

IMPROVEMENT OF FORENSIC SCIENCE AND JUDICIAL EXPERTISE SYSTEM IN UKRAINE



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TABLE OF CONTENTS

	EXECUTIVE SUMMARY	4
	RECOMMENDATIONS	6
I.	FORENSIC SCIENCE AND JUDICIAL EXPERTISE AUTHORITY	9
II.	PUBLICLY FUNDED FORENSIC SCIENCE INSTITUTES	12
III.	PRIVATE JUDICIAL EXPERTS – INDIVIDUAL PRACTITIONERS	14
IV.	ENHANCING ACCESS TO FORENSIC SCIENCE AND JUDICIAL EXPERTISE	17
V.	RAISING QUALITY OF FORENSIC SCIENCE AND JUDICIAL EXPERTISE	19
VI.	VALIDATION OF FORENSIC SCIENCE METHODOLOGIES & TECHNOLOGIES	22
VII.	ROLE OF UNIVERSITIES IN FORENSIC SCIENCE AND JUDICIAL EXPERTISE SYSTEM	24
VIII.	SCIENTIFIC SUPPORT TO CRIMINAL INVESTIGATIONS	26
IX.	FORENSIC DATABASES	29
	<u>ANNEX</u>	
	LIST OF INTERVIEWED INSTITUTIONS	32

EXECUTIVE SUMMARY

The recommendations and the entire study were developed through the analysis of the published sources (desk research), interviews and questionnaires collected from key stakeholders (field research) and the knowledge and professional experience of the author.

The study covers an assessment of the system of forensic science and judicial expertise existing in Ukraine against European and international standards and best practices¹. It does not, however, encompass forensic medicine and psychiatry as well as crime scene investigation, as those areas are not part of the justice system but entirely belong to the other branches of public administration (respectively: healthcare and internal security).

As a result, 25 recommendations to improve the forensic science and judicial expertise performance that should be considered within the framework of comprehensive reforms of the justice system were elaborated. However, it should be kept in mind that these recommendations are strategic ones and, once accepted, they should be supplemented by a more detailed diagnosis and elaboration of such solutions and measures suitable for effective and successful implementation. Such detailed elaboration was impossible within the limited time frame of the project.

During the study, a series of meetings were planned and held with the main stakeholders in the area of forensic science and judicial expertise in Ukraine. There were mostly institutions but also informal groupings and individual persons. To obtain relevant information, after initial discussions and interviews during the meetings, detailed questionnaires were sent to most of them, some forwarded the questionnaires further to other interested ones. Thirteen completed questionnaires were received back. All the strategic suggestions by the interviewed bodies were subject to thorough analysis and have been included or reflected in the recommendations. There were, however, some remarks of a very detailed and technical nature (such as introducing particular disciplines or equipping with new tools). Although important as they are, they were not included in the report as they need to be further explored to be synchronized with the other needs in that respect. For obvious reasons, it was impossible in the frame of this study, but the author recommends starting another project with a different methodology to fully analyze the technical capacity needs in the system and propose comprehensive solutions in this area.

Initial Note

There is no uniform and consistent definition of forensic science or judicial expertise across countries and legal systems.

In this study,

- **Forensic Science** is understood as the principal activity mainly of legal entities specialized in scientific disciplines other than medicine and used as scientific support mostly in criminal cases;

¹ References to the current Ukrainian factual state and legislation and the international standards and best practices are put in the footnotes.

- **Judicial Expertise** is understood as an activity of private individuals appointed by a court or other authority regardless of the type of judicial proceeding, who perform it in addition to their routine professional activity but based on the knowledge and experience gathered thereto.

The above two categories constitute a system of forensic science and judicial expertise².

An additional breakdown used in this study divides the system as follows:

- **Public Sector**, which consists of publicly funded forensic science providers, regardless of their form of operation and organizational subordination;
- **Private Sector**, which consists of private experts – individual practitioners, but it may also include private legal entities.

Other terms commonly used in this study:

- **Forensic Science Provider** is understood as any organisation, regardless of its ownership, that carries out forensic laboratory activities at the request of competent law enforcement or judicial authorities³.
- **Forensic Science Expert** (forensic scientist, forensic examiner) is understood as a person who deals with forensic science mainly as an employee of a forensic science provider but can also act as a private expert – an individual practitioner.

² Cf. Specific study of the CEPEJ on the Legal Professions: Judicial Experts – Contribution of the EEEI (European Expert and Expertise Institute), CEPEJ-GT-EVAL(2023)1rev1, 8 September 2023, 2. Judicial Experts – a Population in Search of its Identity: Judicial experts are those experts who are certified or accredited by a court or other authority to put their experience at the disposal of the judicial system. Expert activity is most often carried out by an individual as an addition to a professional activity, but it can be carried out as a principal activity in certain areas such as DNA research and is therefore very often carried out by legal entities, <https://rm.coe.int/rapport-experts-eeei-en-july-2023-/1680acb058>, accessed 20 August 2024.

³ Cf. Council Framework Decision 2009/905/JHA of 30 November 2009 on Accreditation of forensic service providers carrying out laboratory activities, Art 3 (c) ‘forensic service provider’ means any organisation, public or private, that carries out forensic laboratory activities at the request of competent law enforcement or judicial authorities.

RECOMMENDATIONS

The table below contains general recommendations proposed to improve the functioning of the forensic science and judicial expertise system in Ukraine. They are linked to the relevant following chapters of this study, which describe the initial diagnosis of the problem to be solved, as well as more detailed suggestions based on best practices from both the European Union as well as highly developed democratic countries (UK, USA) with an adversarial criminal procedure similarly to Ukraine. The table also contains remarks on the importance and urgency of the recommendations, scaled in high, medium and low.

Table 1. List of recommendations

No.	Recommendation	Importance	Urgency	Relevant chapter
1.	to establish a non-ministerial Forensic Science and Judicial Expertise Authority to prepare the reform of the forensic science and judicial expertise system in Ukraine, administer the reform's practical implementation and supervise the functioning of the system afterwards	High	High	I
2.	to restart the debate with all interested stakeholders on the reform of the Law of Ukraine on Judicial Expertise	High	High	I
3.	to develop a strategic Action Plan containing the vision and strategic priorities for the forensic science and judicial expertise system for the next 5 years	Medium	Low	I
4.	to exclude from the relevant ministries: The State Scientific Research Forensic Center of the Ministry of Internal Affairs, Kyiv Research Institute of Forensic Expertise of the Ministry of Justice, National Scientific Center of the Hon. Prof. M. S. Bokarius Institute of Forensic Science of the Ministry of Justice, to organize them as independent Institutes of Forensic Science constituting the core of the state forensic science service in Ukraine, and to entrust scientific and executive supervision over them to the Forensic Science and Judicial Expertise Authority	Medium	Medium	II
5.	to perform detailed scrutiny and analysis by the Forensic Science and Judicial Expertise Authority on which of the remaining publicly funded forensic science providers currently still in operation should be fully or to what extent integrated into one of the three public Forensic Science Institutes (see: recommendation 4) divided between them or dissolved	Medium	Low	II
6.	to encourage and assist the private experts' community in creating the professional Association of Forensic Experts that would unite individual practitioners, their formal organizations and informal groups, represent their interests and cooperate with the Forensic Science and Judicial Expertise Authority to increase the number of practicing experts and assure the quality of their services	High	High	III
7.	to introduce a transparent and uniform model of disciplinary and civil liability for private experts and grant them protection measures equal to those available to experts from public forensic science institutes	High	Medium	III

No.	Recommendation	Importance	Urgency	Relevant chapter
8.	to issue clear guidelines by the Supreme Court of Ukraine, the Ministry of Justice or another competent body, confirming that in court proceedings there should be no primacy of experts from the public forensic science sector over private experts, and the only criterion for such evaluations should be the quality of the expert opinion presented to the court	Medium	Medium	III
9.	to eliminate of legal provisions leading to monopolization of certain types of forensic examinations by the public forensic science sector	High	Low	IV
10.	to create conditions enabling the establishment of private forensic science providers and their efficient functioning in the forensic science and judicial expertise system	High	Medium	IV
11.	to introduce regulations enabling the appointment of foreign forensic science providers or private practitioners as independent judicial experts in legal proceedings in Ukraine	High	High	IV
12.	to adopt a strategy indicating ISO17025 accreditation as a goal to be achieved by all forensic science providers in Ukraine	Medium	Low	V
13.	to introduce a coherent and transparent system for certifying forensic science and judicial experts	High	High	V
14.	to take steps in creating Ukrainian proficiency testing programs and then regularly conduct them among forensic science and judicial experts by independent proficiency testing providers under the provisions of ISO 17043	Medium	Medium	V
15.	to promote standardization in forensic science among Ukrainian stakeholders to make them more involved in the work of Technical Committee 192 Forensic Sciences of the Ukrainian Research and Training Center for Standardization, Certification and Quality Issues as well as CEN/TC419 Forensic Science Processes and ISO/TC272 Forensic Science	Medium	Medium	V
16.	to introduce performing foundational validation of the methodologies and technologies for forensic science by the Forensic Science and Judicial Authority whilst the validity as applied shall be carried out by each forensic science provider	Medium	Medium	VI
17.	to review the methods registered centrally by the Ministry of Justice, adjust them – if possible and necessary – to the European best practice manuals and guidelines and promote them by the Forensic Science and Judicial Expertise Authority for their wide use by the forensic science providers in Ukraine	Medium	Medium	VI
18.	to develop a uniform and coherent model for synchronized equipping forensic science providers in Ukraine with modern yet currently permissible technologies to create the most effective and efficient functioning of the forensic science and judicial expertise system in the years to come	High	High	VI
19.	to prepare by the Forensic Science and Judicial Expertise Authority a policy document on the implementation of emerging novelty technologies that could be used for forensic and judicial purposes	High	Medium	VI
20.	to prepare by the Forensic Science and Judicial Expertise Authority together with the National Academy of Legal Science and other such bodies and organisations as they consider appropriate, the scientific research strategy for forensic science and judicial expertise addressed to the Minister of Education and Science of Ukraine, to launch the research program for forensic science and judicial expertise practitioners and academic scientists, considering the current EU priorities and tasks, as well as the domestic needs	Medium	Medium	VII

No.	Recommendation	Importance	Urgency	Relevant chapter
21.	to abolish the monopoly of the Ministry of Justice on conducting training for judicial experts	High	Medium	VII
22.	to produce and implement by the Forensic Science and Judicial Expertise Authority the accreditation procedure for the training institutions including clear and transparent assessment rules and maintain and make publicly available their official register	High	Medium	VII
23.	to start a debate by the Forensic Science and Judicial Expertise Authority with all interested parties: forensic science service providers, end-users, academic researchers and non-governmental organisations representing the general public (in the context of security vs. privacy) on the actual role of forensic science services in Ukrainian investigative agencies and the necessity to limit it to pre-trial measures	High	Low	VIII
24.	to develop a list of forensic science disciplines of an investigative nature to be used by law enforcement agencies and a roadmap for transferring the forensic disciplines to be used for court purposes to the existing public forensic science institutes	High	Low	VIII
25.	to elaborate a joint report by the Forensic Science and Judicial Expertise Authority, the Ministry of Interior, the National Police and any other authority they consider appropriate, on the challenges and the needs and roadmap for Ukraine to join the EU system on the automated search and exchange of data for police cooperation	High	High	IX

I. FORENSIC SCIENCE AND JUDICIAL EXPERTISE AUTHORITY



The Ukrainian forensic science and judicial expertise system is currently highly fragmented and does not form a coherent set-up. Dozens of publicly funded forensic service providers are located throughout Ukraine, supervised by different ministries, and their competencies and the geographical regions they operate overlap each other. Just within the Ministry of Justice alone, 7 different forensic science providers compete with each other. The system also includes a very weak private judicial expert sector, with 800-1000 registered experts (while the number of practicing ones is estimated at 400-500). To complete the picture, it is worth recalling that Ukraine has an adversarial criminal procedure model, which provides parties with equal access to forensic experts, both private practitioners and public institutions, even though the original task of the latter is to provide support in the criminal investigations conducted by the police or prosecutors. Such construction and way of operations make the whole system inefficient, non-transparent and prone to conflicts of interest. Unfortunately, the only remedy noticed so far is a tendency to establish other publicly funded forensic science providers, which doesn't seem well-grounded yet justified.

