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## Directions of development of a police information system designed to support documentation of investigations and technical-forensic activities

### Summary

The article presents an idea for the development and implementation of a police information system, Electronic Register of Investigations (ERCDŚ). The primary legal provisions governing the registration of activities performed by police officers and other employees during the screening and preparatory proceedings are indicated. The main purposes of the application, the scope of data processing as well as the ICT security requirements are discussed. Moreover, the article presents the directions of development of the electronic system, including its new functionalities.

**Keywords** IT tool, technical-forensic activities, electronic transmission of material evidence, DNA database, AFIS system

### Introduction

An idea to improve the work of police officers performing investigative tasks arose at the beginning of the year 2014. On 17 January 2014, the Commander-in-Chief of the Police appointed a team with a task of identifying the processes and activities performed within the framework of screening and preparatory proceedings, which are amenable to automation. The objective was to point out the solutions supporting the processes mentioned above by introducing ICT tools. The need to elaborate such solutions (tools) has been indicated on many occasions by police officers performing and supervising investigative activities at police garrisons of all organizational levels.

### Effects of the Task Force's work

During regular working meetings of the team, the existing law provisions were analyzed in order to specify the possibilities of implementing ICT applications by the Police, within the area of conducted preparatory proceedings. The scope of usage of this type of tools by the individual police units was also diagnosed. Moreover, the assumptions were developed with regard to building a computer application to replace the recording systems used by most police units in

the course of preparatory proceedings and requiring paperwork, including: Register of Investigations, Register of Refusals to Initiate Proceedings and Material Evidence Record Book. The idea was based on the registers already existing at police garrisons, which display different levels of ICT sophistication. The elaborated application assumptions obtained the recommendation and positive opinion of the police management at central, regional and local level.

### Electronic Register of Investigations (ERCDŚ)

As of 1 January 2015, ERCDŚ was introduced in all police organizational units as well as the Central Bureau of Investigation. Maintenance of ERCDŚ and electronic data processing is effected for the purpose of investigative and technical-forensic activities as well as the execution of statutory obligations pursuant to the provisions of the Acts referred to in paragraph 1(1) of the *Regulation No. 25 of the Commander-in-Chief of the Police of 23 July 2015 on certain forms of organization and recording of investigative activities of the Police and storing by the Police of material evidence acquired in the course of criminal proceedings*<sup>1</sup>:

<sup>1</sup> Official Journal of the National Police Headquarters of 2015, item 58.

Elektroniczny Rejestr Śledztw i Dochodzeń

Dodaj wpis RSD Drukuj Wyczyść Szukaj

Jednostka/komórka organizacyjna: -- wybierz -- (zwiń/rozwiń)

☐ 7 kategorii głównych przestępstw

☐ Postępowanie (przestępstwo) z nienawiści

☐ Uwzględni postępowania z podejrzanymi

☐ Uwzględni wszystkie jednostki

Rok sprawy: ☐ Wszystkie roczniki

☒ 2016

Miejsce przestępstwa nieustalone:  
Przestępstwo poza RP:  
Województwo:  
Powiat:  
Gmina:  
Miejscowość:

SWD:  
ZIW:  
ZIS:  
Znak sprawy:

RSD:  
Numer DS:  
Oznaczenie prokuratury:  
Data wszczęcia:  
Data zakończenia:

Rodzaj postępowania:  
Wybierz ...

Forma stałalna czynu:  
Wybierz ...

Przestępstwo:  
Pokrzywdzony (zawiadamiający):  
Podejrzany:  
Kwalifikacja prawna:  
Wybierz art ...

Referent:

Wynik postępowania:  
Wybierz wynik postępowania ...

Uwagi do postępowania:  
Akta postępowania (miejsce):  
Powód wysłania akt:  
Legenda:

☒ Postępowanie do 2 miesięcy

☒ Postępowanie do 3 miesięcy

☒ Postępowanie do 6 miesięcy

☒ Postępowanie powyżej 6 miesięcy

☒ Postępowanie w trakcie przekazania

☒ Postępowanie w trakcie uprawnomocnienia

☒ Postępowanie w trakcie zażalenia

☐ Postępowanie zakończone

☐ Postępowanie zawieszone

Przekształcone z RPS  
Id wpisu w bazie:

Wyczyść Szukaj

Lp.	Jednostka	Znak sprawy	RSD	Ds.	Oznaczenie prokuratury	Data przestępstwa (w dniu/do dnia)	Forma stałalna czynu	Opis czynu przestępczego	Pokrzywdzony (zawiadamiający)	Podejrzany	Kwalifikacja prawna	Data wszczęcia	Referent
Odśwież Widoczne kolumny / Opcje													

Fig. 1. View of the main tab of the Electronic Register of Investigations.

