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# REGULATORY GAPS IN THE INTERNATIONAL TRANSPORT OF COMPANION ANIMALS: PROBLEMS AND A PRACTICAL SOLUTION

***Summary.*** *The study analyzes the critical fragmentation of the regulatory environment accompanying the international transport of companion animals. The growing significance of the problem is associated not only with the rapid expansion of the relevant market segment (estimated at $2.4 billion in 2024 with a projected compound annual growth rate of 8.9% through 2030), but also with the persistently high risks of cross-border spread of zoonoses under conditions of increasing global mobility. The methodological basis of the study relies on comparative legal and systems analysis of veterinary requirements across key international jurisdictions (the European Union, the United States, the United Arab Emirates), as well as comparison with international standards of the World Organisation for Animal Health (WOAH) and the norms of the International Air Transport Association (IATA LAR), which ensures an integrated identification of points of divergence and the associated logistical constraints. Particular attention is devoted to empirically significant contradictions that impede the predictability of law enforcement and the resilience of transport chains. Such contradictions include differences in approaches to animal identification, including the mandatory use of ISO-compatible microchips, as well as substantial variability in the legal regime for serological testing for antibodies to the rabies virus: the range spans from indefinite recognition of results in the European*

*Union to a limitation of 12 months in the United Arab Emirates. Based on the results of the analysis, the concept of a Unified Digital Veterinary Platform (UDVP) is substantiated and formulated, grounded in a single-window architecture and the adaptation of the successful experience of the VEHCS system (USA). The proposed solution is oriented toward automated verification of compliance with both national and international requirements, thereby enabling targeted closure of regulatory gaps, reducing the likelihood of compliance errors, and improving the controllability of biosecurity risks. The material has applied value for specialists in veterinary public health security, international lawyers, logistics operators, and regulatory authorities interested in harmonizing standards and strengthening global biosecurity.*

***Key words:*** *Veterinary public health security, regulatory gaps, international transport of companion animals, harmonization of standards, IATA LAR, WOAH, digital veterinary certificate, VEHCS, zoonoses, concealed commerce.*

Globalization processes, increased population mobility, and the transformation of societal perceptions of companion animals, which are increasingly regarded as full-fledged elements of the family structure [2], have driven a steady rise in the cross-border movement of companion animals. This dynamic, as a derivative of socio-economic change, has brought to the forefront for the international community the task of managed reduction of risks associated with the movement of potential carriers of zoonotic pathogens, while simultaneously observing the imperatives of humane treatment enshrined in the IATA Live Animals Regulations (LAR) [3].

The validity of scholarly interest is further confirmed by the intensive expansion of the global market for companion-animal transport services. According to analytical agencies, its volume was estimated at $2.4 billion in 2024 and, according to forecasts, will increase to $3.9 billion by 2030, demonstrating

a compound annual growth rate (CAGR) of 8.9% over the period 2025–2030. The structural dominance of the transportation segment indicates the heightened importance of unifying logistical and veterinary requirements as a key condition for predictability and legal certainty in international movements. Additional analytics correspond to this trajectory, projecting an increase in the market from $2.04 billion in 2024 to $2.25 billion in 2025 with a CAGR of 10.0% [10].

Exponential demand growth combined with persistent regulatory disunity creates a situation in which regulatory transaction costs and related risks, including a substantial likelihood of entry refusal or the imposition of quarantine measures, are effectively shifted to end consumers and specialized intermediaries. Practice shows that the cost of international animal relocation can vary across a wide range: from $1,000 to $6,000 and above [11]. Regulatory fragmentation is not limited to financial consequences: it generates threats to veterinary public health (VPH), since procedural complication increases the probability of unintentional errors in document preparation, as well as the risk of transporting animals with a non-compliant health status. Under these conditions, an objective need emerges to develop unified, resilient, and reproducible rules that ensure alignment of exporter- and importer-country requirements while maintaining an adequate level of biosecurity.

