

# Decision support system for inheritance under martial law\*

Alla Herts<sup>1,†</sup>, Marta Kravchyk<sup>1,†</sup>, Yelyzaveta Hnatchuk<sup>1,\*,†</sup>, Archil Chochia<sup>3,†</sup>, and Artem Boyarchuk<sup>3,†</sup>

<sup>1</sup> Ivan Franko National University of Lviv, Universytetska str., 1, Lviv, 79000, Ukraine

<sup>2</sup> Khmelnytskyi National University, Institutyska str., 11, Khmelnytskyi, 29016, Ukraine

<sup>3</sup> Tallinna Tehnikaülikool, Ehitajate tee 5, Tallinn, 12616, Estonia

## Abstract

The article proposes a decision support system (DSS) for inheritance under martial law, which is an innovative solution designed to radically simplify the complex and often traumatic process of registering an inheritance for citizens of Ukraine. Its key advantage is the integration of dynamic regulatory changes of wartime, which allows you to automatically track and apply all applicable special regulations, compensating for legal uncertainty and logistical constraints. The system provides unprecedented extraterritoriality, adapting the place of opening an inheritance to the realities of displaced persons and occupied territories, and also dynamically calculates and renews the acceptance deadlines, which is critically important in conditions of delayed registration of deaths. It provides clear, adaptive step-by-step instructions, automatically generating lists of necessary documents and even assisting in the formation of lawsuits in case of missing deadlines for good reasons, including wartime circumstances. In addition, the system proactively assesses civil legal risks of property inheritance, warning about the peculiarities of property registration in combat zones or occupied territories, which protects heirs from wasted efforts and potential legal problems. The proposed DSS is a powerful tool that significantly improves access to justice and minimizes stress for citizens facing inheritance in this extremely difficult period.

## Keywords

Decision support, decision support system (DSS), inheritance, martial law, LegalTech.<sup>1</sup>

## 1. Introduction

Today, the relevance of supporting inheritance decision-making under martial law is extremely high [1-3]. This is due to a number of factors that complicate standard procedures and create uncertainty for heirs [4, 5].

Under martial law, special rules have been introduced that affect the inheritance procedure. The period for accepting or renouncing an inheritance (generally 6 months) may be suspended for the duration of martial law [6]. This creates legal uncertainty regarding the actual end of the period, and also affects the time when a notary can issue a certificate of the right to inheritance. Notarial actions may be performed with certain restrictions, for example, only by notaries included in a special list, or with the lack of access to some registers (although access to the Inheritance Register has been restored in most regions). Problems arise with determining the place of opening the inheritance if the testator died or lived in temporarily occupied territories or in areas of hostilities [3, 4].

Heirs may be internally displaced persons or abroad, which makes it difficult to contact the notary at the place of opening the inheritance in a timely manner. Hostilities can lead to the loss or

\* AdvAIT'2025: 2nd International Workshop on Advanced Applied Information Technologies: AI & DSS, December 05, 2025, Khmelnytskyi, Ukraine, Zilina, Slovakia

<sup>1</sup> Corresponding author.

<sup>†</sup> These authors contributed equally.

✉ agerc@ukr.net (A. Herts); mkravchyk@gmail.com (M. Kravchyk); hnatchuky@khmnu.edu.ua (Ye. Hnatchuk); archil.chochia@taltech.ee (A. Chochia); artem.boyarchuk@taltech.ee (A. Boyarchuk)

ORCID: 0000-0002-3310-3159 (A. Herts); 0000-0003-0823-738X (M. Kravchyk); 0000-0003-2989-3183 (Ye. Hnatchuk); 0000-0003-4821-297X (A. Chochia); 0000-0001-7349-1371 (A. Boyarchuk)



© 2025 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

destruction of title documents (certificates, passports, property documents), which requires complex and lengthy procedures for their restoration [2].

War leads to a large number of deaths, declarations of persons as dead or missing, which automatically opens inheritance cases in difficult conditions. Heirs are often in a state of stress and psychological trauma, which makes it difficult to make informed legal decisions [5].

Critical uncertainty with the necessary urgency of decisions, the need for prompt documentation, the need for legal capacity/consent and protection of civil and third party rights in extreme conditions, extraterritoriality, similar to medical decisions [7, 8], determine the necessity of a decision support system (DSS) to determine the possibility of inheritance in martial law. Such DSS can use similar algorithms and methods to medical decision support systems taking into account civil legal grounds [9-11], since they are also part of the broader problem of ensuring civil legal protection of a person in conditions of crisis, war or emergency.

Taking into account the peculiarities of inheritance relations in Ukraine under martial law, as well as legislative changes regulating the procedure for opening an inheritance, the terms of accepting an inheritance, the activities of notaries and citizens' access to notarial acts during the period of armed aggression determine the relevance of the topic, which is due to the need to ensure the unity of judicial practice and adapt civil legislation to the conditions of a state of emergency due to the suspension of deadlines, problems with jurisdiction, loss of documents and access restrictions, etc.

A decision support system can significantly simplify and speed up the process, minimizing risks for heirs, by: providing up-to-date information about the changed deadlines and procedures that are in effect right now; forming step-by-step instructions, for example, "what to do if documents are lost", "how to find a notary working in the region", "when the suspended term ends", etc.; assisting in making a decision to accept or refuse an inheritance, especially if the property is located in occupied territory or there is a risk of inheriting debts. Thus, decision-making support is vital for protecting the property rights of citizens affected by the consequences of hostilities.

## **2. Literature review**

Let's review known decision support systems for property inheritance based on civil law grounds.

Expert systems for civil law inheritance division [12-14] are typically designed to calculate the specific share of the estate for each rightful heir based on codified law. They often use Forward Chaining inference methods. The system takes facts as input (e.g., "Decedent is survived by spouse, two children, and one living parent") and applies the codified rules of the Civil Code sequentially to determine the outcome. The result is information on the heir group entitled to the legacy and the percentage value or fraction assigned to each heir. This is particularly relevant in Civil Law jurisdictions, where inheritance is often divided by law (intestacy rules) with strict, pre-defined shares, making the process highly suitable for algorithmic modeling.