- Act of 6 June 1997 The Penal Code<sup>2</sup>
- Act of 10 Sempember 1999 – The Penal Fiscal Code<sup>3</sup>
- Act of 26 October 1982 on proceedings in juvenile cases<sup>4</sup>.

The accepted objective has been to enhance the work of police officers of the investigation teams, who, as part of their mission, perform preparatory proceedings. These officers are to be the main beneficiaries of the accepted solutions of the application, which is versatile and publicly available within the Police Data Transmission Network (PSTD) at every police department and organizational unit in the country. Currently, more than 30,000 users have access to this system in all police garrisons.

### Main purposes of the application

- Enhancing work efficiency of police officers performing investigative activities by:
  - obtaining full access to information regarding the proceedings allocated and activities executed,
  - offering the possibility to monitor procedural deadlines and the status of individual activities,
  - automation of procedural and reference documentation generating process,

- offering the possibility to monitor the storage location of material evidence,
- enhancing case searches (i.e. events with the same modus operandi).

- Enhancing the supervision of preparatory proceedings by making available the tools for the assessment of:

- police officers' workload and efficiency,
- the status of outstanding proceedings,
- the scope for using the preventive measures laid down in the Penal Code,
- the efficiency of asset recovery or asset-based security,
- the reasonability of storing material evidence,
- expenditure on expert analyses.

### Scope of data collection:

ERCDS registers procedural steps performed by police officers in the scope of:

- investigations conducted – Electronic Register of Investigations;
- screening procedures performed – Electronic Register of Screening Proceedings (e-RPS);
- material evidence secured – Electronic Book of Material Evidence (e-KDRz);
- issued decisions on the appointment of court experts – Electronic Register of Issued Decisions to Permit Evidence from Court Expert Opinion (e-RPB);
- technical-forensic activities (secured traces and objects at the scene of a crime) – Electronic Register of Technical-Forensic Activities (e-RCTK).

<sup>2</sup> JoL of 1997 No. 89, item 555 as amended.

<sup>3</sup> JoL of 1999 No. 83, item 930 as amended.

<sup>4</sup> JoL of 1982 No. 35, item 228 as amended.

**Elektroniczny Rejestr Czynności Techniczno-Kryminalistycznych**

Dodaj wpis RCTK Drukuj Wyczyść Szukaj

Jednostki/komórki organizacyjne: -- wybierz -- (zwiń/rozwiń)

☐ Uwzględnij wszystkie jednostki

Rok czynności: ☐ Wszystkie roczniki

☒ 2016

Województwo: \_\_\_\_\_  
 Powiat: \_\_\_\_\_  
 Gmina: \_\_\_\_\_  
 Miejscowość: \_\_\_\_\_  
 Droga: \_\_\_\_\_  
 Działka / Obszar: \_\_\_\_\_

Nr ID (SWD): \_\_\_\_\_  
 Numer RCTK: \_\_\_\_\_  
 Data rozpoczęcia czynności od: \_\_\_\_\_  
 Data rozpoczęcia czynności do: \_\_\_\_\_  
 Data zakończenia czynności od: \_\_\_\_\_  
 Data zakończenia czynności do: \_\_\_\_\_  
 Data polecenia od: \_\_\_\_\_  
 Data polecenia do: \_\_\_\_\_

Ogran zlecający: Wybierz ...  
 Rodzaj zdarzenia: Wybierz ...  
 Rodzaj czynności: Wybierz ...  
 Szczegóły czynności: \_\_\_\_\_  
 Stopień, imię, nazwisko specjalisty (-ów): \_\_\_\_\_

Rodzaj śladu: \_\_\_\_\_  
 Opis przedmiotu / śladu: \_\_\_\_\_  
 Oznaczenie przedmiotu / śladu: \_\_\_\_\_

Legenda

☒ W trakcie opracowania

☒ Opracowany - nie do powiązania z RSD

☒ Opracowany - do powiązania z RSD

☐ Powiązany z RSD

Wyczyść Szukaj

Odwołanie Widoczne kolumny / Opcje

L.p.	Nr ID (SWD)	Numer	Jednostka	Wystawiono dla jednostki	Data rozpoczęcia czynności	Data zakończenia czynności	Data polecenia	Rodzaj zdarzenia	Rodzaj czynności	Szczegóły czynności	Stopień, imię, nazwisko specjalisty (-ów)
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Fig. 2. View of the main tab of the Electronic Register of Technical-Forensic Activities.