The importance of forensic science and judicial expertise for an effective justice system is growing in the European Union. Its perception as the source of objective evidence in criminal investigations, prosecutions and court trials, so guaranteeing the human right to a fair trial, is increasing too. Therefore, this matter should be given appropriate meaning in Ukraine as well. As for who should oversee important reform in this area, there are some arguments that it could be either the Minister of Justice or the

Minister of Internal Affairs. This is because the original purpose of forensic science and judicial expertise is primarily to provide evidence for use in investigations, prosecutions, and court trials, so those who regulate and evaluate the functioning of the whole system need to have political authority. An important counterargument is that for forensic science and judicial expertise system to truly gain importance, get transparency, raise quality, increase efficiency, and contribute to public confidence in the administration of justice, its reform and subsequent implementation must be carried out without any possible conflict of interest and conflict between the Ministries concerned. Therefore, **it is recommended to establish a non-ministerial Forensic Science and Judicial Expertise Authority to prepare the reform of the forensic science and judicial expertise system in Ukraine, administer the reform's practical implementation and supervise the functioning of the system afterwards.**

Organizationally and functionally, the Forensic Science and Judicial Expertise Authority shall operate independently from any Ministry whilst its Top Management should report directly to the Parliament (Verkhovna Rada). Since the Authority should have a regulatory and inspection function, its direct political oversight would be inappropriate and unnecessary. The Top Management should be selected in an open procedure and with transparent criteria for candidates, appointed for a limited period (terms of office should not be linked to the political elections). Such an independent status should protect it from political interference.

As for the internal organization of work⁴, the Management of the Authority shall be supported by the Advisory Council, which consists of delegated stakeholders: representatives of publicly funded forensic science institutes, private forensic experts, private forensic science providers (potentially established in the future, see more in Chapter IV), representatives of the academic world and the legal professionals (judges, prosecutors, defence lawyers, barristers). In that way, the Authority shall be able to represent the interests of the forensic science community in front of the Verkhovna Rada and the government/ministries and reflect suggestions from the end-users. As for the executive model, the Authority shall perform its tasks mostly through various executive committees that consist of competent representatives delegated by the relevant stakeholders, while the Authority's function would mostly be to organizationally and logistically support their work.

The first role of the Authority would be to prepare and develop reforms in the forensic science and judicial expertise system in Ukraine, including the preparation of drafts of legal acts. Therefore, **it is recommended to restart the debate with all interested stakeholders on the reform of the Law of Ukraine on Judicial Expertise.** To ease the process, it can be done with the use of one of the latest drafts in that respect⁵. After the reform, the Authority's function would be to supervise the judicial experts – individual practitioners as well as the forensic science providers both public and private (including those currently operating in various ministries or state services, private forensic science providers potentially established in the future). As part of this function, the Authority should conduct an analysis of statistics and trends and issue binding opinions on the establishment of new publicly funded forensic institutes, as well as the merger or liquidation of existing ones. To this end, **it is recommended to develop a strategic action plan containing the vision and priorities for the forensic science and judicial expertise system for the next 5 years.** It should consolidate the forensic science providers and judicial experts around the implementation of common priorities to ensure the effective functioning and development of the system. It should also take into account the suggestions of end-users and the best international experience.

The constant executive task of the Authority would be to certify forensic and judicial experts and serve as their registrar (see more in Chapter V). To maintain and raise quality in the forensic science and judicial expertise system, the Authority will prepare and introduce a mechanism for continuous evaluation of the work of forensic and judicial experts. The Authority will also prepare assumptions for a modern system of forensic science and judicial experts' remuneration consistent with market conditions⁶.

4 Arranging its internal structure, concept of operations and work schemes, the Authority can make use of the solutions proposed in the United States with A Bill to Establish an Office of Forensic Science and a Forensic Science Board, to Strengthen and Promote Confidence in the Criminal Justice System by Ensuring Consistency and Scientific Validity in Forensic Testing, and for Other Purposes, <https://www.cacnews.org/policies/Leahy%20Bill%20revised.pdf>, accessed 24 August 2024. To implement integrated governance in the forensic science sector, the bill proposed the creation of a national forensic science agency but put the new office within the Department of Justice. Although the bill itself and the other solutions proposed in it were well perceived, organizational dependence of the Office of Forensic Science on the Justice Administration was highly criticized, and it was finally the main reason standing behind not entering the whole bill into force (see more: <https://www.propublica.org/article/little-progress-in-congress-on-push-for-forensic-standards>, accessed 24 August 2024).

5 E.g. draft Law on Forensic Expert Activity introduced to the Verkhovna Rada of Ukraine in November 2021 (Reg. no. 6284/2021).

6 Elaborating the Authority can make use of the regularly updated EuroExperts reports Remuneration of Experts in Europe - Comparative Study of Remuneration Systems in Europe, https://euroexpert.org/wp-content/uploads/2024/07/Remuneration-Study_klick_072024.pdf, accessed 28 August 2024.

Apart from the above, the Authority would perform the role of a forensic science and judicial expertise regulator⁷, developing regulatory acts and enforcing their application in practice. At the executive level, the Authority would develop regulatory provisions related to the performance in open market conditions by private forensic science providers, private individual experts, as well as commercial service of public forensic science institutes. On the scientific level, it would approve the nomenclature of forensic and judicial expertise disciplines, update a list of those validated for judicial purposes, perform foundational validations of the methodologies and technologies, and indicate the methods applicable for such validations on the laboratory level (see more in Chapter VI). The Authority will also replace the Coordination Council on the Problems of Judicial Expertise established at the Ministry of Justice of Ukraine to consider the most important inter-departmental issues of the development of forensic science and judicial expertise⁸.

To strengthen and develop the system of forensic science and judicial expertise system, the Authority will promote and support the launching of research programs by the Ministry of Education and Science of Ukraine, enabling financing the projects related to improving the scientific basis in forensic science, but also the implementation of R&D&I. The Authority shall also promote EU Programs such as Horizon Europe⁹ (also: the Internal Security Fund or Justice Grants programs and others, if appropriate), encouraging Ukrainian partners to build or participate in joint European scientific consortia (see more in Chapter VII).

In order to synchronize standardization measures in the forensic science and judicial expertise system, the Authority shall formally cooperate with the Technical Committee 192 Forensic Sciences of the Ukrainian Scientific Research and Training Center for Standardization, Certification and Quality Problems and promote wider participation of the Ukrainian stakeholders in standardization committees (see more in Chapter V).

Worth considering is establishing by the Authority a permanent Commission for Errors in Forensic Science and Judicial Expertise. Its tasks would be to analyze the causes of errors, their impact on the justice system, ways to prevent them, and possibilities of correcting actions to avoid miscarriages of justice in the future. Forensic evidence errors often result from misstatements in forensic science reports incorrect evidence classification or individualization, and errors in testimony. These errors are not always due to the scientists performing the examinations; more often, they are related to systemic issues such as inadequate training, miscommunication of results, or organizational deficiencies within forensic science organizations¹⁰. Therefore, the Commission for Errors in Forensic Science and Judicial Expertise can be a natural expert-partner for the Criminal Case Review Commission¹¹ (if such a body is proposed during the reform of the judicial system in Ukraine) or any other implemented model of criminal cases review¹².

Other emerging problems would be solved by executive committees appointed ad hoc.

7 Such a regulator is present in the UK forensic science system, <https://www.gov.uk/government/organisations/forensic-science-regulator>, accessed 28 August 2024.

8 The Law of Ukraine on Judicial Expertise, Art. 8, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024.

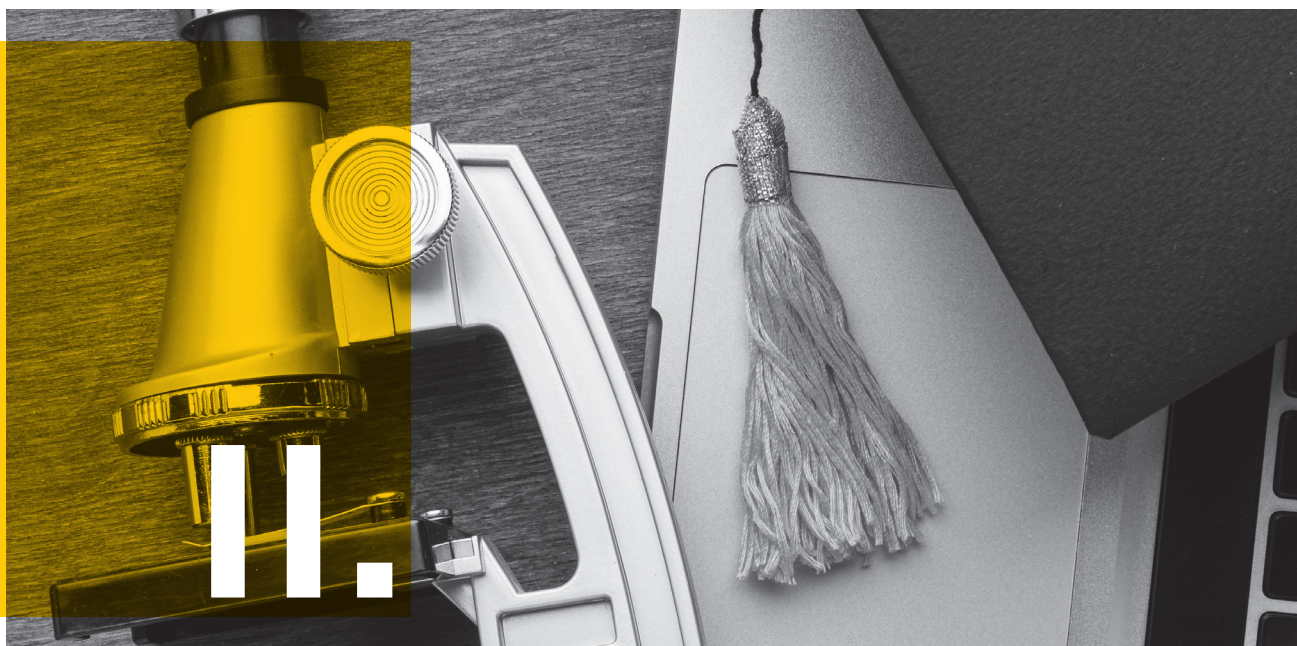
9 For example <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl3-2024-fct-01-02>, accessed 28 August 2024.

