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LIABILITY OF THE REPUBLIC OF CROATIA FOR DAMAGE CAUSED BY COMPROMISING THE REAL PROPERTY REGISTRATION AND CADASTRE JOINT INFORMATION SYSTEM[**]

***Abstract*:** *Before their digitation, land registries in the Republic of Croatia had been kept manually (paper-based registration). The Land Registry Act stipulates that land registries in the Republic of Croatia are kept electronically by means of a Real Property Registration and Cadastre Joint Information System (hereinafter: JIS), containing harmonized real property and cadastral data. A real property and land database is created through the electronic entry of paper-based data, i.e. integration of real property and cadastral data into a single database. Hence, the protection of real property transfers is enhanced since the legal status of the land and all accompanying restrictions (concessions, public property status etc.) can be obtained*

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in one place. The real property land database enables registration of every change to the real property without the need to inform both the land registration court and cadastre thereabout. The Real Property Registration and Cadastre Joint Information System is jointly coordinated and managed by the Ministry of Justice and Administration of the Republic of Croatia and the State Geodetic Administration. The Land Registry Act sets forth that the Republic of Croatia is strictly liable for any damage arising from flaws in keeping land registries. Such damage can occur in case of errors or malfunctions in the respective joint information system. This paper investigates the appropriateness of the measures for protection of the Real Property Registration and Cadastre Joint Information System and the general rules for security and control of the access to the said system, and analyses the risk of compromising it. Regarding the liability of the Republic of Croatia for any damage pertaining to flaws in the land records management, the paper depicts the model of defining the liability for any damage sustained by the holders of ownership rights due to unauthorized access to the said joint information system. The paper also sheds light on the advantages and disadvantages of the model for defining fault and strict liability in the above case, and examines some pending issues relating to the applicable model for defining such damage liability de lege lata as well as possible legal solutions and the potential need for the legislator's intervention de lege ferenda.

Keywords**:** *damage, land registry, cadastre, information system, digitization.*

1. Introduction

In order to make rights *in rem* in immovable (real) property effective towards all (*erga omnes*), they shall be made publicly available. In this view, Croatia follows the tradition of continental law countries in which ownership rights and other facts relevant for legal transactions are registered in land registries. Land registries are reliable real property and relating ownership records which reflect the legal status and transfers of real property. They enable registration of immovable (real) property rights implying legal effects on their publication, protection, exercise, acquisition and termination (Gavella, Josipović, Gliha, Belaj, Stipković, 2007: 273-282). Until their digitation, land registries in the Republic of Croatia (Josipović, 2001: 98) had been kept manually (paper-based registration). Such record-keeping entailed manual entry of data into paper-based registries (bound documents) (Gavella *et. al.*, 2007: 285). The Republic of Croatia and International Bank for Reconstruction and Development entered into a Loan Agreement (Real Property Registration and Cadastre Project) and,

consequently, the Croatian Parliament adopted the Act on the Ratification of the Loan Agreement (Real Property Registration and Cadastre Project) between the Republic of Croatia and International Bank for Reconstruction and Development on 23 January 2003.[1] This agreement includes the general goal of the project: the preparation of an efficient land registry management system aiming at advancement of the real property market through upgrade of the existing real property registration and cadastral system (Antonić, 2006: 77). To harmonize the applicable legislative framework with the land registry digitation process, the legislator has made numerous amendments of the main sources of land registry law in the last 25 years. The highlight of those amendments is the adoption of the new Land Registry Act in 2019. The new Act prescribes that land registries are kept electronically by means of a Real Property Registration and Cadastre Joint Information System (hereinafter: JIS). This system serves to store, maintain and keep all real property and cadastral data. The harmonized data are then entered in a land database as part of the said system.[2]

The transformation of real property and cadastral data into the digital format and their storage in the joint information system, which is in fact a public registry, raises the question of liability for any damage sustained due to the distortions of the system. This paper analyses the risk of unauthorized access to the system and damage which might be suffered by the holders of ownership rights. Indeed, technological advancement implies the high risk of the so-called *cybercrime*[3] whereas the building of trust in an *online* environment represents the key for economic and social development. Therefore, the paper focuses on the potential methods of compromising the security of the Real Property Registration and Cadastre Joint Information System, possible measures for its protection and possibility of demonstrating its distortions through expertise in compensation proceedings. In regard to the liability for damage caused due to flaws in keeping land registries, i.e. system malfunctions or computer-related errors, the paper deals with damage liability models applied in judicial compensation proceedings. The paper also tackles some challenges relating to the applicable model for defining such damage liability as well as possible legal solutions and the potential need for intervention by the legislator *de lege ferenda*.

