Developing AI tools for law enforcement authorities (LEAs): The journey of the TRACE project

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Abstract

With the rise and spread of ICT-enabled crimes and illicit money flows (IMFs), LEAs and Financial Intelligence Units (FIUs) need innovative investigative tools in the virtual world as well as skills, organisational and regulatory adaptations to counter these threats. The multi-disciplinary TRACE project is developing solutions to identify, track and document IMFs, to pave the way for recovering the proceeds of crime and disrupt IMFs. TRACE aims to develop AI-enabled tools to assist LEAs and FIUs in the investigation and prosecution of money laundering and predicate crimes. The results of research conducted in the first 18 months of the project demonstrate that the majority of LEAs and FIUs in the EU do not make use of new technologies in the investigation and prosecution of these crimes.

From responses to questionnaires and interviews with LEAs, it is evident that traditional methods of investigation are still preferred rather than more advanced technology / AI driven solutions. In addition, from the analysis of a wide range of cases involving money laundering, it is evident that, in the vast majority, AI-related tools are not used by investigation and prosecution authorities. Given the complexities these cases present, the use of AI-related tools would have enhanced investigation and prosecution and would have eased the burden for the relevant authorities. In this paper, we present the preliminary findings of the TRACE project to reveal some of the challenges faced by LEAs in adopting AI-driven investigative tools. We then argue that more research should be done on the design and feasibility of these AI-enabled tools given their implications for various legal principles such as privacy and data protection. 'Ethics and rule of law by design' approach imbedded in the TRACE project is proposed as a robust framework for developing AI tools for LEAs which can followed by other researchers and technology developers.

Keywords:

AI, enforcement, ethical considerations, money laundering

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I.   Introduction

        The expression "Follow the money" has become a widely recognised maxim in popular culture, often invoked in the context of investigations aimed at uncovering financial malfeasance.[1] As Europol states: "To effectively disrupt and deter criminals involved in serious and organised crime, law enforcement authorities need to follow the money trail as a regular part of their criminal investigation with the objective of seizing criminal profits".[2] One area in which this phrase is particularly applicable is in the investigation of money laundering, which involves disguising the proceeds of criminal activity to make them appear legitimate.

        The TRACE project is an initiative which aims to equip law enforcement authorities (LEAs) with the tools and resources necessary to effectively identify and disrupt illicit money flows (IMFs).[3] This can involve, among other things, the analysis of financial data, the identification of suspicious activity patterns, and collaboration with other agencies to share information. By following the money trail, LEAs can seize criminal profits and bring offenders to justice.[4]

        The European Union (EU) and its Member States continue to face an array of transnational and cross-sectorial crimes such as money laundering, cyberattacks or fraud perpetrated with the use of cryptocurrencies.[5] To address these phenomena, several institutions, such as Eurojust, Europol and more recently, the European Public Prosecutor Office (EPPO), have been established. In addition, the EU has adopted new rules in the area of financial crimes, such as the recent public consultation on a Directive on corruption.[6] While the EU is making moves towards a more efficient legal and policy framework on the need to tackle financial crime, the development of new technologies has opened up new opportunities for criminals to exploit such as the use of crypto-currencies and fast internet connections.[7]

        To combat financial crime, it is necessary to be able to target the financial flows related to illegal activities and groups. Such protocols employ a risk-based approach to identify individuals, companies, or transactions that require closer scrutiny. Information from public or private sources is used on a case-by-case approach to establish evidence for further action. Nevertheless, integrating these individual cases into a broader context poses challenges due to insufficient cooperation between

implicated authorities and/or different legal rules on cross border cases. Consolidating and understanding these illicit money flows is essential to overcome these limitations which the TRACE project aims to deliver.

The TRACE project aims to address these issues by delivering a modular open-source framework for money-laundering investigations which can be tailored to meet LEAs needs. It will enable investigators to scrape data in any given language, analyse it and visualise the results. The solutions developed aim to identify, track and document illicit money flows, pave the way for recovering the proceeds of crime and disrupt the IMFs. The project is led by Coventry University and has the following partners: Trilateral Research (TRI), Austrian Institute of Technology (AIT), Basque Police, Nova Law School, Aston University, Tax Justice Network, CIN, Proflow, Privanova, the Bavarian Police, VICESSE, Czech Police, KYCP, the Estonia Tax and Customs Board, SYSTRAN, and Expert.AI.[8] The partners come from academia, policy, and law enforcement background combining expertise in law, technology and social sciences. The multi-disciplinarily consortium of the TRACE project combines expertise in law, technology, and social sciences from academia, policy, and law enforcement backgrounds.