Novel solutions and upgrades of the application consist in automation of the numbering process of procedural documentation. Another significant upgrade is a limitation to the minimum extend of a necessity of entering specific data from the cases allocated to the case-handlers and replacing them with dictionary data available within the application (i.e. date, place and way of committing a crime, its legal qualification, type of proceeding, type of registration-statistical form (KSIP)). This way of registration of individual activities undoubtedly contributed to the improvement of quality and consistency of data processed for the purposes of the proceedings carried out by police officers. As of 31 December 2015, a total of 14,892 police officers were carrying out screening and preparatory proceedings at the criminal investigation departments of all police garrisons. As of 31 December 2015 (January-December period), 787,971 of initiated preparatory proceedings and 395,292 screening proceedings were registered<sup>5</sup>. With the application in operation, every case-handler has gained access to full information about the allocated proceedings and completed tasks. An electronic register allows searching for other criminal events,

based on specific parameters (e.g. the offender's modus operandi, object of larceny). The case-handler collects all the necessary information concerning his "own" proceeding in one place and, owing to the computational possibilities offered by the application, he can additionally search for and generate information on the value of the property recovered, securities imposed on the suspect's property, requested and executed preventive measures, expertises ordered, type of analysis and expenditure on expert opinion. ERCDŚ offers the possibility of continuous monitoring by police officers of the timelines of their allocated proceedings, which facilitates timely handling of various procedural activities arising during the proceedings or commissioned by the prosecutor.

Since 1 July 2015, technical-forensic activities performed on-site by a forensic technician/specialist as well as the information about the type and quantity of secured traces and objects have been also registered by the application. As of 31 December 2015, 1682 forensic technicians were on duty at all police garrisons, handling 113,301 criminal events, securing 139,572 traces and 36,268 objects<sup>6</sup>.

<sup>5</sup> ERCDŚ statistical data for the period 1 January – 31 December 2015.

<sup>6</sup> ERCDŚ statistical data for the period 1 July – 31 December 2015.

**Elektroniczny Rejestr wydanych Postanowień o dopuszczeniu dowodu z opinii biegłego**

**Drukuj Wyczyść Szukaj**

Jednostki/komórki organizacyjne:

Rok sprawy:

Data wszczęcia od:  Data wszczęcia do:

**Wyczyść Szukaj**

Biegły / Instytucja:  
 Rodzaj badania:  
 Inny rodzaj badania:  
 Czy była rejestracja profilu DNA(GENOM):  
 Zlecający badania:  
 Data wydania postanowienia od:  
 Data wydania postanowienia do:  
 Ponośzący koszty opinii:  
 Data wystawienia faktury (rachunku):  
 Koszty opinii:  
 Suma wartości opinii:  
 Uwagi:

**Odwołaj Widoczne kolumny / Opcje**

Lp.	Jednostka	Znak sprawy	RSD	Kwalifikacja prawna	Biegły / Instytucja	Rodzaj badania	Inny rodzaj badania	Czy była rejestracja profilu DNA(GENOM)	Zlecający badania	Data wydania postanowienia	Koszty opinii	Ponośzący koszty opinii	Data faktury	Uwagi
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Fig. 3. View of the main tab of the Electronic Register of Court Decisions to Permit Evidence from Court Expert Opinion.

By using such data resources, the program enables the case-handlers not only registering material evidence and generating its lists in an automated way, but also creating electronic decisions on the permission of evidence from court expert opinion (court-expert appointment). As of 31 December 2015 (January-December period), 81,416 experts in various specialties were appointed<sup>7</sup>. At the same time, the application registers and numbers procedural documentation, and allows ongoing monitoring of material evidence storage sites, including police depositories, parking lots or other non-police facilities.

An important for the case-handlers, practical element of the application, is a "Procedural Toolbox", containing 58 procedural forms and printings, 23 instructions and 17 selected legal acts (directives, regulations and orders) related to investigative work. The "Procedural Toolbox" is updated at the level of the National Police Headquarters, which ensures the uniformity and up-to-date character of the procedural documents used by police officers throughout the country.