10 Source: <https://nij.ojp.gov/topics/articles/impact-false-or-misleading-forensic-evidence-wrongful-convictions>, accessed 28 August 2024.

11 Such commissions exist in many countries, e.g. Norway, <https://www.gjenopptakelse.no/en/>, England and Wales <https://ccrc.gov.uk>, Scotland, <https://www.sccrc.co.uk/about-us>, all accessed 28 August 2024.

12 In some countries there is no institutional but functional solution to review criminal cases, <https://www.bjutijdschriften.nl/tijdschrift/ELR/2020/4/ELR-D-21-00007>, accessed 28 August 2024.

II. PUBLICLY FUNDED FORENSIC SCIENCE INSTITUTES



According to Law of Ukraine¹³ the public forensic science sector includes research institutions for forensic examinations of the Ministry of Justice, expert services of the Ministry of Internal Affairs, the Ministry of Defence, the Security Service and the State Border Guard Service. It should be noted that among them three ministry-dependent, scientifically and technically advanced, and internationally recognized¹⁴ publicly funded forensic science providers offer a wide range of forensic disciplines, with field offices covering the whole country. They are the State Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine¹⁵, the Kyiv Research Institute of Forensic Expertise of the Ministry of Justice¹⁶, and the National Scientific Center of the Hon. Prof. M.S. Bokarius Institute of Forensic Science of the Ministry of Justice¹⁷. The other forensic science providers that operate under the Ministry of Justice¹⁸ are smaller regarding geographical coverage and the number of specializations. Another type of forensic science provider operates within state services, i.e. the Ukrainian Scientific Research Institute of Special Equipment and Forensic Expertise of the Security Service which is also internationally recognized¹⁹ and the Main Forensic Centre of the State Border Guard Service of Ukraine. There have also been attempts to establish a fully-fledged forensic science service within purely investigative institutions. For example, the police officers from the Criminalistics Unit of the

13 The Law of Ukraine on Judicial Expertise, Art. 7, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024.

14 All are the ENFSI member-institutes, www.enfsi.eu, accessed 28 August 2024.

15 24 regional centres in Vinnytsia, Volyn, Dnipropetrovsk, Donetsk, Zhytomyr, Zakarpattia, Zaporizhia, Ivano-Frankivsk, Kyiv, Kirovohrad, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Kharkiv, Kherson, Khmelnytskyi, Cherkasy, Chernivtsi, Chernihiv, <https://dndekc.mvs.gov.ua/експертна-служба-мвс/ндекц-територіальні-підрозділи/>, accessed 28 August 2024.

16 Branches in Kyiv, Vinnytsia, Zhytomyr, Ivano-Frankivsk, Kropyvnytskyi, Ternopil, Khmelnytskyi, Cherkasy, Chernihiv, <https://kndise.gov.ua/en/category/branches/>, accessed 28 August 2024.

17 Branches in Kyiv, Donetsk, Poltava, Sumy, <https://nncise.org.ua/en/pro-nnc>, accessed 28 August 2024.

18 They are: Dnipropetrovsk Scientific Research Institute of Forensic Examinations, Lviv Scientific Research Institute of Forensic Examinations, Odessa Research Institute of Forensic Examinations, Scientific Research Center for Forensic Expertise in the Sphere of Information Technologies and Intellectual Property and Scientific Research Center of Independent Forensic Examinations.

19 As above.

Main Investigation Department of the National Police of Ukraine, in addition to providing forensic support for criminal investigations, have recently begun to perform forensic examinations for court purposes²⁰. The National Anticorruption Bureau of Ukraine is also making efforts to create its own forensic science service, which would be tasked, among other things, with preparing forensic reports for use by courts. This solution is, however, widely assessed as controversial, as it may lead to breaching legislation²¹, create a danger of bias and violate the independent status of forensic science providers (see more in Chapter VIII).

In the context of future reform, it is worth noting that even organizationally linked to the ministries or state services, forensic science providers only illusively serve the exclusive interest of their parent organizations, which is related to the adversarial model of criminal investigation in Ukraine. Another noteworthy fact is that the Ministry of Justice recently established the Center for Scientific Research of Independent Forensics, intending to eventually give it the status of a forensic science provider fully independent of any ministry or state service, and this model of operation – as the direction of the reform planned by Ministry of Justice – would ultimately apply to all forensic science providers in the country²².

Considering the above, **it is recommended to exclude from the relevant ministries: The State Scientific Research Forensic Center of the Ministry of Internal Affairs, Kyiv Research Institute of Forensic Expertise of the Ministry of Justice, National Scientific Center of the Hon. Prof. M. S. Bokarius Institute of Forensic Science of the Ministry of Justice, to organize them as independent Institutes of Forensic Science constituting the core of the state forensic science service in Ukraine, and to entrust scientific and executive supervision over them to the Forensic Science and Judicial Expertise Authority.**

The three forensic science Institutes, functioning independently from each other and any external influence, shall constitute the core of the state forensic science service in Ukraine. That model would guarantee its proper functioning and further development based on fair scientific competition. Therefore, the role of the Institutes would be not only to provide forensic reports, but also to carry out scientific research, develop new tools and methods, and conduct training activities both for their own purposes as well as for external entities' needs (e.g. for individual experts or employees of private forensic science providers [potentially established in the future], end-users, etc). The existence of such a number of Institutes would reduce the possibility of a monopoly de facto in the system by ensuring that if, in a given case, doubts arise about the methodology used in forensic examinations, the technology employed or any other cause for concern, there would be a practical possibility of recourse to the scientific school represented by another Institute.

Organizationally and functionally the Institutes shall operate separately from the ministries or state services conducting investigations, which will positively affect their political or procedural independence. Therefore, they should be given the independent status of a state-owned enterprise, an executive agency, a state research and development institute, etc. The directors of the particular Institutes should be selected based on the transparent selection criteria in an open competition according to the procedure elaborated by the Forensic Science and Judicial Expertise Authority. After the contract agreement, they should stay in the position for a limited term of office (e.g. 5 years with the possibility to prolong it for another 5 years). The competencies and responsibilities of the directors should cover in particular the organization of work, employment policy, investments, purchases of equipment and materials, conducting forensic research, scientific policy, etc. However, to avoid desynchronization in the functioning of the whole system, the initial scope of work of each Institute, and then the future strategic changes within, should be consulted with the Forensic Science and Judicial Expertise Authority. For the execution of state-related tasks, the directors should have at their disposal a budget guaranteed by the parliament in the Budget Act and the right to execute it fully independently. The Institutes could also remain able to generate profits from commercial activities, but this should be transparently regulated to avoid any conflict of interest. The directors of the Institutes will have the right to delegate their representatives to the Advisory Council within the Forensic Science and Judicial Expertise Authority.

Finally, it is recommended **to perform a detailed scrutiny and analysis on which of the remaining publicly funded forensic science providers currently still in operation should be fully or to what extent integrated into one of the three public Forensic Science Institutes mentioned above, divided between them or dissolved.**

20 As informed by the interviewed representatives of the National Police.

21 According to Art. 4 of the Law of Ukraine on Judicial Expertise one of the guarantees of the independence of the experts is the existence of forensic examination institutions independent from bodies carrying out operational and investigative activities, pre-trial investigation bodies and the court, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024.

22 As informed by the interviewed representatives of the Ministry of Justice.

III. PRIVATE JUDICIAL EXPERTS – INDIVIDUAL PRACTITIONERS



According to the official register by the Ministry of Justice,²³ the total number of judicial experts in Ukraine is 14.146, with 12.226 experts from publicly funded forensic science providers and 1.920 private experts. However, the more realistic number of private experts registered should be decreased to 800-1000. This is because there are many of the experts kept on the list, although their certificates expired. To make the number even more accurate it must be noted that currently in Ukraine only 400-500 take on expert duties and actively cooperate with law enforcement or justice authorities²⁴.

At first glance, the number of private experts (even the official one) seems disproportionately small to the number of experts from public forensic science providers, the actual needs of a country of this size and population and the adversarial model of justice and the other countries²⁵. It looks clear that in such circumstances public forensic science sector will never be able to provide law enforcement, justice authorities, and all interested parties with access to all the necessary scientific disciplines, both in terms of quantity and quality. The latter applies especially to areas related to new social phenomena, fast-changing realities of crime or emerging and unique technologies and niche disciplines. Organizing a new publicly funded forensic science institute from scratch, or even just a new unit in an existing forensic science institute, is always burdened with long-lasting inertia. Additionally, considering the incidental use of some disciplines, implementing them into the daily routine of the public forensic science sector may turn out to be economically unjustified.

²³ <https://rase.minjust.gov.ua/page/1>, accessed 16 September 2024.

²⁴ As informed by the interviewed representatives of the judicial experts' community.

²⁵ Cf. Specific study of the CEPEJ on the Legal Professions: Judicial Experts – Contribution of the EEEI (European Expert and Expertise Institute), CEPEJ-GT-EVAL(2023)1rev1, 8 September 2023, 6. Number of Judicial Experts, <https://rm.coe.int/rapport-experts-eeei-en-july-2023-/1680acb058>, accessed 20 August 2024.

In most EU Member States, this gap is filled by private experts – individual practitioners, with the appropriate knowledge and professional experience they gain from occupational education and daily work. Being ready and interested in fulfilling the function of a judicial expert, they can support the system both quantitatively and qualitatively. However, in conditions of low interest from the best specialists on the market in helping the investigation or justice, the entire system becomes inefficient. More, such an underdeveloped market for private experts leads to the inefficiency of the entire Forensic Science and Judicial Expertise system.

According to private experts²⁶, the reason for such weakness is the current regulations and conditions that make performing the function of judicial experts unattractive for private persons. The system in its current shape does not offer them any incentives, but rather disciplinary measures. In addition, the private expert community does not feel like a partner in discussions on reform with the Ministry of Justice. In turn, it causes hopelessness for change, and as a result, the community is poorly organized, very dispersed, not interested in consolidation, and does not constitute a strong representation for advocacy. Private experts are therefore unable to push through such changes in the system that, instead of constantly increasing disciplinary measures, would increase the attractiveness of the judicial expert function, raise the quality of the experts' work, and finally improve the efficiency of the system.

Taking the above into account, **it is recommended to encourage and assist the private experts' community in creating a professional Association of Judicial Experts²⁷, which would unite individual practitioners, their formal organizations and informal groupings, represent their interests and cooperate with the Forensic Science and Judicial Expertise Authority to increase the number of practicing experts and assure the quality of their services.**

Although the Association would be organized with state support and assistance from the Forensic Science and Judicial Expertise Authority, it would not be part of the public administration. It will however be recognized as a representative of the judicial experts' community. In return, the Association will support the Forensic Science and Judicial Expertise Authority in supervising the associated member-experts in terms of their professional qualifications and competencies, quality of work, ethical behaviour, etc. To this aim, the Association will develop regulatory acts for the member-experts, such as a code of practice, code of ethics, etc. and implement mechanisms for their obligatory use and enforcement. This should be done in consultations with the Forensic Science and Judicial Expertise Authority.

Organizationally and functionally, the Association shall operate independently, as a self-governing type of professional corporation, or in a non-governmental formula as a state association. Elections to the governing bodies should be held among the member-experts, based on the statute and internal procedures and independently of political influence. This would ensure the autonomy and independence of the Association and give it the appropriate status as a partner in discussions with the ministries and parliamentary committees. The Association – as the representative voice of the private experts – will have a right to delegate the representatives to the Advisory Council within the Forensic Science and Judicial Expertise Authority. At the European level, the Association could partner with other national associations of judicial experts, so such international cooperation would benefit the development of Ukraine's judicial expertise sector²⁸.