Although article [12] deals with Islamic law (which has many features in common with civil law in other countries due to its high codification and determinism of heirs' shares), it describes in detail the use of the forward chaining method to determine the group of heirs and their percentage shares. This is a direct illustration of the logic applicable to any codified system, including civil law.

Article [13] describes a methodology for creating systems based on legal knowledge, which is a broader category that includes expert systems. It explains how to transform legal norms and precedents into executable code to create a system that can solve legal problems, including property division.

The authors of [14] provide a general overview of the use of expert systems in the legal field. Although they do not focus solely on inheritance, they classify and explain how rule-based systems work in law, which is the basis for any civil law inheritance division system.

Publication [15] describes the use of AI tools for document automation, which is critical in inheritance cases, where high accuracy and compliance with procedural and civil law are required.

Publication [16] examines in detail how rules-based software helps in document preparation and compliance, which is the essence of the decision-making support mechanism in inheritance law, centralizing all aspects of inheritance cases, including communication with clients, document storage, and tracking important statutory deadlines.

The publication [17] discusses the transformative impact of AI on the entire field of estate planning and inheritance law, including ethical issues and the use of AI for risk assessment and asset management – key functions of a decision support system.

Article [18] discusses how AI tools automate routine tasks (e.g., asset valuation, document draft generation), thereby increasing the efficiency of law firms. This is a direct description of commercial LegalTech solutions.

Article [19] examines how AI algorithms are used to analyze large data sets to provide personalized, data-driven advice to clients, a form of strategic decision support.

The author [20] describes systems that use modeling to evaluate different inheritance scenarios and their impact on estate tax liability, helping the client choose the most tax-efficient plan.

Article [21] discusses how decision support systems can help lawyers better assess the capacity of a person making a will (especially relevant for injured or ill people), minimizing the risk of appeal.

The article [22] examines how DSS-like systems that provide automated step-by-step instructions (guided workflow) can help internally displaced persons (IDPs) or refugees to independently initiate inheritance proceedings when physical access to a notary is difficult.

The authors [23] examine specific commercial platforms that assist lawyers in conducting complex inheritance and trust cases, including cross-jurisdictional comparisons and automatic calculation of tax consequences.

The author [24] describes how commercial platforms use the logic of "if-then" (which is the basis of expert systems) to create individual wills, trusts and other inheritance documents, minimizing human and manual errors in the preparation of complex legal forms, analyzing complex documents (trusts, wills, real estate contracts) for risks, inconsistencies and non-standard clauses, identifying potential problems before administration, ensuring compliance with strict civil procedures in force in the relevant jurisdiction.

Papers [25-27] focus on the problems of transferring digital assets (cryptocurrency, online accounts) and the need for new legal frameworks and tools for managing digital inheritance after its completion, given that traditional civil law often has difficulties with intangible assets.

The authors [28-30] conducted research on systems designed to assist judges and lawyers in general, often in the field of civil law, by providing legal summaries, case law analysis, and predictive support to ensure consistency and fairness of decisions.

The current crisis (martial law) requires a rapid response from LegalTech to address jurisdictional violations (tools should take into account changes in the definition of the proper court/notary when the deceased lived in an occupied or front-line zone), statute of limitations (systems should integrate and track the suspension and renewal of critical legal deadlines provided for by special wartime legislation) [31-33].

Articles [34, 35] explore the differences between legal systems and propose an architecture for a DSS that can automatically apply the rules of different jurisdictions to a single inheritance case.

The conducted review clearly illustrates that existing decision support systems and commercial LegalTech tools have already laid the methodological and technological foundation for working with inheritance law based on civil law grounds. Thus, expert systems for calculating shares use the forward chaining method to accurately calculate the share of each heir at law and provide high accuracy and automatic compliance with legislative norms on succession and shares. Rules-based systems automate document preparation, ensure compliance, centralize communication and storage of documents and track legally established deadlines, reduce the number of manual drafting errors, increase the efficiency of the lawyer's work, simplify complex civil procedures. Tools for risk assessment, financial modeling (tax liabilities, inheritance scenarios) and case law analysis to support strategic decisions of clients and lawyers provide support for making the most tax-efficient

and least risky decisions. Despite a solid foundation, existing systems have significant shortcomings, especially in the context of martial law: insufficient flexibility to crisis changes (existing systems poorly integrate temporary, extraordinary legal norms, such as: suspension/renewal of statutes of limitations and deadlines for accepting inheritance, special rules on the place of opening inheritance for occupied territories or combat zones, etc.); weak work with informal circumstances (systems focus on documented facts, but do not have mechanisms to address problems with loss/destruction of documents and automated step-by-step guidance for their recovery, recognition of a person as missing or dead in uncontrolled territory, etc.); insufficient humanitarian support for decision-making (limited support for decisions for vulnerable groups, including internally displaced persons and military personnel); the complexity of assessing capacity (most systems do not have integrated tools to assist a notary or doctor in assessing a person's testamentary capacity in a hospital or emergency situation).

The developed in this study decision-making support system for inheritance under martial law should comprehensively integrate existing advantages with functionality that compensates for the legal uncertainty and logistical limitations of wartime: automatic tracking and application of all applicable regulatory acts related to martial law; ensuring decision-making support for extraterritoriality (IDPs, refugees) – determining the appropriate place for opening an inheritance and contacting a notary; providing clear, adaptive step-by-step instructions for heirs and lawyers (automatic generation of a list of necessary requests for document restoration, drawing up a will in a hospital, etc.); assessment of civil legal risks of inheritance (determining whether property is located in a war zone/occupation); supporting legal certainty based on testamentary capacity, etc.

### **3. Civil law regulation of inheritance under martial law**

According to Art. 1216 of the Civil Code of Ukraine, a will is the transfer of rights and obligations (inheritance) from a deceased person (testator) to other people (heirs). The legislation provides for two types of inheritance: by will or by law [6].

The right to inheritance arises on the day of opening the inheritance, that is, on the day of the person's death or on the day from which he is declared deceased.