Another useful element of the application is a module enabling the procedural work supervisors to assess workload and efficiency of police officers, correctness of carrying out their tasks, status of the proceedings, scope of the preventive measures applied and expenses incurred on expert analyses. Moreover, it allows monitoring the requests formulated by the court or prosecutor in relation to the activities performed.

### ICT security

ERCDS operates on the basis of a MySQL 5.6.10 database, an Apache/PHP 5.3.3 server and a CENTOS LINUX operating system v. 6.4 or higher.

<sup>7</sup> ERCDS statistical data for the period 1 January – 31 December 2015.

Data processing is based on a client – server platform, within PSTD. The application operates as WWW WEB 2.0. It may be accessed only via WWW browser. All the newest releases of the most popular Firefox 18+ and Chrome 30+ browsers are supported. Any requests are transmitted to the application through the encrypted version of HTTP – HTTPS protocol. Access blocking is executed from the application level by withdrawing the user's login permission. Access to the server operating system is granted only to a technical administrator and persons appointed by him. Access to personal data processed in ERCDS is possible only after authentication of an authorized user in the operating system. Additionally, it is regulated by allocating users to the appropriate access levels and by user account activation. User management is possible from the application level, only for users with adequate permissions.

### Planned directions of development of Electronic Register of Investigations

In order to address the new tasks to be undertaken by the Police regarding investigative work, on 21 September 2015 the Commander-in-Chief of the Police appointed a team responsible for optimization and further upgrading of ERCDS by including new functionalities. One of the more important assumptions is to implement the process of "coding" traces and objects secured at the crime scene and during the preparatory proceedings.

### Planned solutions will introduce, among others, the following changes:

1. replacement of a current method of permanently affixing the fiches to traces/items of material evidence using barcodes with individual identification of a person securing evidence (police officer/specialist);

2. labeling of each trace/item of material evidence with an individual code automatically generated by the ERCDS application on trace and material evidence lists and on printed barcodes to be attached to the fiches and packaging;
3. introducing electronic circulation of depository material evidence, objects, weapons and ammunition, and drugs. The latter will significantly improve supervision of depositories and eliminate the potential irregularities during inventories thereof.

The planned changes constitute an important element of enhancing the quality and professionalism of technical-forensic and investigative activities performed by police officers (especially forensic technicians and experts of the Central Forensic Laboratory of the Police (CLKP)/Forensic Laboratory (LK)). They will enable the introduction of the so called "trace/object life cycle", covering the period from their discovery through procedural and technical securing and using in preparatory and judicial proceedings (e.g. in specialized analysis).

The implemented solutions will notably improve supervision of secured evidence by means of "tracking" its circulation, not only during the preparatory proceedings, but also at consecutive stages of specialized analyses. Under this project, forensic-technical and investigation units of the CLKP and

regional LKs of all police garrisons are to be retrofitted with computers, readers (scanners) and code printers.

4. Establishing a uniform, countrywide register of experts of various specialties and sworn translators

The register will be connected with a specialty browser available for persons conducting preparatory proceedings. In practice, every officer/case-handler will have at hand the access to current data administered from the level of the National Police Headquarters (in cooperation with the Ministry of Justice).

5. Centralization of application

This step of application optimization, consisting in ERCDS centralization, will enable work harmonization of investigative units. The replacement of paper registration carried out in the scope of preparatory proceedings with an electronic register opened a broad range of informatics capabilities regarding the use of data entered in the application. ERCDS centralization will lead to a direct information exchange between police garrisons and forensic laboratories, which will translate into better quality and registration productivity regarding the data related to investigative and technical-forensic activities and the requested forensic analyses.

6. Establishing Register of Hits.

A register which will automatically process data and provide positive hits from:

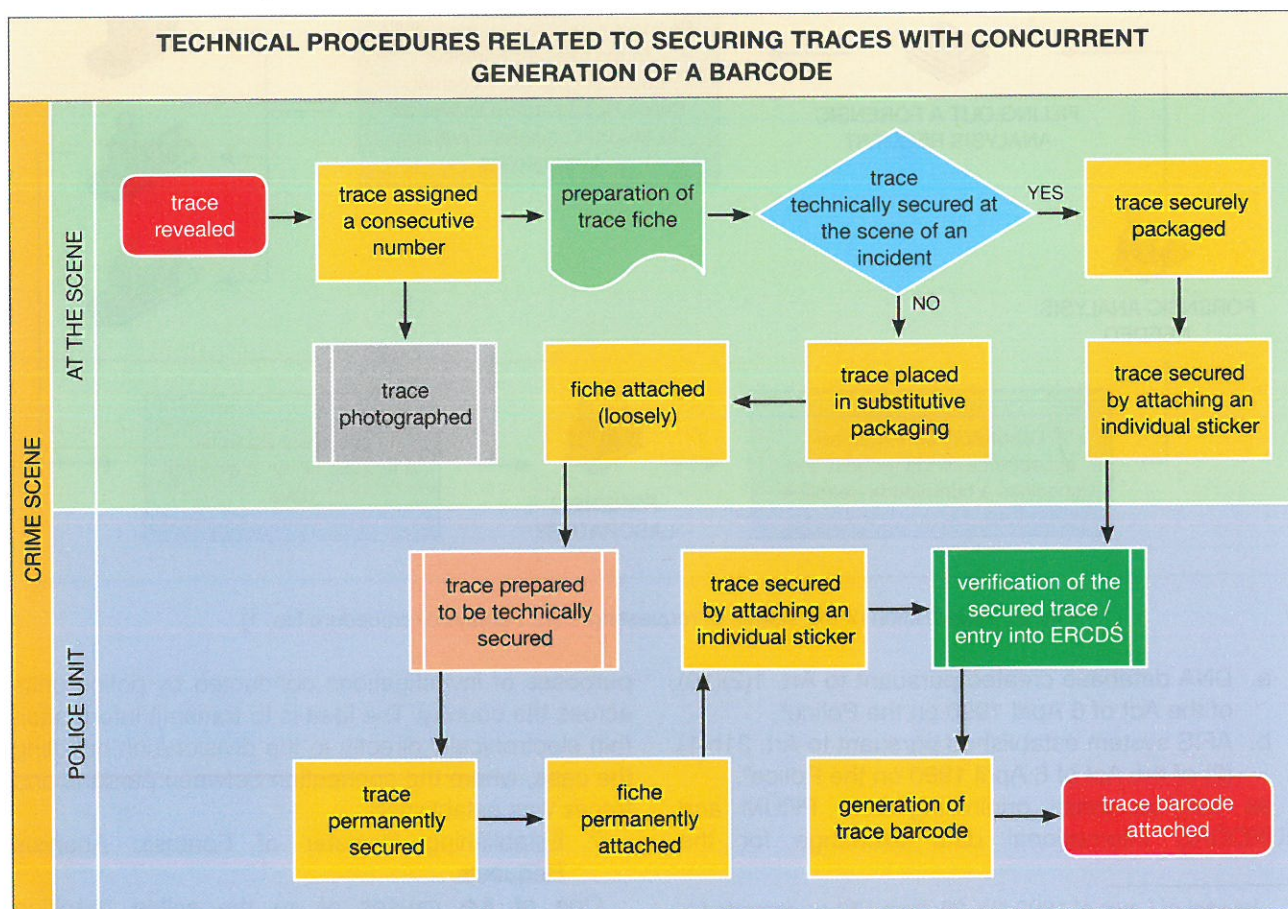


Fig. 4. Visualization of "trace coding" process.