Ultimately, membership in the Association could be considered mandatory for all registered private experts – individual practitioners. In return, the Association would represent their interests outside the organization but also act internally by organizing conferences and seminars for the member-experts, conducting training to ensure their professional development, etc.

An important issue related to the functioning of the private expert sector is liability²⁹. The currently functioning system is assessed as ineffective and abused inappropriately. The widespread practice used by the parties is an unjustified complaint against the expert, which results in the launch of disciplinary

²⁶ As commented by the interviewed representatives of the judicial experts' community.

²⁷ Arranging its organizational structure, defining membership criteria and preparing bylaws, the Associations can make use of the Association Standard of EuroExpert – the Organisation for European Expert Associations, <https://euroexpert.org/standards/association-standards/>, accessed 21 August 2024.

²⁸ For example, it could make working relations with the members of the EuroExpert – the Organisation for European Expert Associations and over time become its full member, more: <https://euroexpert.org/about-us/>, accessed 21 August 2024.

²⁹ According to the Law of Ukraine on Judicial Expertise, Art. 14, a forensic expert may be brought to disciplinary, administrative, civil law and criminal liability on the grounds and in the manner prescribed by law, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024.

proceedings and, as a result, leads to the invalidation of the experts' report in this way³⁰. Private experts don't have the protection of the parent institutions, so they do not have a comfortable position in front of such accusations. They also do not feel safe to the extent necessary to perform the function of an expert in the justice system. Therefore, **it is recommended to introduce a transparent and uniform model of disciplinary and civil liability for private experts and grant them protection measures equal to those available to experts from public forensic science institutes**. The Association could play an important role in the newly defined liability system by protecting the member-experts from unjustified disciplinary measures, providing legal assistance and support in case of unintentional or inadvertent errors in the experts' reports, etc.

Finally, to strengthen the position of private experts, **it is recommended to issue clear guidelines by the Supreme Court of Ukraine or recommendations, the Ministry of Justice or another competent body, confirming that in court proceedings there should be no primacy of experts from the public forensic science sector over private experts, and the only criterion for such evaluations should be the quality of the expert opinion presented to the court³¹**.

30 As informed by the interviewed representatives of the judicial experts' community.

31 As suggested by the interviewed representatives of the judiciary.

IV. ENHANCING ACCESS TO FORENSIC SCIENCE AND JUDICIAL EXPERTISE



One of the reasons for the inefficiency of the forensic and court expertise system in Ukraine may be the monopoly (*de iure* and *de facto*) of public forensic science providers in examining certain types of material evidence³². It practically means that in quite a large number of disciplines³³, the public forensic science sector has to be self-sufficient. However, this sector is not able to perform the examinations in a reasonable time, which reduces the efficiency of the entire forensic science and judicial expertise system. Therefore, eliminating the state monopoly while supporting the development of the private forensic sector could change the situation. For this purpose, further analyses will be necessary to decide which types of examination and under what conditions could be excluded from the monopoly of the public forensic sector³⁴. Therefore, **it is recommended to eliminate legal provisions leading to the monopolization of certain types of forensic examinations by the public forensic science sector.**

When considering forensic disciplines, it should be noted that they are based both on research that can be carried out in conditions available to private experts, as well as on examinations that require the organization

³² According to the Law of Ukraine on Judicial Expertise, Art. 7, only state-specialized institutions carry out forensic activities related to forensic criminalistic, forensic medical and forensic psychiatric examinations, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024.

³³ According to Clause 1.2.1. of the Instruction on the appointment and conduct of forensic examinations and expert studies, the forensic criminalistic examinations includes: handwriting; linguistic examination of speech; technical examination of documents; examination of weapons and traces and circumstances of their use; trace evidence (except for studies of traces of damage to clothing associated with the simultaneous infliction of bodily harm, which are carried out in the bureau of forensic medical examination); photographic, portrait; video, sound recording; explosive; man-made explosions; materials, substances and products (paints and coatings; polymeric materials; fibrous materials; petroleum products and fuels and lubricants; glass, ceramics; narcotic drugs, psychotropic substances, their analogues and precursors; alcohol-containing mixtures; soils; metals and alloys and products made of them; presence of harmful substances (pesticides) in the environment; substances of chemical production and special chemicals; food products; potent and poisonous substances; explosives, explosion (shot) products; biological, <https://zakon.rada.gov.ua/laws/show/z0705-98#Text>, accessed 28 August 2024.

³⁴ There is no disfavour in the EU to co-exist in the justice systems of public and private forensic laboratories that perform the same type of examinations. The most extreme example is however England and Wales, where, following the UK Government's decision to close the publicly funded Forensic Science Service (GovCo) in 2012, all types of forensic criminalistic examinations are being performed by private forensic service providers.

of a complex research environment and as such are not available to individual practitioners. For example, handwriting examination, compared to explosives tests, differ not only in the specificity of the research objects and related restrictions (e.g. special legal regulations and technical provisions regarding the possession and storage of explosives), the type of tests performed (destructive vs. non-destructive evidence examination), but also the equipment and environment necessary to perform them (indoor microscopic examination vs. macroscopic tests performed on the testing ground in the open air). Therefore, when considering enhancing access to forensic science services, it would be worthwhile to introduce the possibility of functioning within the private forensic science sector the legal entities operating as private forensic science providers, complementary to private experts – individual practitioners. It is obvious, that apart from publicly funded forensic science institutes, only commercial, business-oriented entities may invest in the advanced working environment and highly specialized equipment, which is hard to expect in a system whose private sector consists of individual practitioners only. Such a solution could increase the technical capacity of the entire system and its organizational and executive effectiveness. Also, such private forensic science providers would have a greater opportunity than private experts to engage in international and scientific cooperation³⁵.

An additional advantage of introducing such a possibility in Ukraine is related to the functioning of the adversarial criminal proceedings model and the currently abused malpractice of parties requesting – one after another – the same forensic science institute to issue an opinion³⁶. On the one hand, this creates in such institutes a conflict of interest and danger of cognitive bias. On the other hand, if only publicly funded forensic science institutes can perform some of the examinations, sometimes the parties may simply not have a choice of another institute. Therefore, the existence of several private forensic science providers that would complement public forensic science institutes, as well as the introduction of appropriate regulations³⁷ could effectively prevent this.

Although private forensic science providers, as commercial entities, would operate freely according to the free market principles, they should comply with the regulations issued by the Forensic Science and Judicial Expertise Authority. In return, private forensic science providers should be guaranteed advocacy of their interests through their representatives to the Advisory Council operating within the Forensic Science and Judicial Expertise Authority.

Taking all the above into consideration, **it is recommended to create conditions enabling the establishment of private forensic science providers and their efficient functioning in the forensic science and judicial expertise system.**

Another solution to supplement existing possibilities that could be considered is the introduction of legal regulations aimed at enabling the direct appointment to criminal investigations, prosecutions or court trials of forensic science providers or judicial experts from abroad. The possibility of appointing judicial experts from one Member State to another exists in the EU, where actions are being taken to make it even more widely available³⁸. It is argued that looking for experts abroad is beneficial in cases of factual lack or lack of access to a given judicial expertise in the home country, or cases of international nature per se, or as a way of providing objectivity and impartiality, which most often concerns high-profile cases. Currently, there is no such possibility in Ukraine, and foreign judicial experts can, under certain conditions, be included in the joint experts' commissions³⁹. Introducing such a solution in Ukraine, apart from meeting European trends, would be another way to complement the available capacity of the forensic science and judicial expertise system. It is also directly related to the ongoing conflict with the Russian Federation and could be beneficial to the Ukrainian criminal investigations into war crimes. Considering that these high-profile investigations shall be supported by expert opinions, given the international perception it would be advisable to ensure the objectivity of the investigation, prosecution or court trial by enabling the appointment of foreign judicial experts. Thus, **it is recommended to introduce regulations enabling the appointment of foreign forensic science providers or private practitioners as independent judicial experts in legal proceedings in Ukraine.**

³⁵ For example, to cooperate within the ENFSI Working Groups or participate in the research and development and innovation projects consortia in the Horizon Europe programme (or similar ones).

³⁶ As informed by the interviewed representatives of the forensic science institutes and judicial experts' community.

³⁷ E.g. with the use of Guidelines on the Role of Court-appointed Experts in Judicial Proceedings of Council of Europe's Member States, 12 December 2014, 5.1.2 Independence and impartiality, <https://rm.coe.int/168074827a>, accessed 28 August 2024.

³⁸ See: <https://euroexpert.org/find-an-expert/>, https://e-justice.europa.eu/37146/EN/find_an_expert, <https://experts-institute.eu/en/projects/find-an-expert-en/index-ii-presentation-of-the-it-tool/>, all accessed 28 August 2024.

³⁹ The Law of Ukraine on Judicial Expertise, Art. 23, only the heads of state specialized institutions conducting forensic examinations have the right, in necessary cases, with the consent of the body or person who appointed the forensic examination, to include leading experts from other states in the composition of the expert commissions, (<https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024).

V. RAISING QUALITY OF FORENSIC SCIENCE AND JUDICIAL EXPERTISE



The proven in-practice action aimed at improving the quality of forensic science and judicial expertise is accreditation according to ISO 17025 standard General requirements for the competence of testing and calibration laboratories⁴⁰. This standard is widely recognized in the forensic science community and promoted by European and international organizations to be implemented by forensic science providers.

Ukrainian forensic science institutes that are members of the European Network of Forensic Science Institutes are obliged to fulfil such a requirement in order to maintain their membership in that professional organisation⁴¹. Additionally, when it comes to the accreditation of forensic science providers performing DNA and fingerprint examinations, the requirements and conditions of accreditation are regulated in the form of a decision binding all EU countries⁴² (see more in Chapter IX). It is also worth mentioning that in the EU, the accreditation of forensic science providers in a broad sense is highlighted in the strategic

⁴⁰ ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, <https://www.iasonline.org/wp-content/uploads/2021/02/ISO-IEC-17025-2017-IAS.pdf>, accessed 29 August 2024.

⁴¹ https://enfsi.eu/wp-content/uploads/2016/09/policy_on_scope_of_accreditation.pdf, accessed 29 August 2024.

⁴² Council Framework Decision 2009/905/JHA of 30 November 2009 on Accreditation of forensic service providers carrying out laboratory activities.

documents on the European Forensic Science Area⁴³. For all this reason, **it is recommended to adopt a strategy indicating ISO17025 accreditation as a goal to be achieved by all forensic science providers in Ukraine**. Accreditation according to this standard should primarily apply to large research entities, and especially its achievement within a defined period should be a requirement for newly established private forensic science providers.