This working paper presents the results of the TRACE project after its one and a half years of work. It begins by presenting the results of the analysis conducted on court cases, questionnaires, and interviews with relevant LEAs and FIUs. The paper then argues that further research is needed in this field in order to design legal and ethical AI tools that authorities will be able to use in their investigations. 'Ethics and rule of law by design' approach imbedded in the TRACE project is proposed as a robust framework for developing AI tools for LEAs which can followed by other researchers and technology developers.

A. Preliminary results of the use of AI by relevant authorities and the issues they face
i. Gaps and good practices in cross-border investigations

One of tasks of the TRACE project was to analyse and compare at least six cross-border investigations and prosecutions across Europe in order to identify gaps and good practices.[9] Under this task, the research has been conducted through case studies for the understanding and appreciation of good practices and inadequacies in law enforcement and innovative technologies. Legal rules are tied in complex networks of cross-references, linking national and trans-national legal provisions, which govern the identification, prosecution and sanctioning of organised crimes (OCs).[10] Examination of

these legal provisions ('law in the books' or doctrinal legal research) may reveal regulatory gaps, contradictions or ill-defined concepts.[11]

Case studies shift the focus from 'law in the books' to 'law in action' revealing how the law operates in practice. Case studies are designed to analyse how LEAs utilise their tools and powers and grapple with constraints of time, large amount of information and communication and limited resources. One of the aims of TRACE is to demonstrate and better understand how crime schemes / use cases are dealt with at ground level. Analysing practical problems faced by LEAs can reveal deficits of law enforcement that escape doctrinal analysis. Solutions for these deficits can start on both ends: changing the law and/or improving coordination and capabilities for enforcing the law and/or bringing both into a better alignment. This approach is socio-legal methodology ('law in action'), which was used in demonstrating how the law works in practice.

In order to conduct the case studies, TRACE used certain criteria in order to select the cases to be analysed for this task (presence of illicit money flows, significant damage, decided by courts with accessible information, cross-border dimension, wide variety of actors involved, information about asset recovery, public and media attention). The TRACE use cases are the following: financing of terrorism, web forensics for tackling terrorism investigation, analysis of property market transaction with use of crypto-currencies, cyber-extortion, money laundering with stolen art and antiquities and online gambling for money laundering. The selection of the court cases was made in accordance with the aforementioned criteria.

One of the first obstacles faced in the search of suitable cases were the problematic nature of legal databases in certain Member States. While research is needed in order to ameliorate our understanding of crime, several Member States are not able to publish in a coherent way their court decisions. In addition, each case revealed that even when there is opportunity to engage with policy, which can then be translated into legal and policy reform, the authorities did not do that. Once the court cases were identified and our analysis was done, the following gaps and good practices were identified.

One of the good practices identified is that international cooperation is used and is working in cross-border cases. Almost of the cases analysed for this task had the involvement of one or more authorities, inside or outside the EU, which was a significant aid to the investigation and prosecution of the case at hand. Inter-agency cooperation was used in all the cases analysed and this demonstrates the importance of a continuous international cooperation in order to solve complex cases. On the other hand, there was a lack of involvement of EU agencies such as Europol in the investigations. From the

publicly available information we had, almost no one of the cases had relevant EU agencies involved in the investigation. Due to the cross-border characteristics of the cases analysed, it would have been desirable to see Europol and/or Eurojust being involved due to their expertise, investigative tools and techniques which would have been an important aid.

Another gap was the fact that, in all these cases, whistleblowers were missing.[12] While it is understood that employees and other implicated persons knew or suspected illicit activities, no one reported internally or external to the relevant authorities. This assertion leaves room to question the present legislation and culture on whistleblowing. Whistleblowers are important sources of information but their fear to come forward has negative consequences for investigation and prosecution.[13] The information that whistleblowers can provide are essential for investigators and they are necessary in order to develop AI tools and solution. To that end, the cases demonstrated that journalists and their work should be valued more. In some of the cases, journalists have published about crimes being committed and this fact triggered investigations. Both whistleblowers and journalists are important sources of information and should be heard.