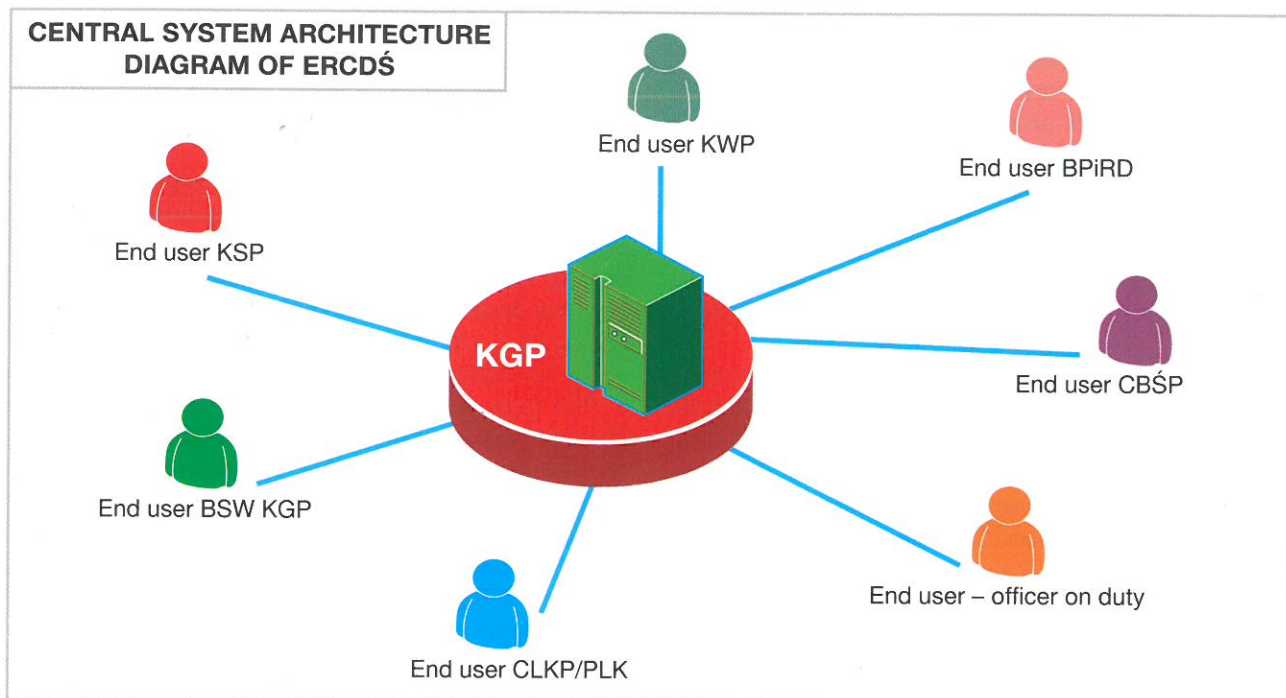


Fig. 5. ERCDS users in the central system architecture.

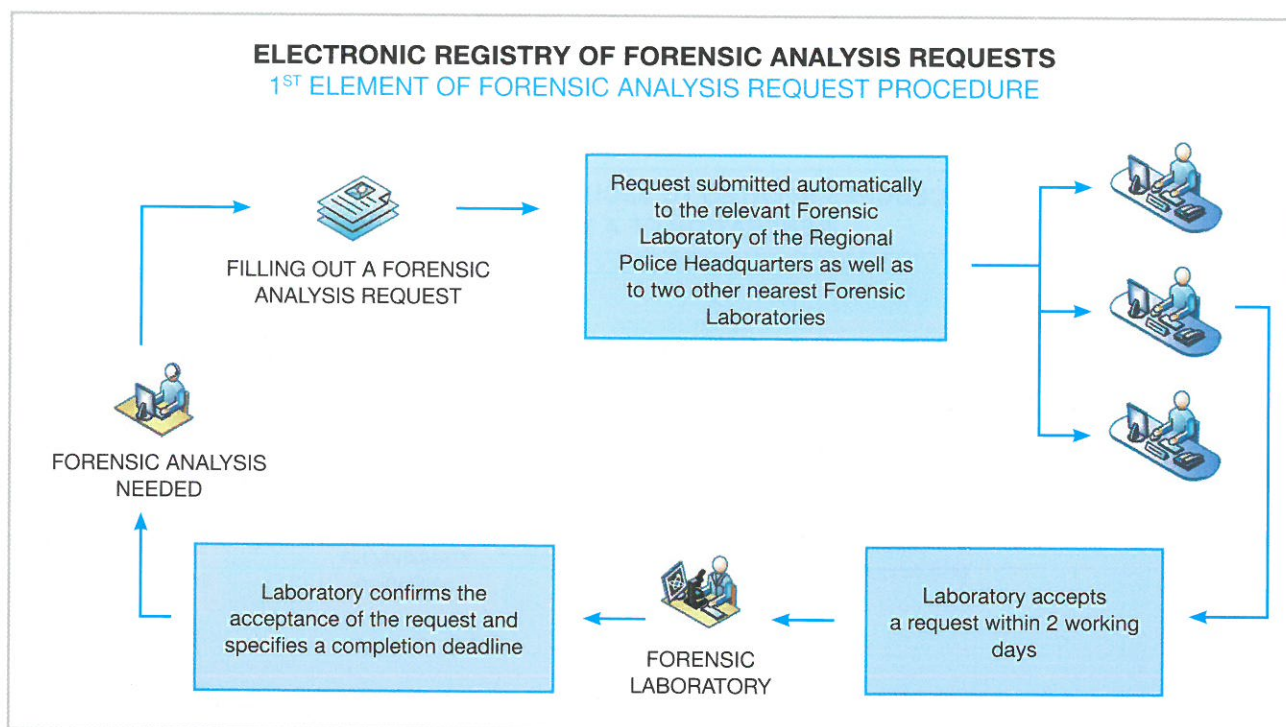


Fig. 6. Visualization of the stages of requesting expert analysis (procedure No. 1).