The international architecture of animal health regulation largely relies on the standards of the World Organisation for Animal Health (WOAH), whose recommendations, including the provisions of the Terrestrial Animal Health Code [4], are used as a methodological and regulatory basis for sanitary and phytosanitary (SPS) measures within the WTO framework [12]. In the logistical dimension, the IATA Live Animals Regulations (LAR) [4] play a system-forming role by regulating requirements for containerization, handling, and transport of live animals. Regional integration entities, in particular the European Union, have taken consistent steps toward internal harmonization of rules, as reflected in Regulation (EU) No 576/2013 [13] and the Animal Health Law (EU) 2016/429

[14].

Despite the existence of international recommendations and regional standards, an analysis of the scientific and applied literature indicates the absence of an effective mechanism for their cross-border integration, as well as legally binding mutual recognition of key procedures and documents. It is indicative that the proliferation of detailed step-by-step transport guides, including requirements for microchipping, vaccination, determination of rabies antibody titers, and documentation state certificates, functions more as an indicator of excessive regulatory complexity and its multi-level paper-based character than as evidence of functional orderliness; the typical procedural configuration often suggests involvement of an accredited veterinary specialist, subsequent approval by APHIS, and interaction with customs authorities [5]. Against this background, a research gap is identified: an insufficiency of analytical works oriented toward developing a mechanism that provides international, digital, and legally recognized mutual approval of veterinary certificates. The existence of individual studies devoted to national electronic systems (for example, the Veterinary Export Health Certification System, VEHCS, in the United States [5]) or to analyses of specific technical requirements (including microchip compatibility issues [16]) does not eliminate the deficit of a comprehensive solution capable of ensuring interoperability and legal validity of electronic documents in the cross-border domain.

Within the present study, the **objective** is defined as identifying and analytically interpreting key regulatory gaps that hinder harmonization and the strengthening of biosecurity in international transport of companion animals, as well as developing a conceptual model of the Unified Digital Veterinary Platform (UDVP) intended for their practical elimination. To achieve this objective, the study provides for comparison of contradictions in basic veterinary requirements, primarily in the domains of identification and serological testing, across leading jurisdictions (the EU, the United States, the UAE); systematization of logistical

and legal risks arising at the interface of WOAH and IATA standards, including the issue of concealed commercial activity; and formulation of the concept and functional scheme of the UDVP as an instrument for safe, transparent, and efficient cross-border verification of veterinary documentation.

**The scientific novelty** of the study consists in the initial proposal and substantiation of a conceptual model of the Unified Digital Veterinary Platform (UDVP), in which the central element is overcoming legal barriers to mutual recognition of electronic veterinary certificates between states operating within the normative orbit of WOAH and operationally oriented toward IATA requirements.

**The author's hypothesis** is formulated as follows: systematic implementation of a globally harmonized digital platform that ensures the unification of identification standards and automated verification of compliance with key veterinary requirements can reduce regulatory fragmentation, mitigate zoonotic risks, and optimize logistical costs.

**Materials and Methods.** The preparation of the study relied on a comprehensive combination of academic and analytical methods adequate to the multi-level nature of the international legal and technical problem field. The methodological design was constructed with a priority on the scientific verifiability of conclusions and the relevance of the evidence base employed.

To establish zones of regulatory divergence and identify inconsistencies in requirements, comparative legal and systems analysis were applied. Within this approach, the the core WOAH standards set out in the Terrestrial Animal Health Code were compared with the logistical-procedural prescriptions of the IATA LAR and regional regulatory acts, including EU Regulation No 576/2013, as well as with the internal requirements of the U.S. veterinary service APHIS USDA. The comparative procedure was oriented toward assessing the actual degree of implementation of WOAH recommendations in national legal regimes, including with respect to critically important parameters, for example, the variability of the

validity periods for rabies titers.

In processing the scholarly corpus, content analysis and subsequent synthesis of results were used, based on specialized publications from peer-reviewed sources (Scopus/WoS) devoted to practical and technological aspects of international transport. The analytical field included works addressing technical defects and regulatory consequences of using incompatible microchips, as well as statistical information on systemic difficulties in animal registration. Synthetic interpretation made it possible to conceptually link technical failures (in particular, microchip reading errors and instability) with their administrative and legal effects for owners and logistics operators, including refusal decisions and increased complexity of procedures for confirming the animal's status.