Another important aspect of quality assurance is the certification of personnel. In Ukraine, the certification of experts employed in public forensic science institutes is performed centrally by the qualification commissions set up at the ministries and other central executive bodies. Private experts are certified by the central qualification commission appointed by the Ministry of Justice⁴⁴. There is also a state register of experts maintained by the Ministry of Justice that includes all certified experts. It must be noted that this model has some advantages as in many countries still there is no formal process of certification. However, it should be noted that forensic science providers both public and private, usually have in-house training systems to obtain qualifications of reporting officers by the employees, and training plans to maintain these qualifications. In addition, professional associations of judicial experts have their membership criteria, which are usually based on checking the competencies and professional qualifications of their members. Therefore, **it is recommended to introduce a coherent and transparent system for certifying forensic science and judicial experts**. It could include certification to be carried out entirely on the central level (including employees of public forensic science institutes, private forensic science providers and individual practitioners) or introduce a possibility of recognising the certification performed internally by those legal entities (so public or private forensic science providers concerning their employees, as well as professional expert association concerning its member-experts). It can also consider delegating the certification of judicial experts to other specialised independent entities⁴⁵. In any case, the Forensic Science and Judicial Expertise Authority should ensure that certification schemes are based on a transparent model of competence assessment⁴⁶, according to predefined criteria⁴⁷ and that the register of certified experts is maintained accordingly⁴⁸. To this end, if applicable to the implemented model of certification, the Authority shall publish the criteria for the experts in general and regularly update criteria in particular disciplines, as well as the procedure of the competence assessment and/or develop guidelines on internal certification schemes to be used by the abovementioned forensic science providers.

Another pro-quality activity currently highly promoted at the EU level is participation by forensic science providers and judicial experts in the proficiency testing programs⁴⁹. Formally, it is one of the requirements for accreditation according to ISO 17025⁵⁰. Regardless of that goal, the broad participation of forensic science and judicial expertise examiners in proficiency testing programmes has a lot of advantages⁵¹. Originally designed to challenge laboratories in the form of interlaboratory comparison, proficiency tests are performed in a way that a previously prepared test item is sent to participants (individuals or organisations) to conduct examinations independently from each other but according to the same pre-defined assumption, whilst the correct result of the examination is previously known to the proficiency testing provider⁵². Therefore, participation in the proficiency testing programmes is treated as an

43 Council Conclusions on 'The Vision for European Forensic Science 2020 Including the Creation of a European Forensic Science Area and the Development of Forensic Science Infrastructure in Europe', approved by the Council on 13 December 2011 (doc. 17537/11), Council Conclusions on 'The Way Forward in View of the Creation of an European Forensic Science Area and the Action Plan for the Way Forward for the Creation of an European Forensic Science Area', approved by the Council on 9 June 2016 (doc. 8770/16),

44 The Law of Ukraine on Judicial Expertise, Art. 17. (...) qualification commissions are created under ministries and other central executive bodies, the sphere of management of which includes state specialized institutions that carry out forensic expert activities. The procedure for assigning the qualification of a forensic expert (...) who are not employees of state specialized institutions is determined by the Ministry of Justice of Ukraine. For this purpose, the Central Expert and Qualification Commission is established under the Ministry of Justice of Ukraine, (<https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024).

45 A model example of an independent institution certifying judicial experts is the Netherlands Register of Court Experts, <https://english.nrgd.nl>, accessed 28 August 2024.

46 Arranging it, the Authority can make use of the results of the EU project FINDEX II, <https://euroexpert.org/about-us/finindex-ii-recommendations-of-working-group-3-requirements-for-experts-to-be-registered-in-and-stay-on-a-directory/> accessed 28 August 2024.

47 <https://euroexpert.org/about-us/finindex-ii-recommendations-of-working-group-1-definition-of-criteria-for-judicial-experts/>, accessed 28 August 2024.

48 <https://euroexpert.org/about-us/finindex-ii-recommendations-of-working-group-2-definition-of-the-criteria-to-be-met-by-the-bodies-responsible-for-the-lists-of-experts/>, accessed 28 August 2024.

49 As above.

50 ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, 7.7.2: The laboratory shall monitor its performance by comparison with results of other laboratories, where available and appropriate. This monitoring shall be planned and reviewed and shall include, but not be limited to, either or both of the following: a) participation in proficiency testing; b) participation in interlaboratory comparisons, <https://www.iso.org/standards/std/17025-2017-ias.pdf>, accessed 29 August 2024.

51 US Department of Commerce, National Institute of Standards and Technology, National Commission on Forensic Science, Proficiency Testing in Forensic Science, Final Draft, March 2016 <https://www.justice.gov/ncfs/file/831806/dl>, accessed 30 August 2024.

52 ISO/IEC 17043 Conformity assessment — General requirements for the competence of proficiency testing providers, 3.4: interlaboratory comparison – design, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions; 3.6: participant – person or organization that undertakes activities related to proficiency testing and submits their results for performance evaluation by the proficiency testing provider; 3.7: proficiency testing – evaluation of participant performance against pre-established criteria by means of interlaboratory comparisons; 3.8 proficiency testing item – sample, product, artefact, reference material, piece of equipment, measurement standard, object, image, data set or other information used for proficiency testing; 3.9: proficiency testing provider – organization which takes responsibility for all activities in the development and operation of a proficiency testing scheme, <https://www.iso.org/obp/ui/en/#iso:std:iso-iec:17043:ed-2:v1:en>, accessed 30 August 2024.

external assessment to ensure the ability to perform examinations to the level of competence, but also an element of improving and maintaining their high quality. For proficiency testing to be effective, the test provider must be competent⁵³, and proficiency testing programs must be designed in a way the test assumptions, testing items and all the testing circumstances reflect, as best as possible, the routine that occurs in reality⁵⁴. Currently, there are several companies or organizations offering proficiency tests in various forensic disciplines, available for worldwide customers. They are differently rated by the users in terms of substantive content and level of difficulty, but regardless of their quality, those global products do not take into account local criminological conditions and legal environment and therefore do not reflect circumstances most similar to those existing in Ukraine. They are also not adapted linguistically and do not take into account locally applied nomenclature and professional jargon so it additionally may be confusing. All this makes them not user-friendly for Ukrainian forensic science and judicial experts, and promoting participation in such proficiency tests is prone to failure. **Therefore, it is recommended to take steps in creating Ukrainian proficiency testing programs and then regularly conduct them among forensic science and judicial experts by independent proficiency testing providers under the provisions of ISO 17043.**

The proficiency testing programs should take into account the Ukrainian legal context and local criminological assumptions, encompass all the disciplines in which they are currently possible and be further developed. In parallel, the Forensic Science and Judicial Expertise Authority should promote wide participation in the proficiency testing programs by forensic science and judicial experts and ultimately consider making it mandatory.

Pro-quality activities, which have recently gained importance, are also related to the ongoing standardization work in the field of forensic sciences. The relevant committee for forensic sciences CEN/TC 419 Forensic science processes formally exists within the European Committee for Standardization. The global discussion takes place within TC 272 Forensic Sciences of the International Organization for Standardization. It concerns the development of sector standards, which, unlike the currently used general standards, would take into account a more practical approach. Therefore, **it is recommended to promote standardization in forensic science among Ukrainian stakeholders to make them more involved in the work of Technical Committee 192 Forensic Sciences of the Ukrainian Research and Training Center for Standardization, Certification and Quality Issues as well as CEN/TC419 Forensic Science Processes and ISO/TC272 Forensic Science.** This will make the system of forensic sciences and forensic expertise ready for the upcoming ISO 21043 standard for forensic processes. This comprehensive series consists of five parts covering terms and definitions, forensic evidence collection, analysis, interpretation and reporting (most of which are currently in the draft international standard, DIS). The standard is a recommendation applicable to all forensic services, including those provided by government agencies, the private sector and independent experts. Another ISO standard applicable and recommended for entities involved in forensics is ISO/IEC 27037 guidelines for handling digital evidence⁵⁵. It provides detailed guidance on the identification, collection, acquisition, and preservation of digital evidence, which is critical for maintaining the integrity and admissibility of digital data in forensic investigations. Forensic science providers that use biometrics for the purpose of comparisons should consider the provisions of relevant international standards of the ISO 19794 series that enable seamless communication and interoperability between biometric systems, thereby enhancing the effectiveness of biometric technologies.

⁵³ According to ISO/IEC 17025 ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, 7.7.2 Note: Proficiency testing providers that meet the requirements of ISO/IEC 17043 are considered to be competent, <https://www.iso.org/standard/44381.html>, accessed 29 August 2024.

⁵⁴ R. Mejia, M. Cuellar, J. Salyards, Implementing blind proficiency testing in forensic laboratories: Motivation, obstacles, and recommendations, Forensic Science International: Synergy, Volume 2, 2020, Pages 293-298, <https://www.sciencedirect.com/science/article/pii/S2589871X20300577>, accessed 30 August 2024.

⁵⁵ ISO/IEC 27037 Information technology – Security techniques – Guidelines for identification, collection, acquisition and preservation of digital evidence, <https://www.iso.org/standard/44381.html>, accessed 27 August 2024.

VI. VALIDATION OF FORENSIC SCIENCE METHODOLOGIES & TECHNOLOGIES



The importance of validation is stressed on the European and International levels in many reports⁵⁶, professional guidelines⁵⁷ and scientific articles⁵⁸. Validation is the mechanism by which “forensic units ensure methods are fit for the purpose intended and support the production of evidential material for the court that is adequate, relevant, and reliable”⁵⁹. According to the Law of Ukraine, all methods and tools for conducting forensic examinations (with some exceptions) are validated centrally in the procedure established by the Cabinet of Ministers of Ukraine and registered by the Ministry of Justice⁶⁰. Since it is recommended to withdraw from the monopoly of the public forensic sector on performing forensic examinations and to enable private forensic science providers to carry out examinations previously reserved for state institutions, there is a need for standardized methods to be used by all of them. These methods should fulfil the following criteria: the method of conducting examinations is accepted by the scientific community competent in the given field of knowledge, its uncertainty was determined (the source of possible errors and their impact on the result) and it was validated for forensic or judicial purposes. However, regulating all the methods at the central level may be associated with some inertia, which is particularly disadvantageous in the need to perform tests of non-

56 President's Council of Advisors on Science and Technology, Report to the President – Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Washington DC, 2016, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, accessed 3 September 2024.

57 European Network of Forensic Science Institutes, ENFSI Guideline for Evaluative Reporting in Forensic Science. ENFSI 2016. https://enfsi.eu/wp-content/uploads/2016/09/m1_guideline.pdf, accessed 3 September 2024.

58 Y. Guo, J. Slay, J. Beckett, Validation and verification of computer forensic software tools – Searching Function, Digital Investigation, Volume 6, Supplement, September 2009, Pages S12-S22, <https://www.sciencedirect.com/science/article/pii/S1742287609000358>, accessed 2 September 2024.