- a. DNA database created pursuant to Art. 1(2)(10) of the Act of 6 April 1990 on the Police<sup>8</sup>,
- b. AFIS system established pursuant to Art. 21h(1)(2) of the Act of 6 April 1990 on the Police<sup>9</sup>, as well as those originating from PRÜM and EURODAC international data exchange for the

purposes of investigations conducted by police units across the country. The idea is to transmit information (hit) electronically directly to the division/unit handling the case, where the connection between persons and traces was established.

#### 7. Establishing Register of Forensic Analysis Requests.

One of the causes of so the called "backlog factor" encountered during preparatory proceedings

<sup>8</sup> Journal of Laws of 1990 No. 30, item 179 as amended.

<sup>9</sup> Journal of Laws of 1990 No. 30, item 179 as amended.

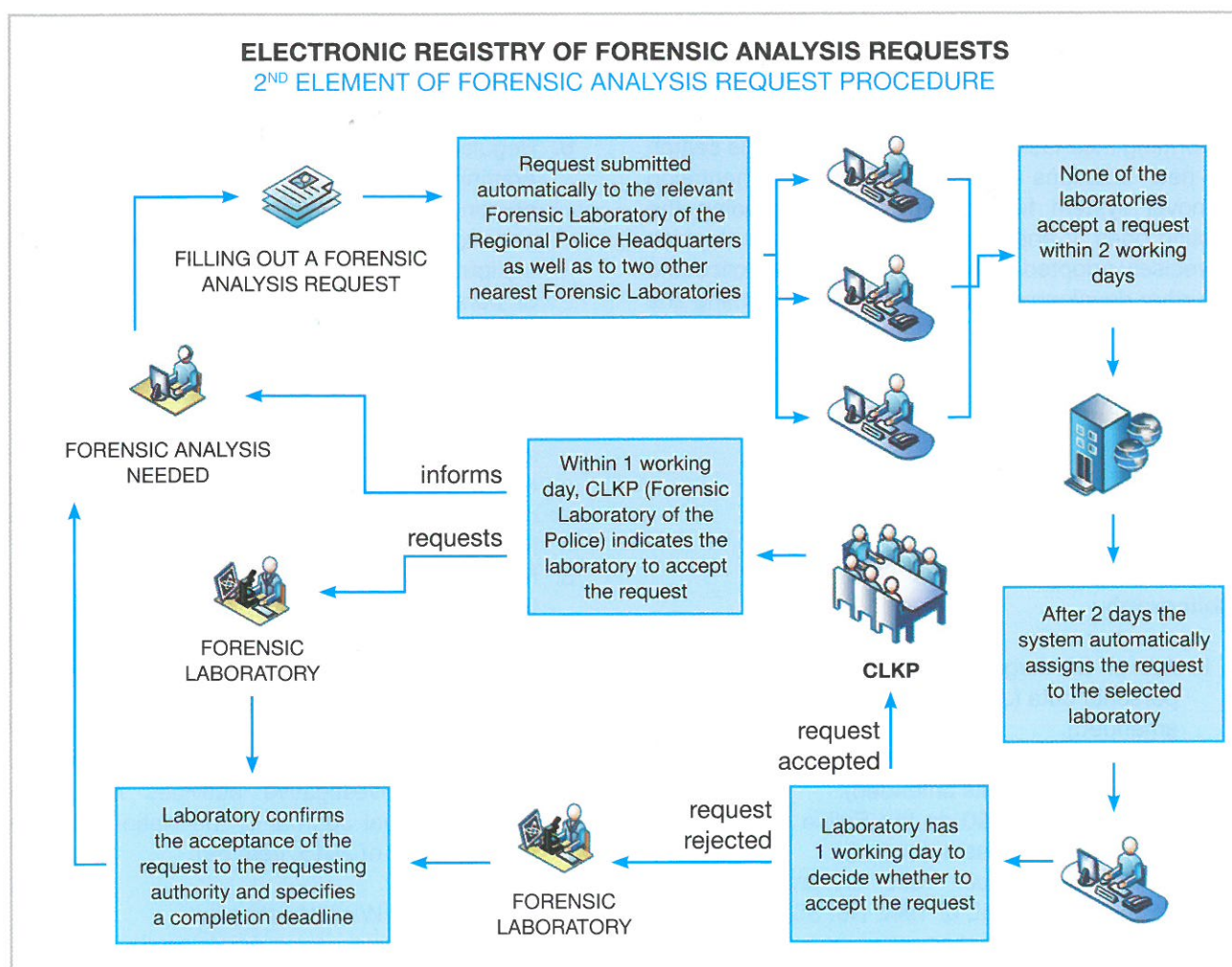


Fig. 7. Visualization of the stages of requesting expert analysis (procedure No. 2).

conducted by the Police is a long waiting time for the opinions of experts of different specialties. The optimization of ERCDS assumes the improvement of requesting and analysis processes, beginning with technical-forensic activities performed by a forensic technician/specialist through proper registration, generation of material evidence and forensic traces lists, issuance of a decision to permit evidence based on expert opinion, to the allocation of analyses to individual CPFL/FL. The intention is to depart from regionalization and to enable analyses to be carried out at any (police) laboratory in the country, whereby one of the key selection criteria should be the laboratory turnaround time. The process of allocating requests to experts in individual laboratories takes different organizational forms. Such a diversity often results in artificial and unnecessary queues for expert opinions. Often, the causes are of an administrative nature and they can be reduced by central or regional management, including the implementation of an automated process of request allocation. Such a model will only be possible after the completion of ERCDS centralization, which is scheduled for the years 2016-2017.

The priority objective of the Electronic Register of Forensic Analysis Requests is to enhance communication between the case-handlers carrying out preparatory proceedings and the experts preparing opinions. The time required for analyses will be significantly reduced after performing the modeling of request allocations. The request allocation procedure itself will take a maximum of 4 days, including the time of delivery of an allocation confirmation feedback message to a police officer at the organizational unit carrying out the proceeding.