Empirical updating of the problem field was ensured through statistical and forecasting analysis of market data. The study integrated data for 2024–2025 from reports of leading consulting agencies (Grand View Research, The Business Research Company). These materials were used to demonstrate the scale of market expansion in companion-animal transport services and to provide a quantitative substantiation of the potential economic effect of implementing the proposed practical instrument (UDVP) through reducing costs arising from non-compliance and regulatory uncertainty.

The search and selection of sources were conducted in accordance with strict academic criteria of relevance, reliability, and reproducibility. The information corpus was formed on the basis of materials from leading scientific databases and official resources of international organizations and specialized agencies (WOAH, IATA, USDA APHIS, the U.S. Department of State). To ensure relevance and credibility, 15–25 sources were selected with priority given to peer-reviewed publications (Scopus/WoS) and analytical industry reports; all included materials were dated no more than five years.

**Results and Discussion.** The results obtained indicate that regulatory gaps in the field of international transport of companion animals are caused not by a

deficit of norms as such, but by pronounced fragmentation of requirements and misalignment between technical parameters, veterinary protocols, and the legal status of accompanying documentation. Against the backdrop of persistently high demand for the transport of companion animals, this misalignment acquires a systemic character, increasing the likelihood of compliance errors and creating additional barriers to predictable law enforcement.

International veterinary public health (VPH) is oriented toward preventing the cross-border transmission of zoonoses [2]. At the same time, WOAH standards, while serving as a universal methodological foundation, do not possess direct imperative force and function predominantly as recommendatory reference points. The specific set of requirements to be fulfilled for admitting an animal into the territory of a state is determined by the importing country [15]. Such a distribution of regulatory powers institutionally institutionally the variability of approaches, which leads to significant divergence of key veterinary protocols and creates structural prerequisites for regulatory non-compliance.

The most indicative are divergences in the sphere of identification and in the rules for recognizing serological confirmations of immune status for rabies. Animal identification constitutes the primary element of control and the de facto point of entry for VPH mechanisms. The requirement to use ISO-compatible microchips compliant with standards 11784/11785 assumes critical importance within major regional regimes, primarily in the European Union [20]. In the absence of microchip compliance with the ISO standard, the legal and organizational contour of the procedure becomes more complex: the availability of a specific reading device may be required or re-chipping.5 may be necessary. The regulatory burden is intensified by an additional biotechnical condition according to which microchip implantation must precede rabies vaccination, since the linkage identifier—vaccination status forms a legally significant chain of evidence [5]. Thus, technical incompatibility of microchips is transformed from a purely engineering problem into a factor capable of initiating

administrative consequences up to and including refusal decisions.

A similarly pronounced regulatory variability is demonstrated by the approach to antibody titers to the rabies virus, reflecting a high level of national discretion in the sphere of VPH. In the legal regime of the European Union, the result of serological testing for rabies antibodies may be recognized as valid indefinitely provided that revaccinations are continuous and timely without allowing lapses [6]. This divergence demonstrates that even in the presence of profile regulation at the WOAH level, including the provisions of Chapter 8 [14]. of the WOAH Code devoted to rabies [4], national competent authorities use the serological titer as an instrument of additional risk management, introducing stricter temporal limits (12 months) as a manifestation of a conservative model for ensuring VPH.

Table 1 presents the results of the conducted comparative analysis of key veterinary requirements for the international transport of companion animals.