Another issue from the analysis of these cases was the asset recovery.[14] In the cases where asset recovery occurred, this was quite limited and not enough to compensate victims. In most of the cases, the assets could not be located and/or were transferred to other jurisdictions using complex corporate structures. These complex corporate structures were an obstacle for judges as well. In one of the cases, the complexity of the case seems to have hindered the investigation and prosecution. AI tools, as developed by the TRACE project, would have the potential to solve the issue of complexity by visualising the elements of a case and allow the investigators and judges to work in a coherent way.

ii. Information sharing practices

One of the tasks of the TRACE project was to analyse and compare at least 14 cross border investigations and prosecutions involving illicit financial flows (IFFs) across Europe to identify gaps and good practices. The cases should involve Suspicious Transaction Reports (STRs)/ Suspicious Activity Reports (SARs), IFFs, predicate crimes and money laundering. The analysis of the cases has produced interesting results on the significance of STRs/SARs and provided gaps and good practices. Of particular interest are analytical elements that relate to the following: value of STRs/SARs, involvement of new technologies, cross-border cooperation, involvement of IFFs, complex structures, successful investigation/prosecution, and missed opportunities.

One of the basic obstacles of this task was the access to STRs/SARs. The details and quality of STR/SAR elements are not usually disclosed in the court judgments or for research purposes. In the majority of the cases, the elements of the STR/SARs were not detailed in the court decision with only laconic elements being provided (such as "An STR was submitted…"). While it is a missed opportunity for the current project, and LEAs that could have been helped with detailed and quality STRs/SARs to investigate better, it is acknowledged that the secrecy with STR/SAR is there to safeguard the intelligence and investigation efficiency from criminals as public records can be read by both sides.

In most of the cases, the complex corporate structures along with the implication of several individuals and transactions hindered the investigation and prosecution. There was difficulty in identifying all the networks, which may have been solved by the technologies that the TRACE project aims to develop. There is also the need for beneficial ownership registration and verification as that is one of the best tools that can be used to trace the complex chain of ownership. It is unfortunate, though, that the recent judgement of the Court of Justice of the European Union has limited the public access to the beneficial ownership registers.[15]

In all of the cases analysed, cross-border cooperation was present. The need for international cooperation is demonstrated by the fact that IMFs were from several countries inside and outside Europe. Authorities, either in the European or international level, were able to cooperate and gather relevant information. Despite the significance of international cooperation, some cases have demonstrated that better coordination was desirable. In some instances, crimes were committed in one country, but no information was sent to other implicated countries. It was, probably, difficult to trace the implicated countries in terms of banks accounts and/or companies. Thus, even though all cases had cross-border elements, effective cross-border cooperation could have been utilised better than observed in most of the cases. Various LEAs in different countries could make use of cooperation and information exchange agreements to enhance better sharing of information of IFFs.

When evaluating cross-border cooperation, speed, efficiency and effectiveness of cooperation are supposed to be considered.[16] This depends on many different factors such as the availability of sufficient (human) resources at the very moment when the partner LEA approaches the other LEA with a cooperation proposal. If there are enough resources at that moment, cooperation could usually be quick and effective. However, if at that time there is a lack of resources, cooperation does not work or is not at a sufficient level.

New mechanisms for international information channels or technical tools will also help only if there are enough human resources to manage them. It is, however, important to take into account the dynamics, priorities, policies and strategies of different jurisdictions in relation to resource allocation for money laundering and cooperation when planning cooperation in the investigation of money laundering crimes and crimes related to IFFs.[17] For instance, it can be problematic to get cooperation from such a country, through which only money flows or other related activities take place, which in itself may not be crimes in that country but contribute to predicate crime or money laundering. It is even more difficult to cooperate with a country that does not want to cooperate. If the predicate crime of money laundering takes place in this country or other important evidence (such as bank accounts, companies and/or persons related to the crime, etc.) of money laundering is located in such a country, then proving both predicate crimes and money laundering tends to be insurmountable difficulties.

Eurojust's casework shows that in some countries, although theoretically the precise identification of the predicate offence to prosecute ML is not required, and the fact that the money derives from criminal activities should suffice, supreme courts have nevertheless set high standards for prosecutors to demonstrate the criminal origin of the money.[18] In practice, prosecutors have to be able to identify the predicate offence as well. They also face a lack of clarity as to the standard of proof that is required to demonstrate that the money is of criminal origin. This has an impact on international cooperation, as prosecutors from these countries are more reluctant to start ML investigations.

EU relevant authorities were not involved in any of the cases from the information gathered – with the exception of one case. Due to the cross-border characteristics of the cases, it is desirable that Europol with its expertise and investigative tools and techniques should have been called in if respective national laws permitted that.[19] The recent report by Eurojust has, for instance, provided many instances where the Europol's support to national authorities was vital to the success of investigations and prosecutions of individuals involved in money laundering.[20]

From the court decisions analysed, new technologies such as AI were not seen to be used. Information about methods of gathering evidence, the technologies used, and cooperation are usually only found in court decisions where there are disputes about the collection of evidence. The use of specialised software in the investigation process is hardly described or even mentioned in court records. However, outside the court, investigators apply new technologies in investigating IFFs. One of our

partners confirmed that, in the jurisdiction, there is use of new technologies such as data visualisation and AI technology, but this is not described in the court judgment. As a result, the use of new technologies, from our understanding, is dependent on the country and if this country has developed and/or bought relevant AI driven investigatory tools. Here lies another point worth commenting on. The development of AI tools and/or buying these tools is an expensive task which, in our view, some Member States cannot afford and/or are not willing to do. And even if these AI tools are developed and/or bought, specialised personnel should handle them and all the existing personnel should be trained to be able to use them.