### Summary

This article attempts to present an IT system, namely the Electronic Register of Investigations, as well as its role in the police sector in a concise manner. There is no doubt that this system is one of the key IT tools supporting the work of the Police, particularly criminal investigation departments. The replacement of paper registration related to preparatory proceedings with electronic registers resulted in reorganization and systematizing the tasks performed by the Police

at every organizational level. The application has been continuously developing and gaining greater capabilities. The development of new IT technologies not only increases professionalism of police officers in performing their tasks, but also encourages the search for new solutions as regards the implementation of novel system functionalities and upgrading the existing ones. It appears that ERCDS is a tool which is precisely adopted to the specificity of the Police and its further development will guarantee overcoming any problems encountered.

### Sources of Figures

Figure 1-3: own elaboration

Figure 4-7: National Police Headquarters

### Bibliography

1. Act of 29 August 1997 on the protection of personal data (JoL of 1997 No. 133, item 883 as amended).
2. Act of 6 June 1997 The Penal Code (JoL of 1997 No. 89, item 555 as amended).
3. Act of 6 April 1990 on the Police (JoL of 1990 No. 30, item 179 as amended).
4. Act of 26 October 1982 on proceedings in juvenile cases (JoL of 1982 No. 35, item 228 as amended).
5. Regulation of the Minister of Internal Affairs of 29 September 2015 on the processing of information by the Police (JoL of 2015, item 1564).
6. Regulation of the Minister of Internal Affairs and Administration of 29 April 2004 on documenting personal data, processing, and the technical and organizational requirements to be met by IT equipment and systems used for the processing of personal data (JoL of 2004 No. 100, item 1024).
7. Regulation No. 25 of the Commander-in-Chief of the Police of 23 July 2015 on certain forms of organization and recording of investigative activities of the Police and storing by the Police of material evidence acquired in the course of criminal proceedings (Official Journal of the National Police Headquarters of 2015, item 58).
8. Regulation No. 13 of the Commander-in-Chief of the Police of 4 May 2013 on the forms of ICT and telecommunication projects conducted by the Police (Official Journal of the National Police Headquarters of 2013, item 40).
9. Guideline No. 1 of the Commander-in-Chief of the Police of 23 July 2015 on the performance of certain investigative activities by police officers (Official Journal of the National Police Headquarters of 2015, item 59).

*Translation Rafał Wierchośłowski*