the future development of solutions for Automotive Digital Forensics for LEA’s across the EU.

Therefore, with this in mind we are seeking participants who:

“.....have the appropriate operational background, a thorough understanding of the discipline and relevant knowledge and experience”

The discussion points and activities that will be covered within the workshop are as follows:

- **The current situation with regards to technology, processes and methodologies**
- **The capability gaps**
- **End user requirements and priorities**
- **Potential solutions to the priorities**
- **Possible areas for standardisation and procurement**

Please note that this Workshop is only being delivered on a face to face basis, with no option for remote participation.

6. Pre-Workshop Requirements for Participants

Survey

Prior to the workshop on Automotive Digital Forensics, participants will be asked to complete a short survey. This survey is built around a number of the main objectives of the CYCLOPES project and explores areas such as: current technologies, current technology challenges, current and future needs, and opportunities for innovation in line with the workshops theme. The pre-workshop data will be collated from all participants, and the survey process repeated at a later stage in the project. The overall data will be used to identify, measure and evidence changes that have occurred within the cybercrime community and all results will be disseminated to the EU Commission and those working in relation to cybercrime. Completion of the survey will be required 2 weeks prior to the commencement of the workshop and all results will be held securely within the EU Survey platform.

PowerPoint Slides

As part of the workshop registration process, participants will be asked to prepare 3 PowerPoint slides (including introduction slide) using the CYCLOPES workshop PowerPoint Presentation template. Participants will be required to deliver a 10-15-minute presentation to other attendees of the CYCLOPES Practitioner Workshop. The slides will contribute to building a rich picture of the activities within this arena across the participating EU countries and used as part of the data gathering process.

The content of the presentation should include the following details:

- Describe the key techniques and technologies used within your LEA to investigate vehicle related data
- Describe the limits and issues of the currently used technology
- Provide details of any other capability gaps you have within your LEA that hinders digital investigations on automobiles (cooperation, legislation)
- Explain what technologies you would like to see being developed to improve the way your LEA conducts automotive digital investigations

The slides should be sent to Anand Knox at anand.knox@homeoffice.gov.uk by **26th August.**

Please note: The information to be included within the slides should not be of a sensitive nature nor should it breach participants LEA security and/or copyright protocols.

7. Post Workshop Activity

The data deriving from the workshop interaction and communication will be utilised CYCLOPES on practitioner's behalf, to drive and direct innovation and research and development in order to achieve 'fit for purpose' solutions where required.

Participants will receive the results of the workshops and be consulted on the following:

- Technology, research and innovation watch
- Standardisation information
- Procurement

Participants will also receive news and information on:

- Community networks
- Industry days
- CYCLOPES Permanent Information Sharing Platform
- Expert Register

Please see Appendix C for the Practitioner Workshop Participation Process

8. Letter of Consent

Any data collection undertaken by any project consortium member will be carried out to a high ethical standard, and the following set of principles will be adhered to:

- The rights of the participants will be respected at all times
- Participants will be duly informed about the purpose, methods and results of the workshops
- High standards of integrity, quality and transparency with respect to any research undertaken will be maintained throughout the lifetime of the project

With this in mind, we would like to draw your attention to the “Letter of Consent” at the end of this document which is a copy that should be retained for your records. The stand-alone copy should be completed by all workshop participants and sent via email to anand.knox@homeoffice.gov.uk

Please see Appendix A for the Letter of Consent

9. Contacts

If you require further details of any of the information provided within this document, please do not hesitate to contact Anand Knox at: anand.knox@homeoffice.gov.uk

10. Acknowledgements

Thanks go to Alexander Binjens, Eli Hoyberghs, Meera Barnett and Ed McBryde-Wilding for helping to develop the scope of the workshop.

11. Further Information

You can keep up to date with the CYCLOPES Project using the following link:
<https://cyclopes-project.eu/>

APPENDIX A Letter of Consent

INFORMED CONSENT FORM FOR PARTICIPATION IN CYCLOPES ACTIVITIES

Hereby I, (first name, last name)

Please mark clearly your selection	YES	NO
I have read the information on this workshop that will be carried out as part of Task 2.2 of the H2020 CYCLOPES project.		
My questions about the activity have been answered to my satisfaction, and I understand that I may ask further questions at any point.		
I understand that I am free to withdraw from the activity at any time without giving a reason for my withdrawal without any consequences to my future treatment by the researcher.		
I agree to provide information to the activity organisers under the conditions set out here and/or in the Information Sheet.		
I have been reassured that after analysis of the minimum information sought and processed, any personal data of mine shall be fully protected and deleted after the conclusion of the study.		
I consent to the information collected for the purposes of this activity, once anonymized/pseudonymised / de-identified/de-linked / (Re)identified (so that I cannot be identified), to be used for any other purposes related to the CYCLOPES project.		
I wish to participate in the workshop under the conditions set out here and/or in the Information Sheet.		
Place:		
Date:		
Participant's signature:		
Should you have any questions, please call or write to the following contact persons:		
The persons responsible for this workshop:		
Meera Barnett	Home Office	Meera.Barnett@homeoffice.gov.uk
Anand Knox	Home Office	Anand.Knox@homeoffice.gov.uk
The Coordinators of CYCLOPES:		
Rashel Talukder	PPHS	rashel.talukder@ppbw.pl
Klaudia Kaczmarek	PPHS	klaudia.kaczmarek@ppbw.pl