59 As above.

60 The Law of Ukraine on Judicial Expertise, Art. 8, (<https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024).

routine research material or the situation of rapid technological development, introduction of new tools, etc. Depending on the approach – functional vs. tool-oriented⁶¹ or type of validation – foundational vs. validity as applied⁶² – some part of validation can be done centrally, but it is the process that should be implemented and ensure it is done properly at the single forensic laboratory level⁶³. Also, under the provisions of the ISO 17025 standard, a laboratory may use its own methods or modify methods already developed by other institutions⁶⁴ and this standard indicates the techniques that should be used for their validation⁶⁵. A solution to the problem could therefore be to require that any forensic service provider or private expert carry out the examination based on the written manuals with the use of validated testing methods and make the validation protocols available upon request. To this aim, the Forensic Science and Judicial Expertise Authority should produce guidelines for the forensic science providers to perform validation, both in general⁶⁶ and in certain specific forensic science disciplines⁶⁷. Considering the above, **it is recommended to introduce performing foundational validation of the methodologies and technologies for forensic science by the Forensic Science and Judicial Authority⁶⁸ whilst the validity as applied shall be carried out by each forensic science provider.** As for the methods of examination currently registered by the Ministry of Justice, **it is recommended to review the methods registered centrally by the Ministry of Justice, adjust them – if possible and necessary – to the European best practice manuals and guidelines⁶⁹ and promote by the Forensic Science and Judicial Expertise Authority their wide use by the forensic science providers in Ukraine⁷⁰.**

Another aspect of centrally performed validation should apply to the implementation of novelty forensic technology. It must be borne in mind that the all-new technologies offered currently on the global market may not always be suitable for judicial purposes in particular jurisdictions, even though they were produced and promoted as such. The main reasons are differences in law and/or lack of validation. It is of particular importance especially in the time ahead when one can anticipate some external funds may be dedicated to enhancing the forensic science and judicial system's technical capacity in Ukraine by purchasing new equipment, tools and software. Buying technologies with a reference from recognised foreign forensic science providers is only a part-solution to the problem, as it may not take into account differences in law. Moreover, it won't always be possible in the era of rapid technological development (especially IT). Therefore, **it is recommended to develop a uniform and coherent model for synchronized equipping forensic science providers in Ukraine with modern yet currently permissible technologies to create the most effective and efficient functioning of the forensic science and judicial expertise system in the years to come. As the following step, it is also recommended to prepare by the Forensic Science and Judicial Expertise Authority a policy document on the implementation of emerging novelty technologies that could be used for forensic and judicial purposes in Ukraine.**

- 61 In the functional approach, general validation of the version of the tool can be done once and does not need to be performed by every lab, whilst the validation of an individual technique, method, or function of the tool used by the particular laboratory may need to be repeated there. In the tool-oriented approach, the implemented tool needs to be validated each time the tool or related technology changes, see in: J. Bruntz, Validation of forensic tools and methods: A primer for the digital forensics examiner, WIREs Forensic Science, Volume 5, Issue 2, Mar 2023, <https://wires.onlinelibrary.wiley.com/doi/epdf/10.1002/wfs2.1474>, accessed 2 September 2024.
- 62 Foundational validity for a forensic science method requires that it be shown, based on empirical studies, to be repeatable, reproducible, and accurate, at levels that have been measured and are appropriate to the intended application. Validity as applied means that the method has been reliably applied in practice, see in: President's Council of Advisors on Science and Technology, Report to the President – Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Washington DC, 2016, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, accessed 3 September 2024.
- 63 T. De Baere, W. Dmitruk, B. Magnusson, D. Meuwly and G. O'Donnell, Guideline for the single laboratory – Validation of Instrumental and Human Based Methods in Forensic Science, ENFSI, 2014, http://enfsi.eu/wp-content/uploads/2017/06/Guidelines-for-the-single-laboratory-Validation-of-Instrumental-and-Human-Based-Methods-in-Forensic-Science_2014-version-2.0.pdf, accessed 3 September 2024.
- 64 ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, 7.2.2.1: The laboratory shall validate non-standard methods, laboratory-developed methods and standard methods used outside their intended scope or otherwise modified. The validation shall be as extensive as is necessary to meet the needs of the given application or field of application, <https://www.iasonline.org/wp-content/uploads/2021/02/ISO-IEC-17025-2017-IAS.pdf>, accessed 29 August 2024.
- 65 ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories 7.2.2.1 Note 2: The techniques used for method validation can be one of, or a combination of, the following: a) calibration or evaluation of bias and precision using reference standards or reference materials; b) systematic assessment of the factors influencing the result; c) testing method robustness through variation of controlled parameters, such as incubator temperature, volume dispensed; d) comparison of results achieved with other validated methods; e) interlaboratory comparisons; f) evaluation of measurement uncertainty of the results based on an understanding of the theoretical principles of the method and practical experience of the performance of the sampling or test method, <https://www.iasonline.org/wp-content/uploads/2021/02/ISO-IEC-17025-2017-IAS.pdf>, accessed 29 August 2024.
- 66 As above.
- 67 Cf. The UK Forensic Science Regulator, Guidance – Validation, https://assets.publishing.service.gov.uk/media/5f6b1a3de90e77ca292204f/201_-_FSR-G-201_Validation_Guidance_Issue_2.pdf, Software Validation For DNA Mixture Interpretation, https://assets.publishing.service.gov.uk/media/5f607bbc8fa8f5106b23aa3a/G223_Mix_software_valid_Issue2_accessV3.pdf, Method Validation in Digital Forensics, https://assets.publishing.service.gov.uk/media/5f6ca608d3bf7f7231ac65e0/218_Method_Validation_in_Digital_Forensics_Issue_2_New_Base_Final.pdf, all accessed 3 September 2024, or the US National Institute of Standards and Technology, Organization of Scientific Area Committees for Forensic Science, Human Factors in Validation and Performance Testing of Forensic Science, March 2020, https://www.nist.gov/system/files/documents/2023/10/26/OSACTechSeriesPub_HF%20in%20Validation%20and%20Performance%20Testing%20of%20Forensic%20Science_March2020.pdf, Best Practice Recommendations for Internal Validation of DNA Extraction Methods, December 2022, https://www.nist.gov/system/files/documents/2022/12/05/OSAC%202022-S-0041-BPR%20for%20Internal%20Validation%20of%20DNA%20Extraction%20Methods.OPEN%20COMMENT_STR%20VERSION.pdf, all accessed 3 September 2024.
- 68 Cf. President's Council of Advisors on Science and Technology, Report to the President – Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Washington DC, 2016, 6.1 Role for NIST in Ongoing Evaluation of Foundational Validity, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, accessed 3 September 2024.
- 69 Best practice manuals and guidelines in forensic science are published by ENFSI: <https://enfsi.eu/about-enfsi/structure/working-groups/documents-page/documents/best-practice-manuals/>, accessed 29 August 2024.
- 70 As mentioned in the Council Conclusions on The Vision for European Forensic Science 2020 Including the Creation of a European Forensic Science Area and the Development of Forensic Science Infrastructure in Europe, approved by the Council on 13 December 2011 (doc. 17537/11) and repeated in Council Conclusions on The Way Forward in View of the Creation of an European Forensic Science Area and the Action Plan for the Way Forward for the Creation of an European Forensic Science Area, approved by the Council on 9 June 2016 (doc. 8770/16),

VII.

72 V. Shepitko, M. Shepitko, *Handicrafts and Forensic Sciences in Ukraine: History and Current Trends*, (in) *Liber Amicorum Profesorului Vidmantui Egidijui Kurapcai*, 2022, <https://cris.mruni.eu/cris/handle/007/18630>, accessed 5 September 2024.

the context of research and development and applied sciences. The reason is that the scientific basis of natural and technical science being a foundation of forensics and judicial expertise have little in common with legal sciences. Therefore, universities and their law faculties currently see their role in the system of forensic science and judicial expertise as training institutions only. Moreover, they want to strengthen this function, seeing an opportunity for development in opening up opportunities for conducting training on legal aspects for judicial experts, which still is the monopoly of the Ministry of Justice⁷³. At the same time, they have little interest in forensic R&D&I, as they stated they do not have any experience and capacity for such activities in this area of science⁷⁴. As a result, the most scientific research of academic science is the preparation of fundamental works and encyclopedic editions⁷⁵.

In the current EU approach, the way to improve the reliability and validity of forensic science is through research and innovation⁷⁶. Moreover, in the present Action Plan⁷⁷ there are several research priorities listed (e.g. for applied science, such as Biometrics, Artificial Intelligence, Digitalization, New Tools and Emerging Technologies, or for the basic science - Fundamentals in Forensic Science, Forensic Human Factors, etc.) and some tasks already assigned to the EU Member States (e.g. adaptation, validation and implementation of new emerging technologies for forensic science application). The above priorities and tasks can't be, however, carried out by forensic practitioners only, even noting that in Ukraine some well-developed and scientifically advanced research institutes exist in the public forensic science sector. Performing them without the engagement and support from the academic sector won't be efficient or effective, and sometimes even impossible (e.g. research on the scientific foundation of forensic science). Therefore, **it is recommended to prepare by the Forensic Science and Judicial Expertise Authority together with the National Academy of Legal Science and other such bodies and organisations as they consider appropriate, the scientific research strategy for forensic science and judicial expertise addressed to the Minister of Education and Science of Ukraine, to launch the research program for forensic science and judicial expertise practitioners and academic scientists, considering the current EU priorities and tasks, as well as the domestic needs.**

The strategy should include priorities for theoretical studies (projects related to research on a scientific basis in forensic science), applied science (R&D&I projects towards the elaboration of new methods and tools) and adaptation and implementation of emerging technologies. It should also foresee the realisation of the scientific projects in joint teams by forensic practitioners and academic researchers through multi-disciplinary research centres⁷⁸. In the strategy, the current EU granting possibilities should also be considered (such as Horizon Europe or other financial granting programs in which Ukraine as the EU candidate country can already take part), as well as promotion actions to be taken by the Forensic Science and Judicial Expertise Authority and other players to encourage Ukrainian partners to build or participate in joint European scientific consortia and widely participate in the European forensic scientific community⁷⁹.

In the area of education and training, **it is recommended to abolish the monopoly of the Ministry of Justice on conducting training for judicial experts.** This is particularly important in the context of the recommendation to open the forensic market to private forensic science providers and to increase the number of practising private experts. Universities and other training institutions accredited by the Forensic Science and Judicial Expertise Authority can successfully fill the gap that could arise with it. Additionally, the market competition rules could increase the value of training quality. Therefore, **it is recommended to produce and implement by the Forensic Science and Judicial Expertise Authority the accreditation procedure for the training institutions including clear and transparent assessment rules and maintain and make publicly available their official register.**

⁷³ The Law of Ukraine on Judicial Expertise, Art. 21: Specialists who are not employees of state specialized institutions and aim to carry out expert activities are trained in the relevant expert specialty in the state specialized institutions of the Ministry of Justice of Ukraine, taking into account the restrictions provided for by law, (<https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 28 August 2024).

⁷⁴ As commented by the interviewed representatives of the academic community.

⁷⁵ As above.

⁷⁶ Council Conclusions on The Vision for European Forensic Science 2.0, approved by the Council on 13 October 2022 (doc. 13369/22).

⁷⁷ Council Conclusions on the Action Plan for the European Forensic Science Area 2.0, approved by the Council on 9 March 2023 (doc. 7152/23).

⁷⁸ Cf. President's Council of Advisors on Science and Technology, Report to the President – Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Washington DC, 2016, 6.4 Need for an R&D Strategy for Forensic Science, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, accessed 3 September 2024.

⁷⁹ The latest granting possibilities, important scientific conferences and main events in the area of forensic science are published by ENFSI Research and Development Standing Committee in the Research & Development Newsletter, August 2024, <https://enfsi.eu/wp-content/uploads/2024/08/RDSC-Newsletter-2024.pdf>, accessed 3 September 2024.