An individual who has acquired the right to inheritance, in particular, may: accept the inheritance; renounce it in general or in favor of another person; do nothing (not take legally significant actions regarding the acceptance of the inheritance).

In Ukraine, the rules for registering an inheritance during martial law have changed. These changes are an important step towards modernizing legal norms and providing citizens with more transparent and effective mechanisms for exercising their inheritance rights.

The changes primarily concern determining the place of opening the inheritance. Before the full-scale invasion, the place of opening the inheritance was determined as the place of residence of the testator at the time of death. And if this information was unknown, then it was determined as the place of residence of the main inheritance – real estate. Today, a person can submit an application to a notary located in the same region as the deceased's last place of residence. However, if death occurred in the occupied territory or in areas where hostilities are underway, the heir can submit an application and choose any notary on the territory of Ukraine. At the same time, the property subject to inheritance may be registered in other regions, and even abroad. Then its future should be decided according to the law of the country where it is registered.

A period of 6 months is set for accepting the inheritance, but if a person died during martial law and the state registration of death was carried out later than one month after his death, the terms for accepting the inheritance are calculated not from the moment of actual death, but from the moment of registration of death by state authorities.

If a person died in the temporarily occupied territory or in some other place, the heirs apply to a notary and cannot substantiate the date of death (for example, a person died a year ago, but the relatives did not have time to formally open an inheritance case), for such persons the term is

calculated from the moment the fact of death is entered in the records of state bodies. The state has come to the aid of such citizens, because previously, if a person missed the 6-month period, he could not register an inheritance and the only way out of the situation was to go to court.

An heir who wishes to inherit and is abroad must personally submit a corresponding application by mail to the address of a notary registered in the territory of Ukraine before the expiration of a 6-month period after the death of the testator. According to the Civil Code of Ukraine, this document must be notarized by the signature of a notary of the country of residence. If it is not possible to send a letter to Ukraine, you should contact the consular offices of Ukraine in the country of residence.

Thus, a six-month period is established for accepting the inheritance, which is calculated from the moment the inheritance is opened. In cases where the emergence of a person's right to inheritance depends on the non-acceptance (refusal) of the inheritance by other heirs, the period for accepting the inheritance by him is established as three months from the moment they do not accept the inheritance or refuse to accept it. If the remaining period is less than three months, it is extended to three months.

If the heir does not submit an application for acceptance of the inheritance within six months from the moment the inheritance is opened, he is considered not to have accepted it. If no one has accepted the inheritance, it passes to the territorial community.

An heir who missed the deadline for accepting the inheritance, but wishes to accept it, determines two ways to exercise his rights:

1. With the written consent of the heirs who accepted the inheritance, the heir who missed the deadline for accepting the inheritance may submit an application for acceptance of the inheritance to a notary or, in rural settlements, to an authorized official of the relevant local government body at the place of opening the inheritance. The application for consent to accept the inheritance must come from all heirs. If at least one of the heirs who accepted the inheritance objects to granting consent, this method cannot be applied.
2. At the request of an heir who missed the deadline for accepting the inheritance for a good reason, the court may determine for him an additional period sufficient for him to submit an application for acceptance of the inheritance. A person who has not accepted the inheritance within the period established by law may apply to the court with a statement of claim for the appointment of an additional period for accepting the inheritance. The reasons for missing the period for accepting the inheritance may be various circumstances. In court cases on disputes arising from this matter, the following grounds are indicated: stay in places of deprivation of liberty; long-term illness of the heir; presence of certain diseases in the heir, assistance to a family member who is undergoing treatment in a hospital; service in the Armed Forces of Ukraine, participation in the ATO; absence of an embassy of Ukraine in the country of residence of the heir; absence of a death certificate of the testator for the heir.

If one of the heirs under the will refuses to accept the inheritance, then the share in the inheritance that he had the right to accept passes to the other heirs under the will and is divided between them equally.

If one of the heirs under the law from the same line who has the right to inherit refuses to accept the inheritance, then the share in the inheritance that he had the right to accept passes to the other heirs under the law of the same line and is divided between them equally.

Today, of course, the question will often arise whether property is inherited in uncontrolled territories. If the property has survived, you can only open an inheritance case, but it is impossible to obtain a certificate of inheritance. And if the property has been destroyed, then it is impossible to register the property in the occupied territory. Moreover, if the property has been destroyed, then the notary has no grounds to issue a certificate of the right to inheritance for this property.

Even if the territory is deoccupied, the property is actually absent, and the right to inheritance is not issued.

To register the inheritance, the heir must provide the following documents to the notary: passport; identification code; application for acceptance of inheritance; death certificate of the testator; certificate, which records the place of registration of the deceased, where and with whom he was registered at the time of death; certificate of the testator's place of residence; will, if the registration of the inheritance is carried out by will, or documents confirming family ties, if the inheritance is registered by law.

According to Art. 1222 of the Civil Code of Ukraine [6], heirs by will and by law may be individuals who are alive at the time of opening the inheritance, as well as persons who were conceived during the lifetime of the testator and born alive after the opening of the inheritance. Legal entities and other participants in civil relations by law may be heirs only by will. This applies to both the state of Ukraine and territorial communities, foreign states, and other subjects of public law. Inheritance by law is formalized when the testator did not leave a will. In this case, relatives by degree of kinship may claim the inheritance. The heir has the right to accept the inheritance or refuse it - within a specified 6-month period. According to the norms of the Civil Code of Ukraine [6], there are five lines of heirs by law. Heirs by law receive the right to inherit in turn.

Martial law significantly affected the implementation of the right to inheritance, in particular due to the complication of access to notarial services, the temporary suspension of the activities of certain notarial districts, the loss of documents, and the inability to comply with the deadlines for accepting the inheritance.