*Table 1*

**Comparative analysis of key veterinary requirements for the international transport of companion animals**

| Requirement | European Union (EU) | USA (Import) | United Arab Emirates (UAE) |
|---|---|---|---|
| Identification (Microchip) | ISO 11784/11785 | Required (upon import) | Required (ISO-compatible) |
| Validity period of rabies titer | Indefinite provided revaccination is maintained | Depends on the state/country of origin | No more than 12 months before travel |
| Veterinary certificate | EU passport or EU certificate | USDA-APHIS (Form 7001) | International Health Certificate + Import Permit |

*Source:* compiled by the author based on [5-8; 13; 21]

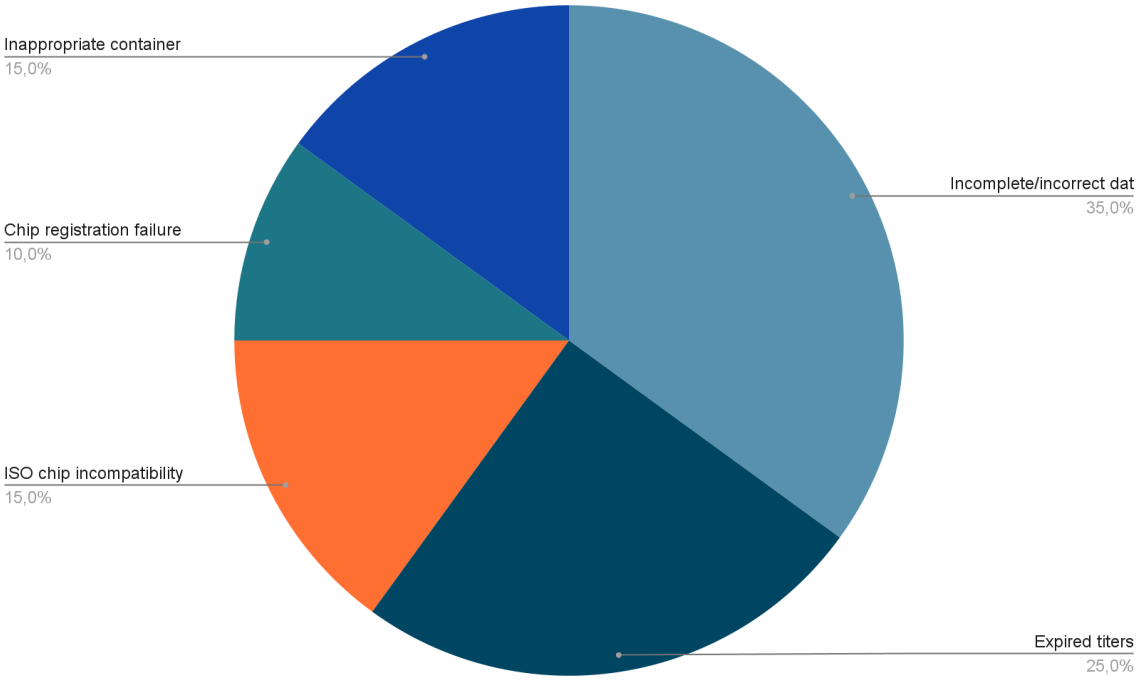



**Fig.1. Structure of reasons for non-compliance with veterinary requirements during international transport**

*Source:* compiled by the author based on [7; 16]

As illustrated in Figure 1, the aggregate set of difficulties associated with documentation and the currency of registration data constitutes the predominant share of the identified problems (60%), noticeably exceeding the proportion attributable to purely technical or logistical factors. This proportion indicates that eliminating the regulatory gap cannot be limited to unifying individual veterinary requirements, including titer-recognition regimes, and requires institutionally embedded digitalization of verification procedures. Consequently, a critical element of managed compliance becomes mandatory verification of the currency of owner data and identification records prior to making a decision to approve transport, which implies a shift from declarative storage of information to enforced, procedurally embedded updating within a digital framework.

Risks arising at the interface of logistics and law form an independent layer of problems in which the regulatory certainty of veterinary requirements intersects with transport regulations, commercial infrastructure, and legal

admission regimes. International transport, especially by air, is governed by the IATA Live Animals Regulations (IATA LAR) [3]. This body of rules is oriented primarily toward ensuring the welfare and safety of the animal during transport, which is reflected in detailed requirements for containers, handling, and placement conditions, including the principle of sufficient space enabling the animal to stand and lie down in a natural posture [23]. At the same time, the high complexity and cost of complying with IATA LAR requirements are transformed into factors that create not only operational but also legal barriers, since any deviation from the prescriptions may entail refusal of carriage, delays, additional inspections, or a forced change of route.