VIII. SCIENTIFIC SUPPORT TO CRIMINAL INVESTIGATIONS



In principle, forensic science in the criminal justice process is used in two consecutive stages. The first is an investigation, which pursues to identify the most likely perpetrator of a crime. The second is prosecution, intending to prove that the defendant is guilty. The investigation and prosecution involve different standards for the use of forensic science. In investigations, information may come from both scientifically tested and any other method proven by practice and approved by law. In the prosecution, forensic science must meet a higher standard, i.e. it must be based on reliable principles and methods, and they should be reliably applied in the context of case⁸⁰. Although there is no doubt that law enforcement agencies must have their forensic services of scientific support to criminal investigations, there has been a lively debate as to whether forensic science providers – whose function is to provide impartial evidence independently – should still operate under law enforcement agencies or be removed to the independent institutions. Strong arguments supporting the latter idea came along with the report issued in 2009 by the U.S. National Academy of Science – Strengthening Forensic Science in the United States: A Path Forward⁸¹. Although the Report is based on observations and diagnoses of the United States criminal justice system, the addressed problem of bias in forensic science providers is universal

80 Cf. President's Council of Advisors on Science and Technology, Report to the President – Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, Washington DC, 2016, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, accessed 6 September 2024.

81 Committee on Identifying the Needs of the Forensic Sciences Community, National Research Council, Strengthening Forensic Science in the United States: A Path Forward, August 2009, 2. The Forensic Science Community and the Need for Integrated Governance, Conclusions and Recommendations, Recommendation 4: “To improve the scientific bases of forensic science examinations and to maximize independence from or autonomy within the law enforcement community, Congress should authorize and appropriate incentive funds to the National Institute of Forensic Science (NIFS) for allocation to state and local jurisdictions for the purpose of removing all public forensic laboratories and facilities from the administrative control of law enforcement agencies or prosecutors’ offices”. 6. Improving Methods, Practice, and Performance in Forensic Science, Independence of Forensic Science Laboratories: “The majority of forensic science laboratories are administered by law enforcement agencies, such as police departments, where the laboratory administrator reports to the head of the agency. This system leads to significant concerns related to the independence of the laboratory and its budget. Ideally, public forensic science laboratories should be independent of or autonomous within law enforcement agencies. In these contexts, the director would have an equal voice with others in the justice system on matters involving the laboratory and other agencies.” Uncertainties and Bias: Forensic scientists who sit administratively in law enforcement agencies or prosecutors’ offices, or who are hired by those units, are subject to a general risk of bias. <https://www.ojp.gov/pdffiles1/nij/grants/22809issuedby1.pdf>, accessed 9 September 2024.

so the discussion has been replicated worldwide⁸². In short, the problem is defined as: forensic science providers must be independent of law enforcement agencies because that dependence breeds bias⁸³. The adversarial model of criminal justice proceedings tends to promote this process.⁸⁴

In Ukraine, a state with an adversarial model of a criminal trial, there are legal safeguards for the independence of forensic science institutes that guarantee existence within the forensic science and judicial expertise system only those that are independent of bodies carrying out operational and investigative activities, pre-trial investigation bodies and the court⁸⁵. There is no other legal possibility. In addition, forensic experts may be held disciplinarily responsible for committing an offence such as collecting evidence and selecting initial data for future forensic examinations on their own⁸⁶. Although the original rationale for this restriction is not known, it is conceivable that it aims to prohibit the mixing of the role of forensic science in investigation and prosecution (collecting evidence is a purely investigative matter, which is dealt with by law enforcement agencies) and to avoid bias (through participating in it by forensic experts, whose role is to provide the independent and impartial forensic report about the items collected by law enforcement agencies). In summary, such legal provisions in Ukrainian law should be assessed as being in line with current trends appealing for forensic science providers' independence and avoidance of bias. Of course, one can imagine more far-reaching safeguards (e.g. by taking into account the current state of science regarding the human factor in the decision-making process in forensics). However, the current problem lies in the proper enforcement of the applicable law, rather than in the implementation of new legal measures in this area. The fact is that in Ukraine, despite strict

82 Even earlier works on that topic were published in the European scientific journals, i.e. R. Koppl, How to Improve Forensic Science, *European Journal of Law and Economics* (20), 2005. "The adversarial system of our criminal courts organizes a dispute between the prosecution and the defense. But the current institutional structure of forensic work put the results of forensic workers largely beyond dispute. (...) Forensic labs are often organized under the police and are thus dependent on the police for their budgets. (...) Dependence creates a pro-prosecution bias. (...) Independence should replace dependence. Rivalrous redundancy and privatization would necessarily create independence in at least the formal sense. Competitive self-regulation would produce both formal and substantive independence", <https://econwp.ub.uni-muenchen.de/econ-wp/le/papers/0503/0503001.pdf>, accessed 9 September 2024.

83 Just after the publication of the report Strengthening Forensic Science in the United States: A Path Forward the idea of transitioning forensic laboratories to independent bodies and its reasoning began to be widely commented. There were debates in the laboratory industry sector, i.e. A. Goldman, Study: Separate Police, Labs Because of Bias, *Lab Manager*, 14 April 2009, "Subtle biases contaminate forensic findings when scientists answer to cops, researchers find. (...) Crime labs need to be independent of law enforcement agencies because forensic scientists who work for police are prone to subtle, contextual bias. (...) 'There's a perceived and, in some cases, actual bias whenever you have laboratory employees working directly for law enforcement,' said Rick Workman, director of the Henderson Police crime lab. Lab autonomy is critical, Workman says, 'to demonstrate to ourselves, to ensure, that we don't have bias, perceived or real.'", <https://www.labmanager.com/study-separate-police-labs-because-of-bias-20496>, accessed 9 September 2024. Subsequently, several scientific publications were issued about the research on the reasons for bias in forensic science and the proposed way to eliminate it: G. Whitman, R. Koppl, Rational Bias in Forensic Science, *Law Probability and Risk*, March 2010, "The current organization of forensic science induces biases in the conduct of forensic science even if forensic scientists are perfectly rational. (...) The potential biases we examine are largely attributable to the institutional structure of forensic science rather than the cognitive limits of individual forensic scientists. (...) Structural reforms to address such problems of rational bias include independence from law enforcement (...)"; https://www.researchgate.net/publication/228311974_Rational_Bias_in_Forensic_Science, accessed 9 September 2024; S. Moser, Confirmation Bias: The Pitfall of Forensic Science, *Themis: Research Journal of Justice, Studies and Forensic Science*, 2013, "Among the most prominent sources of confirmation bias is the organizational structure of crime laboratories. Despite the attempt to remain objective, forensic science is biased inherently as a result of its association and dependence upon police agencies. (...) To remedy the issue, (...) the separation of crime laboratories and police agencies is the most prominent solution offered." <https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1006&context=themis>, accessed 9 September 2024; I. E. Dror, Biases in forensic experts, *Science*, 20 April 2018, "Forensic experts are too often exposed to irrelevant contextual information, largely because they work with the police and prosecution" <https://www.science.org/doi/10.1126/science.aat8443>, accessed 9 September 2024; Y. Takefuji, Bias effects in forensics can be scientifically alleviated by stochastic computing (E-letter to Science in response to the above publication), "We assume that experts have bias, ethics, and mistakes in forensics. There are two categories of biases: motivational and cognitive. A motivational bias is a generally conscious tendency to favor a particular party, for self-serving or personal motivations. There are four types in cognitive bias: contextual bias, confirmation bias, selection bias, and expectation bias" <https://www.science.org/doi/10.1126/science.aat8443>, accessed 9 September 2024; S. Kaur, Cognitive and Other Types of Biases Affecting Forensic Evidence: Research Analysis and Expert Conclusions, *Themis: Research Journal of Justice Studies and Forensic Science*, 2022, "The field of forensic science has become plagued by several types of biases perpetuated by experts and the professions within it", <https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1100&context=themis>, accessed 9 September 2024. Regardless, the need to separate forensic science from law enforcement also began to be noticed by the United Nations: UN News, Forensic services must be independent from law enforcement – UN expert tells Assembly, "To be effective, an investigation into torture must be prompted, impartial, independent and thorough, but that seems to be the exception in many countries, where forensic services are closely linked with law enforcement agencies, the United Nations Special Rapporteur on Torture told the General Assembly", <https://news.un.org/en/story/2014/10/481752>, accessed 9 September 2024. There were also several criticisms of the proposal for establishing independent laboratories: P. C. Giannelli, Independent Crime Laboratories, The Problem of Motivational and Cognitive Bias, *Faculty Publications*, 2010, "A. Integration with Police Investigative Function. A forensic laboratory may play an important role in the early stages of a criminal investigation (and independence) can limit the effectiveness of the laboratory's participation in the investigative phases of a case (...). This argument raises a serious concern. However, homicide department detectives work closely with medical examiner officials in death investigations, and medical examiner offices are typically independent of the police; B. Practicability. [S]ome (...) laboratories are quite small (...) [and] could probably not exist as an independent entity; C. Funding. [F]unding for the state laboratory would be jeopardized if it were separated from the police [and] will have to compete with other, larger agencies for scarce state resources. (...) In contrast, the Report assumed that laboratory independence would protect a laboratory's budget; D. Efficacy of Reform. Because police and prosecutors use crime laboratories far more than defense attorneys do, (...) close relationships were inevitable. There is some merit in this position. Yet there is a difference between working with someone, even extensively, and working with someone who is a superior (or works for a superior) within the same organization", https://scholarcommons.law.case.edu/cgi/viewcontent.cgi?article=1602&context=faculty_publications, accessed 9 September 2024. Over time, another argument began to be highlighted, namely, the lack of scientific qualifications: M. Kuslowski, An Easy Win for Criminal Justice Reform: Independent Crime Labs, *Opinion, Criminal Justice, The Hill*, 6 March 2022, "Discussions of potential bias, however, distract from the larger problem: that police and prosecutors' offices are simply not qualified to operate forensic laboratories. (...) The real issue is not bias but the delivery of good science. Most publicly funded forensic laboratories (even those with a civilian lab director) ultimately report to individuals with no background in science", <https://thehill.com/opinion/criminal-justice/3511295-an-easy-win-for-criminal-justice-reform-independent-crime-labs/amp/>, accessed 9 September 2024. Currently, the independence of the forensic science laboratories from the police has become the main priority of the socially demanded reform of the criminal justice system in the United States: "This is a pivotal time for forensics. The federal rule on expert evidence, Rule 702, was just amended for the first time in over twenty years. The changes emphasize the importance of judges carefully reviewing the reliability of forensic expert evidence. It will be crucial to push these issues. We believe that forensics reform should be a central part of our public safety agenda. (1) Independence – Crime labs and forensic evidence collection and analysis should be independent from the police. We need scientists and not 'cops in labcoats.' This means financial and functional independence from the police; (2) Accuracy – Only reliable and validated forensic methods should be used and they should be presented to the public, lawyers, and jurors, with words that reflect the inherent uncertainty and limits of any evidence. (3) Oversight – Accountability matters in policing and government more broadly. While accountability is an expectation for other laboratories, crime labs have been largely immune from regulation or auditing. We need robust quality programs at all crime labs and forensic evidence providers", <https://forensicsreform.com>, accessed 9 September 2024.

84 P. C. Giannelli, Independent Crime Laboratories, The Problem of Motivational and Cognitive Bias, *Faculty Publications*, 2010, https://scholarcommons.law.case.edu/cgi/viewcontent.cgi?article=1602&context=faculty_publications, accessed 9 September 2024.

85 The Law of Ukraine on Judicial Expertise, Art. 4: The independence of the court expert and the correctness of his conclusion are ensured by: the existence of forensic examination institutions, independent of bodies carrying out operational and investigative activities, pre-trial investigation bodies and the court, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 10 September 2024.