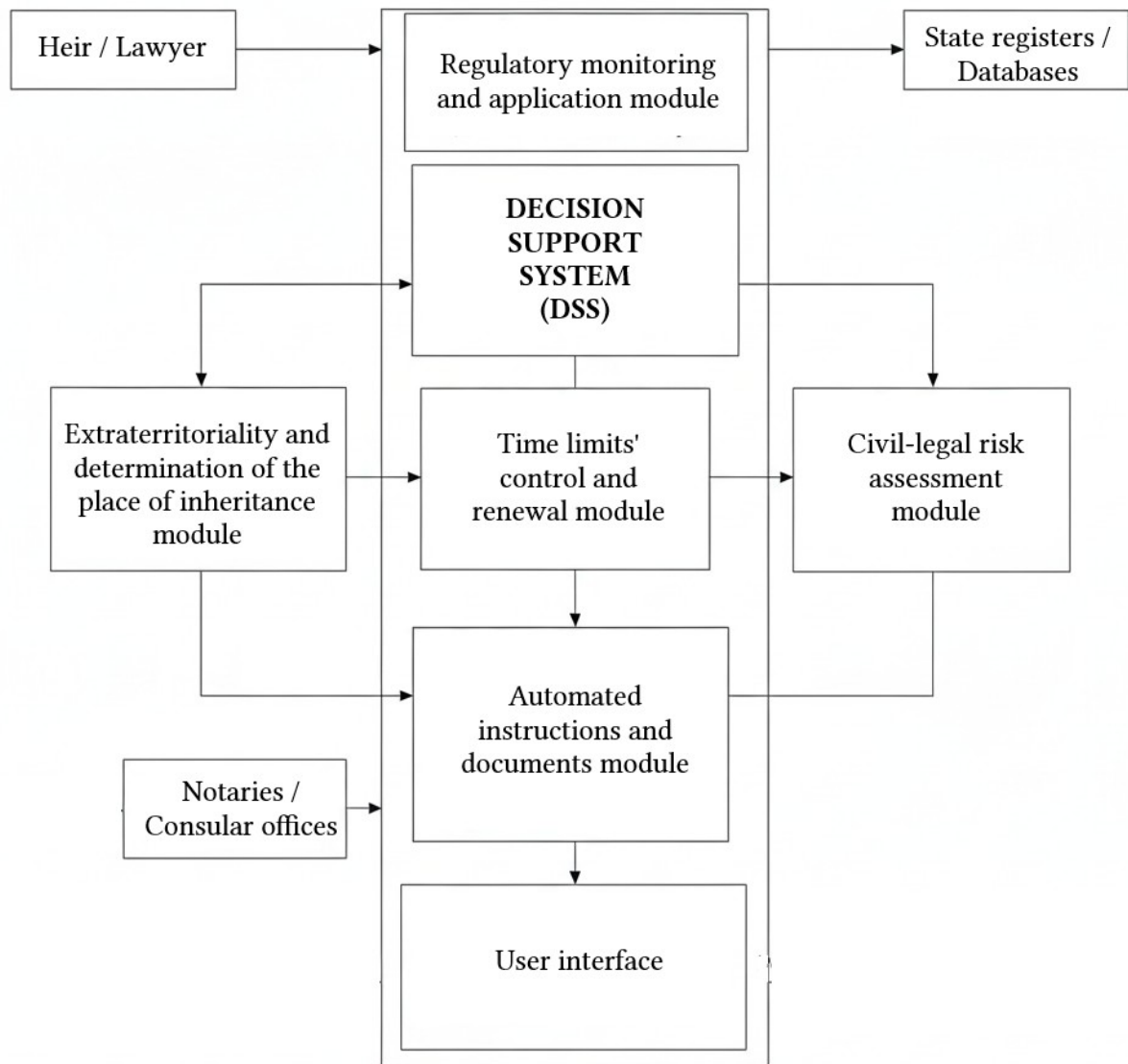
#### **4. Decision support system for inheritance under martial law**

The developed DSS should comprehensively integrate legal norms, logistical constraints and risks caused by martial law, ensuring extraterritoriality, legal certainty and adaptive instructions.

The structural diagram of the decision support system for inheritance under martial law is presented in Fig. 1.

Thus, the decision-making support system for inheritance under martial law consists of the following modules:

1. Regulatory monitoring and application module — is the basis for ensuring the relevance and legal certainty of the system. It constantly monitors and integrates all current laws, resolutions of the Cabinet of Ministers, orders of the Ministry of Justice relating to inheritance, notary public and martial law (including special regulations on deadlines, place of opening of inheritance, validity of registers, etc.). Automatically applies current regulations to a specific case (for example, regulations on the possibility of contacting any notary in Ukraine if death occurred in the occupied territory). Creates a structured knowledge base with excerpts from current legislation relating to inheritance (for example, Art. 1216, Art. 1222 of the Civil Code of Ukraine and special provisions).
2. Extraterritoriality and determination of the place of inheritance module — solves the key problem caused by the displacement of persons and changes in administrative-territorial division. Based on the entered data (place of death/last residence of the testator, status of the territory – occupation/combat operations/safe zone), the system determines whether there are restrictions on the choice of a notary (any in Ukraine, if death occurred in an occupied/combat territory), as well as the region within which the notary can open a case. Provides instructions on filing an application (in person/by mail/through a consulate) taking into account the country of residence of the heir. Provides recommendations on resolving future property registered abroad, with reference to the need to apply the law of the relevant country.



**Figure 1:** The structural diagram of the decision support system for inheritance under martial law.

3. Time limits' control and renewal module — focuses on the terms of inheritance acceptance that have been changed or violated due to martial law. Calculates a 6-month (or 3-month) period taking into account the actual date of death, as well as the date of state registration of death (if registration occurred later than a month after death, or for deaths in occupied territories). If the deadline is missed, the system offers two options: checking the possibility of obtaining written consent from all other heirs who accepted the inheritance (generates a sample consent statement) or assessing the validity of the reasons for the omission (offers a list of typical valid wartime reasons, for example, being in the Armed Forces of Ukraine, lack of communication, occupation, illness) and generates requirements for a lawsuit to the court.
4. Civil-legal risk assessment module — assesses the risks associated with inherited property. Determines whether the inherited property (real estate) is located in a combat zone or in a temporary occupation zone or in a previously de-occupied zone. If the property is in an occupied/combat territory and has survived, it recommends opening an inheritance case, but indicates the impossibility of obtaining a certificate of inheritance before de-occupation. If the property is destroyed, it issues a conclusion that issuing a certificate by a notary is impossible, even after de-occupation. Checks testamentary capacity and compliance of the

will with martial law norms (for example, features of drawing up a will in a hospital, before a military commander).