The expansion of new technologies and the possibilities they often come with a cost.[21] The design and development of these AI tools is an expensive task where the public treasure should be able to spend money to help authorities better investigate and prosecute. In addition, further research is needed on the intersection of AI tools and the law. TRACE is a fine example of a consortium where legal, social, and technological partners work together to develop AI tools which will be useful for investigators. Both the EU and the Member States should take the decision to spend more research money on these issues and develop EU AI tools which will comply with legal and ethical requirements.

Furthermore, our partner VICESSE has conducted an empirical analysis via the use of questionnaire sent to several relevant participants across the EU and in the United States (US) where one of the questions was about the use of new technologies in their investigations. While the use of forensic investigation software was satisfactory (almost half of the participants are using it), the use of AI based/supported software was rare or almost inexistent. This supports our argument that more research is needed in the field of developing AI tools and then this will give a better training to relevant authorities.[22]

B. Ethics and legal rules for the design of AI tools

AI tools can greatly assist investigators in analysing large amounts of data quickly and accurately, allowing them to identify patterns and insights that could be difficult or impossible to discern manually.[23] While the benefits of AI are significant, there are potential downsides of using AI tools in investigations. One potential downside is the risk of bias or error, as algorithms may be trained on biased data or may make incorrect assumptions based on incomplete information.[24] Another issue that should be addressed is the need to protect data and privacy and to ensure data security, particularly

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when analysing sensitive data such as criminal data. These legal and ethical concerns are addressed by the TRACE project.

The AI tools created by the TRACE project to assist LEAs for their investigations should come with trust that is built on the rule of law, transparency and ethical approaches. The TRACE project has a dedicated Work Package (WP8) on the ethical, legal and social impact of the AI tools developed by the project.[25] Under WP8, the project addresses the data protection, legal, social and ethical issues raised by the development of the TRACE technologies. Its objectives are to respond to the ethics requirements of the European Commission, to conduct ethical, social, legal and human rights impact assessments of the TRACE technologies and to develop practical solutions to the data protection, ethical, social and legal issues raised by the TRACE technologies.

One of the uniqueness elements of this work is that scholars with legal, social and ethical background are working closely with technological partners in an open dialogue so as to understand all the relevant issues raised by AI tools and provide solutions. This collaborative style of research is much needed and should be encouraged for the development of AI tools. Legal, ethical and social scientists should work together with technological experts in order to provide AI tools which will be functional and comply with the law. There is a need for more research in this area and the model developed by the TRACE project can be a reference to the future development of AI tools.

It is known that there is no relevant legislation on AI. The proposed EU AI Act is a text of reference and closely monitored by the TRACE project to ensure compliance of its AI tools with these proposed rules.[26] On the ethical side, the TRACE project has an Ethics Advisory Board which closely monitors the development of its AI tools and discuss relevant ethical concerns and the way to address them. In addition, the TRACE project is developing ethical recommendations to address relevant issues under the project. On the legal side, apart from closely monitoring all the developments around the proposed EU AI Act, the TRACE project follows closely other legal rules which are related to the project such as the Law Enforcement Directive (Directive 2016/680/EU) and the EU e-evidence Package.[27]

Concluding remarks

The aim of this working paper was to present the TRACE project and some of its preliminary results after one year and a half of work. The findings of TRACE are that new technologies are

necessary for the investigation and prosecution of money laundering and related crimes. The findings from our work for the current situation are not satisfactory as most of the cases analysed did not involve AI tools and, in the empirical work conducted, most of the respondents said that they do not have any AI tools to assist them. The TRACE project aims to develop AI tools that will be able to assist authorities and comply with ethical, legal and social standards.

Finally, there is another point worth highlighting again in the concluding remarks, the need for more research on these matters. The TRACE project is a good example of interdisciplinary work which is desirable for the development of AI tools. As the technological market evolves fast and other countries are taking the lead, such as the US, the EU needs to invest more funds and to enable interdisciplinary work on AI. In addition, it is urgent to adopt clear rules on AI which will allow the development of AI tools in a clear and coherent manner.

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