Financial and organizational constraints in this sphere are amplified against the backdrop of rapid market expansion (CAGR 8.9%), which generates sustained demand for reproducible, standardized logistical solutions. At the same time, the cost of transport varies substantially depending on the selected mode of movement (Table 2); however, international cargo transport, which is a mandatory option for most large animals, retains the status of the most expensive channel and is often assessed in the range from $1,000 to $6,000 and above [11]. An alternative option of transport in the aircraft cabin, despite a lower price threshold (approximately $100–$350) [24], is regulatorily and physically constrained: applicability is determined by the maximum permissible mass of the animal and the container (as a rule, up to 9 kg), which significantly reduces the possibility of using this format for large breeds and, in some cases, for long-haul routes.

*Table 2*

**Comparative cost and logistical characteristics of air transport of companion animals**

| Transport category | Cost range (USD) | IATA logistical requirements | Key constraints |
|---|---|---|---|
| In cabin | $100 – $350 | Minimal; weight of the animal + carrier (usually < 9 kg) | Strict limitation by size and weight; stress factor for the animal |
| Cargo hold (Cargo) | $500 – $6,000 (International) | Mandatory compliance with LAR (dimensions, ventilation, temperature regime) | High cost; necessity of veterinary control; dependence on weather conditions |
| Domestic transport (Ground Transport) | $150 – $3,500 (by land, USA) | Regulated locally | Duration of transport, distance limitations |

Source: compiled by the author based on [3; 4; 11; 24]

A substantial regulatory failure manifests in the insufficient clarity of the delineation between non-commercial (NC) movement and commercial activity in the sphere of cross-border circulation of companion animals. The regulatory construct of EU Regulation No 576/2013 establishes a quantitative criterion for non-commercial movement, limiting it to accompaniment by the owner and a cap of up to five animals [13; 16]. At the same time, transport associated with sale, transfer of ownership rights, or aimed at subsequent placement of animals (including in the format of rescue and relocation of dogs) is classified as commercial and is subject to stricter control regimes [26].

The problem is that traditional paper veterinary certificates by their nature do not provide reliable verification of the actual purpose of movement and do not allow for a credible determination of whether transport is non-commercial or conceals a commercial character. As a result, a significant portion of the control burden is de facto shifted to carriers, primarily airlines, which are compelled to assume quasi-regulatory functions by conducting verification actions regarding

suspicion of fraudulent commercial activity and possible smuggling. Such practice constitutes a palliative managerial mechanism: the quantitative limit of five animals functions as a crude filter, but it does not eliminate biosecurity and legal risks at the systemic level, because it does not remove information asymmetry and does not create a legally significant evidentiary framework regarding the purpose of transport.

A digital infrastructure implemented in the UDVP format makes it possible to address this gap in a targeted manner by shifting key verification to the stage of certificate issuance and subsequent transparent traceability. Within such a model, the non-commercial purpose is subject to confirmation by digital attributes and verifiable declarations, including recording of the absence of a change of owner, as well as documentary-digital confirmation of other permissible grounds when the limit of five animals is exceeded (for example, registration for an exhibition if there are more than five animals). An additional element is the integration of information on transfer of ownership rights into the registry contour, which makes it possible to neutralize the loophole of concealed commerce by establishing links between the animal identifier, the owner, and the basis for movement at the moment the veterinary document is generated.

The practical component of the solution brings to the forefront the necessity of digital harmonization as a mechanism for overcoming procedural disunity and uncertainty of the legal status of documents. The experience of the United States is indicative, where the implementation of the Veterinary Export Health Certification System (VEHCS) confirmed the functional effectiveness of electronic certification in the export of live animals [9]. The system enables USDA-accredited veterinary specialists to generate certificates, sign them, and submit them electronically to APHIS for approval, which reduces administrative delays and standardizes internal document circulation [5, 22].