5. Automated instructions and documents module — provides a step-by-step, adaptive algorithm of actions for the user. Provides a clear, personalized algorithm of actions for the heir or lawyer, depending on the type of inheritance (by law/will), the place of residence of the heir and the circumstances of death. Forms a list of necessary documents for submission to a notary (passport, identification code, death certificate, certificate of place of registration, will/documents on family ties, etc.). Automatically generates a list of necessary requests to state bodies to restore documents lost during the war (death certificate, property documents, documents on family ties, etc.). Automatically calculates the share of the inheritance belonging to the heir, taking into account: the order of inheritance by law (five orders), the refusal of other heirs (redistribution of the share between heirs of the same order/by will), the mandatory share (if inheritance by will).
6. User interface — is intuitive to minimize legal errors. Consists of a form for entering data (circumstances of death, territory status, heirs' data, property information), a results panel (displaying legally significant conclusions — proper notary, deadline for acceptance, potential risks of property, etc.), a document center (storage and generation of all necessary forms and instructions).

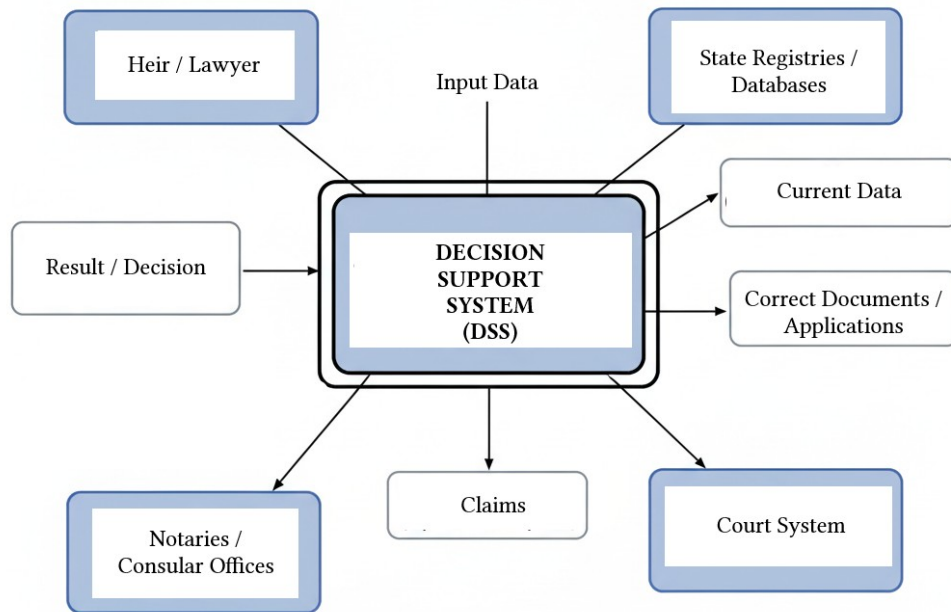
The proposed decision support system for inheritance under martial law has the following advantages:

- Time frame correction — automatic calculation of a 6-month period from the date of death registration (rather than the actual date) in cases of wartime.
- Extraterritoriality — identification of any notary in Ukraine if the death occurred in a combat zone/occupation.
- Property risk assessment — prevention of futile attempts to register destroyed property and provision of recommendations regarding property in temporarily occupied territories.
- Adaptive instructions — step-by-step instructions for IDPs/refugees and mechanisms for restoring missed deadlines (consent/court).

Based on the proposed DSS structure, let's develop a contextual diagram of the decision support system for inheritance under martial law, which reflects DSS as a single process and its interaction with the main external objects (actors and data repositories) — Fig. 2.

The context diagram of the decision support system for inheritance under martial law presents the central element — the Decision support system (DSS) — and its key interactions with the external environment. The main users and sources of input information are the Heir or the Lawyer, who provide the system with the necessary input data on the inheritance case, the circumstances of death and information about property. The DSS, in turn, to ensure the relevance and legal correctness of its decisions, constantly exchanges information with State registers and Databases, receiving from there the current legal norms, data on territorial status (occupation, hostilities) and official information on death registration and property. After processing and applying all special wartime norms, the system generates and returns to the Heir/Lawyer the Result and Decisions, which include clear instructions, corrections of deadlines and assessment of civil legal risks. Further, these results are used to interact with two main legal institutions: on the one hand, DSS helps to form Correct documents and Applications for Notaries or Consular offices, ensuring compliance with all extraterritoriality requirements, and on the other hand, in cases of missed deadlines, the system generates the necessary Claims to apply to the Court System, arguing valid reasons for the missed deadline due to the war. Thus, the diagram depicts DSS as a central node that filters and adapts complex legal information, ensuring communication between citizens and state legal institutions.





**Figure 2:** Contextual diagram of the decision support system for inheritance under martial law.

A comparative analysis of the proposed DSS for inheritance under martial law with typical (known) solutions today (classical electronic registers and general legal consultation systems) is presented in Table 1.

The main difference of the proposed DSS is the transition from simple automation to the adaptation of legal procedures and risk management, which is critically important in the conditions of legal chaos and logistical constraints of wartime.

So, the proposed decision support system for inheritance under martial law is an innovative solution designed to radically simplify the complex and often traumatic process of registering an inheritance for citizens of Ukraine. Its key advantage is the integration of dynamic regulatory changes of wartime, which allows you to automatically track and apply all applicable special regulations, compensating for legal uncertainty and logistical constraints. The system provides unprecedented extraterritoriality, adapting the place of opening an inheritance to the realities of displaced persons and occupied territories, and also dynamically calculates and renews the acceptance deadlines, which is critically important in conditions of delayed registration of deaths. It provides clear, adaptive step-by-step instructions, automatically generating lists of necessary documents and even assisting in the formation of lawsuits in case of missing deadlines for good reasons, including wartime circumstances. In addition, the system proactively assesses civil legal risks of property inheritance, warning about the peculiarities of property registration in combat zones or occupied territories, which protects heirs from wasted efforts and potential legal problems.