86 The Law of Ukraine on Judicial Expertise, Art. 14. A forensic expert may be brought to disciplinary, administrative, civil law and criminal liability on the grounds and in the manner prescribed by law. The forensic expert may be brought to disciplinary responsibility for committing a disciplinary offense. A disciplinary offense is: 1) collection of materials subject to research on one's own, as well as a selection of initial data for forensic examination on one's own, <https://zakon.rada.gov.ua/laws/show/4038-12#Text>, accessed 10 September 2024.

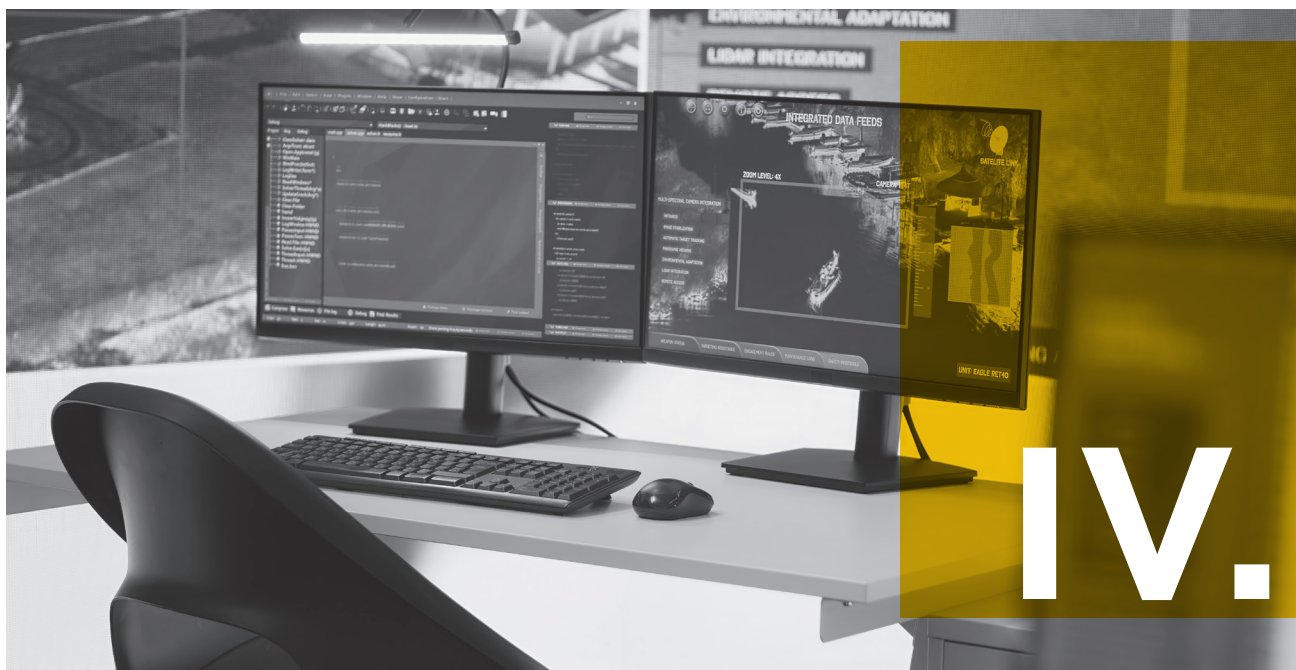
legal regulations, some forensic science providers operate within purely investigative state services, for example, the Ukrainian Institute of Scientific Research of Special Equipment and Forensic Expertise of the Security Service or the Police Forensic Department of the Main Investigative Department, which, in addition to providing forensic support for criminal investigations, has recently begun to perform forensic examinations for court purposes. The same idea is proposed to be implemented by the National Anticorruption Bureau of Ukraine. Taking into account all the above considerations and findings, **it is recommended to start a debate by the Forensic Science and Judicial Expertise Authority with all interested parties: forensic science service providers, end-users, academic researchers and non-governmental organisations representing the general public (in the context of security vs. privacy) on the actual role of forensic science services within Ukrainian investigative agencies and the necessity to limit it to pre-trial measures⁸⁷**. The debate should take into account the need for the independence of forensic science providers, especially in the adversarial system. It is worth highlighting that the intention of this recommendation is not anti-law enforcement but pro-science, and after all law enforcement agencies will benefit from the real (not only declared) independence of forensic science providers⁸⁸. As a result of this debate, **it is recommended to develop a list of forensic science disciplines of an investigative nature to be used by law enforcement agencies⁸⁹ and a roadmap for transferring the forensic disciplines to be used for court purposes to the existing public forensic science institutes.**

⁸⁷ As suggested by the interviewed representatives of the judiciary.

⁸⁸ M. Kuslusi, An Easy Win for Criminal Justice Reform: Independent Crime Labs, Opinion, Criminal Justice, The Hill, 6 March 2022, "It is important to remember that this effort [transition of the police labs to independent agencies] is not anti-police, but pro-science. Police and prosecutors benefit when crime labs are independent. The purpose of forensic laboratories is to provide an unbiased evaluation of the physical evidence. Aside from being more efficient during the investigative phase, independent labs remove the appearance of bias when these cases are later presented in court", <https://thehill.com/opinion/criminal-justice/3511295-an-easy-win-for-criminal-justice-reform-independent-crime-labs/amp/>, accessed 10 September 2024.

⁸⁹ J. Robertson, Should Forensic Science Services be Independent of Policing? A Critical Reflection, Current Issues in Criminal Justice, 2012, "Forensic science could sit independently outside of any parent organisation with some form of autonomous independent status. With a commercial spin, ESR in New Zealand (a government-owned crown research institute) is such a model, but crime scene and other 'police' forensic sciences remain within the police", <http://www.austlii.edu.au/au/journals/CICrimJust/2012/24.pdf>, accessed 9 September 2024.

IX. FORENSIC DATABASES



An important aspect of law enforcement agencies' investigative work is the sufficient use of forensic databases, such as DNA profiles and dactyloscopic data, equipped with automated search engines. Forensic databases improve the effectiveness of the investigative process through the efficient identification of suspects and the possibility of rapidly indicating links between the suspect and the crime(s). Given the fragmentation of the public forensic science sector in Ukraine, the forensic databases are scattered too⁹⁰. It is however of utmost importance to manage them properly not only for domestic needs but also to prepare Ukraine for police cooperation under the Prüm II Regulation⁹¹. The regulation is related to the automated search and exchange among the EU Member States of several categories of data (DNA profiles, dactyloscopic data, certain vehicle registration data, facial images and police records data), and this area of police cooperation is very demanding on the technical as well as organizational level. For example, each EU Member State participating in the automated search and exchange should establish a connection with each Member State participating in the exchanges, (so for Ukraine it would be at least 27 connections per Member State, per data category), to ensure that automated searching is possible 24 hours a day, 7 days a week, designate one or more national contact points for the purpose of exchange of the forensic data, etc. In terms of data quality, the Regulation also requires that a minimum quality standard is established and regularly reviewed. Another regulation binding for the EU Member States and closely linked to the automated exchange and quality of biometric data is the Decision on accreditation of forensic service providers carrying out laboratory activities⁹². In particular, its provisions regulate the quality of DNA profiles and dactyloscopic data, stating that the data, which are the subject of exchanges must be obtained as the results of laboratory activities carried out by forensic service providers accredited to EN ISO/IEC 17025. Practically this means, that every forensic laboratory in

⁹⁰ As informed by the interviewed representatives of the National Police.

⁹¹ The Regulation (EU) 2024/982 of the European Parliament and of the Council of 13 March 2024 on the automated search and exchange of data for police cooperation, and amending Council Decisions 2008/615/JHA and 2008/616/JHA and Regulations (EU) 2018/1726, (EU) No 2019/817 and (EU) 2019/818 of the European Parliament and of the Council (the Prüm II Regulation).

⁹² Council Framework Decision 2009/905/JHA of 30 November 2009 on Accreditation of forensic service providers carrying out laboratory activities.

Ukraine – whose data will later be stored in forensic databases to be used for automated searches and exchange with any EU Member State – must be accredited. Therefore, **it is recommended to elaborate a joint report by the Forensic Science and Judicial Expertise Authority, the Ministry of Interior, the National Police and any other authority they consider appropriate, on the challenges and the needs and roadmap for Ukraine to join the EU system on the automated search and exchange of data for police cooperation.** The report should start with the stock-taking analysis (on how many forensic databases exist in Ukraine, who are their hosts, what are the overlapping fields of operations, etc.) then define the main players and their future roles (contact points, forensic data providers, forensic database managers, etc.) and the milestones to be achieved towards the final goal - the operational readiness to automated search and exchange of data among the EU Member States under the Prüm II Regulation.



ANNEXES

LIST OF INTERVIEWED INSTITUTIONS

The table below shows the institutions the author interviewed during personal meetings (face-to-face or online), with the use of a questionnaire or both methods. It must be noted that all meetings were held in an open and friendly atmosphere and the questionnaires were sent back within the deadline set. There was, however, one institution, which refused to meet even after several attempts to set the date.

Table 2. List of interviewed institutions

Institution	Date/Hrs	Questionnaire	Remarks
The National Scientific Center of the Hon. Prof. M. S. Bokarius Institute of Forensic Science of the Ministry of Justice	9th of July 2024 10:00-11:00	Received	
Ministry of Justice Department for Judicial Expertise	9th of July 2024 14:00 - 15:00	Received	
The Kyiv Research Institute of Forensic Expertise of the Ministry of Justice	10th of July 2024 10:00-12:00	Received	
Ukrainian Bar Association	10th of July 2024 14:00-15:00	Received	
The Ukrainian Scientific Research Institute of Special Equipment and Forensic Expertise of the Security Service	10th of July 2024 16:00-17:00	Received	
Independent movement of judicial experts	11th of July 2024 10:00-11:00	Received (2)	
Office of Prosecutor General	11th of July 2024 12:00 - 13:00	Received	
Center for Scientific Research of Independent Forensics of Ministry of Justice	11th of July 2024 14:00 - 15:00	Received	
Chair of Criminalistics at the Lviv University of Internal Affairs	12th of July 2024 11:00 - 12:00	-	
Chair of Forensic Medicine Department at the Lviv Medical University	12th of July 2024 12:30 - 13:00	-	
Judiciary: Commercial court judge and Investigative judge	12th of July 2024 16:00 - 17:00	-	
Judiciary: High-anticorruption court judge	30th of July 2024 15:00 - 16:00	-	
Criminalistics Unit of the Main Investigation Department of the National Police of Ukraine	1st of August 2024 10:00 - 11:00	-	

Institution	Date/Hrs	Questionnaire	Remarks
Judiciary: High-anticorruption court judge	2nd of August 2024 12:00-13:00	-	
The Dnipropetrovsk Research Institute of Forensic Expertise of the Ministry of Justice	-	Received	Meeting not planned
The Lviv Research Institute of Forensic Expertise of the Ministry of Justice	-	Received	Meeting not planned
The Odessa Research Institute of Forensic Expertise of the Ministry of Justice	-	Received	Meeting not planned
Scientific Research Center for Forensic Expertise of Information Technologies and Intellectual Property of the Ministry of Justice	-	Received	Meeting not planned
The State Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine	-	-	Refused to meet