At the same time, a fundamental limitation of this solution is identified: a significant share of trading partners does not recognize electronic signatures as a

sufficient legal equivalent and continues to require a paper document with a wet signature and APHIS stamp.8 Consequently, the bottleneck is predominantly legal rather than technological in nature and is associated with the absence of an interstate mechanism for recognizing electronic veterinary certificates. In this regard, the UDVP should be viewed not as a local information system but as an international standard institutionally curated by WOAH, ensuring the legal validity of electronic certificates by fastening their recognition in the format of interstate agreements and coordinated compliance procedures.

The functional model of the UDVP should cover the entire life cycle of key control actions and documents, ensuring continuous digital traceability from primary veterinary measures to final confirmation of admission. The integrated contour should include stages of identification and vaccination recorded in practical guidelines, as well as registration of serological testing results (titers) and the issuance of state certificates that form a legally significant evidentiary chain for cross-border movement.

The key advantages of the UDVP are formed through shifting control from ex post checks to pre-departure digital verification, legal fixation of the status of the electronic document, and strengthening of traceability mechanisms. The central element is compliance automation: according to the logic presented, the platform performs algorithmic verification of the animal's compliance with the most stringent requirements of the destination country and transit regimes, including the presence of an ISO-compatible microchip, the correct sequence and timeliness of vaccination, as well as compliance with rules related to titers [7, 19]. Such an architecture prevents the creation of a legally defective certificate already at the data-entry stage, because the system blocks the generation of an incorrect or incomplete package, shifting control from the discretionary domain to a regime of formalized validation.

The second system-forming advantage is the legal recognition of the electronic document as equivalent and mandatory for acceptance in the cross-

border domain. A UDVP certificate approved by the authorized national authority (D) acquires the status of a document subject to mandatory recognition by the destination country (F) on the basis of an international agreement institutionally ensured within the WOAH framework. This construct eliminates the need for paper duplication and the use of wet signatures [8], because verification of the authenticity and immutability of the certificate is transferred to the digital channel: the carrier (E) gains the ability to verify the document via a machine-readable identifier (for example, a QR code) or by using distributed technologies for recording and verifying data integrity (including blockchain mechanisms). Thus, not only operational savings are achieved, but also a reduction in legal uncertainty arising in the event of a conflict between national requirements for the form of the document and the technical capabilities of electronic certification.

The third advantage relates to strengthening biosecurity by increasing the speed and reliability of control. Instant verification of the authenticity of the certificate and the currency of data included in the registration contour reduces the likelihood of using forged documents and limits the possibility of moving animals with an improper or incomplete health status. The combined effect is manifested in a reduced risk of importing animals that do not meet veterinary admission conditions, as well as in a decrease in the share of errors caused by the human factor during manual verification and transfer of information between fragmented forms and departmental systems.

At the same time, the implementation of an international platform of such scale presupposes the existence of a matrix of benefits and regulatory risks that must be taken into account already at the design stage. The potential of the UDVP in terms of reducing transaction costs and increasing the controllability of bio-risks is associated with legal challenges (interstate coordination of mandatory recognition, requirements for the form and legal force of an electronic signature, liability regimes for erroneous validation) and technical limitations (interoperability of national registries, cyber-resilience, ensuring immutability

and verifiability of data). Consequently, the regulatory-technological architecture of the UDVP should provide for mechanisms for allocating competences among participants, standardized protocols for data exchange, and formalized audit procedures that ensure reproducibility of decisions and trust in digital certification in the cross-border environment [22; 25].

Regulatory gaps in the international transport of companion animals constitute a complex dysfunction attributable not to the absence of a regulatory base, but to inconsistent and fragmented implementation of already existing standards and recommendations. The problem is grounded in an asymmetry of trust between states: importing countries to a substantial extent retain legal and institutional caution with regard to the veterinary systems of exporting countries. This distrust manifests, first, in persistent variability and contradictoriness of requirements for the same biosecurity parameters (in particular, for the validity periods of rabies titers), and second, in the preservation of formal requirements for paper certificates as the most reliable form of evidence of compliance with import conditions. Thus, even in the presence of international reference points, fragmented national regimes are reproduced, in which control is exercised through strengthening procedures and documents rather than through interoperability and mutual recognition [17; 18].