However, like any complex system, it has certain limitations. First, the effectiveness of DSS largely depends on uninterrupted access to up-to-date and reliable state registers and databases, which in martial law conditions can be complicated by technical failures or the inaccessibility of certain territories. Second, despite the expanded functionality, the system cannot completely replace individual consultation with a lawyer in complex and unique cases where in-depth interpretation of specific circumstances or additional representation of interests in court is required. Finally, since the legislation during wartime is extremely dynamic, there is a constant need to update and monitor new acts, and any delay in this process can reduce the relevance of the provided recommendations. Despite these challenges, the proposed DSS is a powerful tool that

significantly improves access to justice and minimizes stress for citizens facing inheritance in this extremely difficult period.

**Table 1**

Comparative analysis of the proposed DSS with known solutions

Comparison criterion	Proposed DSS	Typical known solutions
Main goal	Compensation for legal uncertainty and logistical constraints caused by the war	Automation of standard bureaucratic procedures, record keeping
Regulatory framework	Dynamic integration of all current special acts of martial law (CMU resolutions, Ministry of Justice orders) and their instant application	Use of mainly standard norms and basic notarial instructions
Extraterritoriality	Automatic permission to apply to any notary in Ukraine if the death occurred in occupied/combat territories; support for IDPs/refugees	Place of residence of the testator or location of the main real estate; does not take into account the change of jurisdiction due to hostilities
Accounting for acceptance deadlines	Calculation of the 6-month period from the moment of death registration (if registration is delayed due to hostilities), and not from the moment of actual death	Standard calculation - 6 months from the moment of actual death (without adaptation to martial law)
Assessment of civil-legal risks	Assessment of whether the property is in the occupation/hostilities zone. Providing recommendations on the impossibility of registering destroyed property	Only recording the fact of the existence of the property and its registration. Does not assess the physical condition or risks
Generation of instructions	Algorithms for recovering lost documents and actions for registering a will in extreme conditions (hospital, military commander)	Standard list of necessary documents and procedures
Resolution of the missed deadline	Providing an algorithm of actions to renew the deadline (written consent of other heirs OR preparation of a statement of claim to the court with a list of valid reasons for wartime)	Maximum - mention of the possibility of a judicial appeal

## 5. Results & discussion

Let's considered examples of using the decision support system for inheritance in martial law.

*Case 1* – the testator died in Kharkiv (a city that was in an active combat zone) in March 2022. The heir is an internally displaced person (IDP) and temporarily resides in Lviv.

When using the proposed DSS, the user enters the place and date of death, as well as information about the hostilities in the region. The DSS, referring to the current regulatory acts of martial law, informs that the heir has the right to contact any notary in the controlled territory of Ukraine, since the death occurred in a combat zone. The system eliminates the need to search for a notary at the testator's old place of registration, which is physically impossible or dangerous, and provides a list of available notaries in Lviv or another safe city.

*Case 2* – the testator died in the temporarily occupied territory in May 2024, but the state registration of his death was carried out by the Ukrainian authorities only in August 2025. The heir is not sure whether he missed the 6-month deadline.

When using the proposed DSS, the user enters the date of actual death (May 2024) and the date of state registration (August 2025). The DSS applies special martial law rules, determining that the 6-month deadline is calculated not from the date of actual death, but from the date of state registration of death (August 2025). The system confirms that the deadline was not missed and accurately calculates the final date for filing the application, avoiding the need for judicial renewal.

*Case 3* – the testator had an apartment in Mariupol, which was completely destroyed during the hostilities. The heir wants to know whether it is worth spending time on registering an inheritance for this property.

When using the proposed DSS, the user enters the location of the property and its status (destroyed). The DSS provides a clear warning about the risk: if the property is physically destroyed, the notary has no grounds to issue a certificate of the right to inheritance for it. The system helps to make a decision by focusing efforts on the surviving property or on compensation mechanisms (if available), rather than on the legal registration of ownership of something that does not exist.

*Case 4* – the heir is in Germany and intends to accept the inheritance. He cannot return to Ukraine for 6 months.

When using the proposed DSS, the user indicates his location (Germany) and his desire to accept the inheritance. The DSS generates step-by-step instructions on how to properly complete the application – the application should be notarized by a German notary or at the Consular Office of Ukraine in Germany, after which the applications should be sent by mail to the address of the selected Ukrainian notary before the expiration of the 6-month period. The heir receives an accurate algorithm that meets the requirements of the Civil Code of Ukraine and international notarial standards, without missing a deadline.

The considered examples of using DSS clearly demonstrate how the proposed system transforms complex, confusing and potentially hopeless inheritance situations under martial law into clear, manageable processes. It does not simply automate standard legal actions, but actively adapts to extreme circumstances, removing legal and logistical uncertainty. By providing personalized instructions, dynamic calculation of deadlines, extraterritoriality and proactive assessment of property risks, the system helps testators and heirs effectively navigate the changing legal field. In fact, DSS becomes a reliable digital advisor that provides legal certainty and minimizes the emotional burden in one of the most difficult periods for citizens, allowing them to exercise their inheritance rights even in the most difficult circumstances of war.

## **6. Conclusions**

Taking into account the peculiarities of inheritance relations in Ukraine under martial law, as well as legislative changes regulating the procedure for opening an inheritance, the terms of accepting an inheritance, the activities of notaries and citizens' access to notarial acts during the period of armed aggression determine the relevance of the topic, which is due to the need to ensure the unity of judicial practice and adapt civil legislation to the conditions of a state of emergency due to the suspension of deadlines, problems with jurisdiction, loss of documents and access restrictions, etc.