The concept of the Unified Digital Veterinary Platform (UDVP), built on principles of end-to-end digitalization and automated compliance verification, forms an applied framework for overcoming the identified contradictions. The architectural logic of the UDVP consists in shifting the focus from subsequent detection of non-compliance to its prevention at the document-formation stage: embedded validation algorithms do not allow the creation of an incomplete or legally defective certificate, ensuring the application of the most stringent requirements of the destination country as the base admission regime. In this way, reproducibility of procedures is achieved, dependence on the human factor is reduced, and the risks of refusals, delays, and quarantine measures caused by

formal errors or incomplete information are minimized.

At the same time, the functional viability of the UDVP in the cross-border environment is determined not so much by the technical maturity of the solution as by the presence of a political-legal mechanism that transforms the electronic document into a legally binding object of international recognition. This requires the formation of a specialized Digital Protocol fixed within the WOAH mandate and enshrined with WTO instruments, which would establish the obligatoriness of mutual recognition of the legal force of electronic veterinary certificates issued through the UDVP. The normative закрепление of such a regime should ensure unified criteria of trust in the data source, approval procedures, and verification mechanisms, and also create legal grounds for refusal only on an exhaustive list of objective reasons, excluding arbitrary non-recognition of the digital form of the document.

Consequently, without this legal step, any digital certification will inevitably function in a mode of local effectiveness, without eliminating the main barrier, namely the absence of interstate recognition. Under these conditions, the technical solution remains limited by national borders and is compelled to reproduce paper duplicative frameworks, which undermines scalability, reduces the economic effect, and preserves vulnerabilities attributable to fragmentation of legal regimes.

**Conclusion.** The conducted study, based on an analysis of current statistical data (forecast market growth to $3.9 billion by 2030) and a comparison of international regulatory regimes, confirmed the formulated hypothesis regarding the possibility of effectively eliminating key regulatory gaps through the implementation of a unified digital infrastructure. Verification of the hypothesis is based on the conclusion that the sustainable reproduction of fragmentation is formed at the intersection of three critically significant contours: technical, veterinary, and legal. The technical contour is characterized by problems of compatibility of identification means and degradation of data quality

in registry systems, including the unreliability of registration and updating of information. The veterinary contour is manifested in institutionally fixed divergence of requirements for the validity periods of serological confirmations of immune status, in particular with respect to titers. The legal contour is conditioned by the absence of trans-state recognition of digital mechanisms of attestation and, above all, by the refusal of a number of countries to recognize digital signatures, which maintains dependence on paper documentation.

The formulated concept of the Unified Digital Veterinary Platform (UDVP) sets a practical vector of global harmonization by integrating fragmented requirements into a single verifiable process. Reliance on the successful experience of national electronic systems (including VEHCS) makes it possible to substantiate the applicability of an approach in which the platform provides automated and rapid verification of an animal's compliance with the totality of conditions of the destination country. As a result, financial and time losses associated with international relocation, the cost of which can reach $6,000 and more, are reduced, and the effectiveness of VPH mechanisms is increased by minimizing errors typical of paper document circulation and multi-stage manual verification procedures. An additional regulatory effect is a reduction in opportunities for concealed commerce due to the embedded requirement for digital confirmation of the purpose of movement and the fixation of legally significant transport attributes at the certificate-formation stage.

At the same time, implementation of the UDVP is not exhausted by the task of technical design. A key condition of its cross-border operability is the creation of an international legal mandate that institutionally secures mutual recognition of electronic veterinary certificates. The most substantiated mechanism appears to be the formation of such a mandate in coordination through WOAH with possible use of World Trade Organization instruments regarding the coordination of obligations and recognition procedures. Only normative fixation of the legal force of the electronic certificate at the interstate level can eliminate

dependence on paper forms, close the identified regulatory gaps, and ensure a stable balance of biosecurity and the principles of humane treatment in cross-border transport.

The prospective development of the research includes the formation of a detailed roadmap for integrating the UDVP with existing national VPH systems, as well as conducting a quantitative assessment of the potential economic effect of implementing the UDVP, including measuring the reduction of logistical risks and costs arising due to non-compliance with IATA LAR standards.

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