The article proposes a decision support system for inheritance under martial law, which is an innovative solution designed to radically simplify the complex and often traumatic process of registering an inheritance for citizens of Ukraine. Its key advantage is the integration of dynamic regulatory changes of wartime, which allows you to automatically track and apply all applicable special regulations, compensating for legal uncertainty and logistical constraints. The system provides unprecedented extraterritoriality, adapting the place of opening an inheritance to the realities of displaced persons and occupied territories, and also dynamically calculates and renews the acceptance deadlines, which is critically important in conditions of delayed registration of deaths. It provides clear, adaptive step-by-step instructions, automatically generating lists of necessary documents and even assisting in the formation of lawsuits in case of missing deadlines for good reasons, including wartime circumstances. In addition, the system proactively assesses civil legal risks of property inheritance, warning about the peculiarities of property registration in combat zones or occupied territories, which protects heirs from wasted efforts and potential legal problems. The proposed DSS is a powerful tool that significantly improves access to justice and minimizes stress for citizens facing inheritance in this extremely difficult period.

The considered examples of using DSS clearly demonstrate how the proposed system transforms complex, confusing and potentially hopeless inheritance situations under martial law into clear, manageable processes. It does not simply automate standard legal actions, but actively adapts to extreme circumstances, removing legal and logistical uncertainty. By providing personalized instructions, dynamic calculation of deadlines, extraterritoriality and proactive assessment of property risks, the system helps testators and heirs effectively navigate the changing legal field. In fact, DSS becomes a reliable digital advisor that provides legal certainty and minimizes the emotional burden in one of the most difficult periods for citizens, allowing them to exercise their inheritance rights even in the most difficult circumstances of war.

The authors' further research will focus on several critical areas. First, it is necessary to conduct an in-depth analysis of the impact of digital transformation on notarial activities during military conflicts, studying the technical feasibility and legal legitimacy of remote certification of wills and inheritance applications using electronic digital signatures and identity verification through secure state systems, especially for military personnel and refugees. An important aspect is the development and verification of predictive models of civil legal risks, which, based on geospatial data (contact line, shelling zones) and information about destroyed infrastructure, would allow for an accurate assessment of the probability of loss or damage to inherited property, as well as propose optimal strategies for protecting property rights in court or international instances. Special attention should be paid to the study of mechanisms for integrating DSS with international legal and consular databases, which will allow for effective resolution of issues of inheritance of property registered abroad, as well as automatic application of the norms of international private law on conflicts of laws. Finally, the topic of ethical and cybersecurity aspects of DSS functioning is relevant, since working with extremely sensitive personal and property data in conditions of increased threat of cyberattacks requires the development of the latest protection protocols and ensuring the inviolability of the principle of legal secrecy. To ensure maximum accessibility and convenience for a wide range of users, especially in martial law conditions, the future implementation of such a system is absolutely necessary in the form of an intuitive web application and a functional mobile application. This will allow heirs and lawyers to receive operational support and up-to-date information from any location with internet access, overcoming geographical and logistical barriers.

## **Declaration on Generative AI**

During the preparation of this work, the authors used Grammarly in order to: grammar and spelling check; DeepL Translate in order to: some phrases translation into English. After using these tools/services, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

## References

- [1] V. P. Makovii, O. I. Yakymets, Z. I. Knysh, Legal regulation of inheritance relations under martial law, *Bull. Kharkiv Natl. Univ. Intern. Aff.* 99.4 (2022) 93–107. doi:10.32631/v.2022.4.08.
- [2] A. Kukhariev, Court Ruling on Supplementary Period for Accepting Inheritance in Terms of Martial Law, *Slovo Natl. Sch. Judges Ukr.* № 2(47) (2024) 135–148. doi:10.37566/2707-6849-2024-2(47)-11.
- [3] Inheritance: Legal issues of inheritance in conditions of armed conflict, 2025. URL: <https://quantumlaw.com.ua/en/blog/inheritance>.
- [4] Ukraine to apply new heritage and statute of limitations rules during martial law, 2024. URL: <https://cms-lawnow.com/en/ealerts/2024/01/ukraine-to-apply-new-heritage-and-statute-of-limitations-rules-during-martial-law>.
- [5] Inheritance Challenges in Ukraine During Martial Law: Procedures and Features, 2025. URL: <https://yednanniazaradyii.org.ua/en/publications/inheritance-challenges-in-ukraine-during-martial-law-procedures-and-features/>.
- [6] Civil Code of Ukraine, 2003. URL: <https://zakon.rada.gov.ua/laws/show/435-15#Text>.
- [7] Y. Hnatchuk, T. Hovorushchenko, O. Pavlova, Methodology for the development and application of clinical decisions support information technologies with consideration of civil-legal grounds, *Radioelectron. Comput. Syst.* No. 1 (2023) 33–44. doi:10.32620/reks.2023.1.03.
- [8] T. Hovorushchenko, Ye. Hnatchuk, A. Herts, A. Moskalenko, V. Osyadlyi, Theoretical and Applied Principles of Information Technology for Supporting Medical Decision-Making Taking into Account the Legal Basis, *CEUR-WS* 3038 (2021) 172-181.
- [9] T. Hovorushchenko, A. Herts, Ye. Hnatchuk, Concept of Intelligent Decision Support System in the Legal Regulation of the Surrogate Motherhood, *CEUR-WS* 2488 (2019) 57-68.
- [10] T. Hovorushchenko, A. Herts, Y. Hnatchuk, O. Sachenko, Supporting the Decision-Making About the Possibility of Donation and Transplantation Based on Civil Law Grounds, in: *Advances in Intelligent Systems and Computing*, Springer International Publishing, Cham, 2020, pp. 357–376. doi:10.1007/978-3-030-54215-3\_23.
- [11] T. Hovorushchenko, A. Herts, Y. Hnatchuk, Intelligent Agent for Support of Decision Making on Civil Law Regulation of Contract for the Provision of In Vitro Fertilization, in: *2020 IEEE 15th International Conference on Computer Sciences and Information Technologies (CSIT)*, IEEE, 2020. doi:10.1109/csit49958.2020.9322023.
- [12] A. F. Andikos, G. Ali, W. A. Purnomo, Expert System for Decision Support Division of Inheritance According to Islamic Law, *IAES Int. J. Artif. Intell. (IJ-AI)* 5.3 (2016) 89. doi:10.11591/ijai.v5.i3.pp89-94.
- [13] A. Chorley, T. Bench-Capon, Developing legal knowledge based systems through theory construction, in: *the 9th international conference*, ACM Press, New York, New York, USA, 2023. doi:10.1145/1047788.1047805.
- [14] M. Farajollahi, V. Baradaran, Expert system application in law: A review of research and applications, *Int. J. Nonlinear Anal. Appl.* 15 (8) (2024), 107–114.
- [15] AI for Probate Lawyers: Draft Better Legal Processings, Faster, 2025. URL: <https://www.casely.ai/solutions/ai-legal-processing-probate-law>.
- [16] How Probate Lawyers Use AI: A Comprehensive Guide for Law Firms, 2025. URL: <https://www.gavel.io/resources/how-probate-lawyers-use-ai#:~:text=AI%20can%20streamline%20the%20client,insurance%20policies%3B%20and%20much%20more.>
- [17] Artificial Intelligence (AI) and Trust and Estate Law, 2025. URL: <https://www.actec.org/resources-for-wealth-planning-professionals/artificial-intelligence-and-trust-and-estate-law-ai/>.
- [18] The Rise of AI in Estate Planning: Balancing Innovation with Human Insights, 2025. URL: <https://www.certainlynews.com/article/the-rise-of-ai-in-estate-planning-balancing-innovation-with-human-insights>.

- [19] Impact of Artificial Intelligence on Estate Planning Attorneys, 2024. URL: <https://www.lindabury.com/firm/insights/impact-of-artificial-intelligence-on-estate-planning-attorneys.html>.
- [20] Strategic Estate Planning: Legal and Tax Considerations for a Secure Legacy, 2025. URL: <https://www.ddlegalservices.co.za/blog/strategic-estate-planning-legal-and-tax-considerations-for-a-secure-legacy>.
- [21] M. Redahan, B. D. Kelly, Artificial intelligence and mental capacity legislation: Opening Pandora's moderm, *Int. J. Law* 94 (2024) 101985. doi:10.1016/j.ijlp.2024.101985.
- [22] T. Sourdin, B. Li, D. M. McNamara, Court innovations and access to justice in times of crisis, *Health Policy Technol.* 9.4 (2020) 447–453. doi:10.1016/j.hlpt.2020.08.020.
- [23] Using Technology to Enhance a Trusts and Estates Practice, 2020. URL: <https://www.strausmalk.com/wp-content/uploads/2020/07/Using-Technology-to-Enhance-a-Trusts-and-Estates-Practice-00473263xA4356.pdf>.
- [24] Automated Estate Planning: The Advantages of Using Automation Software for Drafting Wills and Enduring Power of Attorney Documents, 2024. URL: <https://www.lexology.com/library/detail.aspx?g=79db8f20-335b-452b-b0ef-abbe0ab5d447>.
- [25] T. Mikk, K. Sein, Digital Inheritance: Heirs' Right to Claim Access to Online Accounts under Estonian Law, *Juridica Int.* 27 (2018) 117–128. doi:10.12697/ji.2018.27.12.
- [26] Á. Juhász, Inheriting Digital Assets – A Glimpse Into the Future, *Juridical Trib. - Rev. Comp. Int. Law* 14.4 (2024) 547–563. doi:10.62768/tbj/2024/14/4/02.
- [27] T. Kraiwanit, P. Limna, S. Suradinkura, Digital Asset Adoption in Inheritance Planning: Evidence from Thailand, *J. Risk Financ. Manag.* 18.6 (2025) 330. doi:10.3390/jrfm18060330.
- [28] H. A. Almuzaini, A. M. Azmi, TaSbeeb: A judicial decision support system based on deep learning framework, *J. King Saud Univ. - Comput. Inf. Sci.* (2023) 101695.
- [29] A. A. Sobowale, B. A. Omodunbi, T. A. Abdul-Hameed, P. O. Sobowale, B. J. Amuzat, Development of a decision support system for legal case analysis and decision making using recurrent neural network, *UNIOSUN. J. Eng. Environ. Sci.* 6.1 (2024). doi:10.36108/ujees/4202.60.0180.
- [30] S. Ahmad, M. Z. Asghar, F. M. Alotaibi, Y. D. Al-Otaibi, A hybrid CNN + BiLSTM deep learning-based DSS for efficient prediction of judicial case decisions, *Syst. With Appl.* 209 (2022) 118318. doi:10.1016/j.eswa.2022.118318.
- [31] The Crisis and Force Majeure Regulation: Towards future-proof crisis management and responses?, 2024. URL: <https://www.epc.eu/publication/The-Crisis-and-Force-Majeure-Regulation-Towards-future-proof-crisis-m-5bb29c/>.
- [32] Y. Salahuddin Ali, The Legal Impacts of the Force Majeure Clause on the Supply Chain Resilience in Response to Unexpected Disruptions, in: *The 5th International Scientific Conference on Administrative and Financial Sciences (CIC-ISCAFS'2025)*, Cihan University-Erbil, 2025, c. 160–166. doi:10.24086/icaifs2025/paper.1750.
- [33] A Series: Managing Legal Risk Associated with IT Outages Through Contracting Best Practices – Force Majeure, 2025. URL: <https://www.fasken.com/en/knowledge/2025/01/a-series-managing-legal-risk-associated-with-it-outages>.
- [34] J. Martins da Costa, C. R. Brandão Junior, D. H. Nunes, C. Barberato, Digital legacy: reflections on regulation and challenges in the succession of digital assets, *Concilium* 23. (2023) 173–197.
- [35] A. A. Akramov, N. Kh. Rakhmonkulova, O. T. Khazratkulov, E. E. Inamdjanova, D. I. Imamalieva, S. R. Tuychieva, S. B. Ibodullaev, A. E. Ergashev, S. Khamidov, N. R. Rustamova, The Impact of Digitalization in Inheritance Law, *Qubahan Acad. J.* 4.3 (2024) 100–134.