1 Act on the Ratification of the Loan Agreement (Real Property Registration and Cadastre Project) between the Republic of Croatia and International Bank for Reconstruction and Development, *Official Gazette*, International treaties no. 2/2003.

2 Article 6 paragraphs 1-3 of the Land Registry Act (hereinafter: the LRA).

3 Cybercrime can be defined as a totality of crimes exercising illegal influence on the use, integrity and availability of the system hardware, software and database or on the confidentiality of digital data (Šimundić, Franjić, 2009: 31).

2. Land Registry Management Models

Legal transactions related to real property transfers on the territory of the Republic of Croatia are entered into land registries. That procedure involves registration of ownership rights and other rights, if envisaged by special laws.[4] Land registries appear to be public registries[5] in which immovable (real) property, related (ownership) rights *in rem* and other legal relationships and fact relevant for real property transfers are registered. The content and reliability of such records contribute to legal certainty as regards the holders of ownership rights and legal transactions in general, as well as the possibility of control over the holders by public law and the exercise of the rights by third parties towards them.[6] Land registries in Croatia are kept by municipal courts or more precisely, their land registration departments (Pichler, 2022: 12). Cadastral surveying sets grounds for land registration. Data on the plots of land entered into land registries shall be compatible with the appertaining cadastral data. An immovable (real) property cadastre contains records of land parcels and buildings lying thereon or thereunder, and of special legal regimes related thereto.[7] Data on the holders of ownership rights are entered into real property cadastres based on the data from land registries.[8]

In line with the aforesaid, the LRA foresees electronic registration of real property data in the JIS. Harmonized real property and cadastral data are integrated into a single database which is created by the electronic entry of paper-based data in the JIS (Josipović, 2001: 99). Hence, the protection of real property transfers is enhanced because the legal status of the land and all accompanying restrictions (concessions, public property status etc.) can be obtained in one

4 Article 3 paragraphs 1-2 of the LRA

5 The most important role of public registries in relation to ensuring legal certainty in legal relationships between natural persons and legal entities refers to the availability of registered data to the public. Therefore, all the registries shall be publicly available. Under certain conditions, one can have an insight into and obtain information on the facts and requirements for acquisition of individual rights. Considering the fact that public registries are managed by courts or administrative bodies in the role of authorities, they should entail public trust. Persons relying on data entered into public registries should be, in a particular way, protected in legal transactions even if those data do not reflect the legal and factual situation (Josipović, 2006: 4-5).

6 The adequate response to the challenges of a modern legal state and providing efficient legal protection require reliable records. Keeping such records imposes the need for their organizational and functional regulation (Pichler, 2006: 31).

7 Article 21 paragraph 1 of the Act on State Survey and the Real Property Cadastre, *Official Gazette* no. 112/18, 39/22, hereinafter: ASSRPC.

8 Article 4 of the Ordinance on the Content and Form of Cadastral Documentation, *Official Gazette* no. 142/08, 148/09, hereinafter: OCFCD.

place (Pichler, 2022: 14). A real property land database enables registration of every change to the real property without the need, which characterized the old system, to inform both the land registration court and cadastre thereabout, e.g. about the changes referring to the number, shape and surface area of a land parcel and those relating to its subtraction, separation, addition and division (Antonić, 2005: 74-75). The JIS is an information system in which real property and cadastral data are stored and kept in a single database in the following manner: the bodies in charge of cadastre management are also in charge of keeping cadastral data whereas land registration courts are in charge of managing data on the holders of ownership rights and on legal facts and relationships. The Real Property Registration and Cadastre Joint Information System is jointly coordinated and managed by the Ministry of Justice and Administration of the Republic of Croatia and the State Geodetic Administration.[9] The Land Registry Act stipulates that paper-based registries are transformed into the electronic format and stored in the JIS, i.e. paper-based files are transformed into electronic files.[10] Documents laid down by the Ministry of Justice and Administration of the Republic of Croatia and the State Geodetic Administration regulate the organization and operation of the JIS. Technological management of all JIS data is entrusted to a company founded by a decision of the competent body. Mutual relationships, rights and liabilities in the JIS technological management are governed by a special agreement concluded between the Ministry of Justice and Administration of the Republic of Croatia and the State Geodetic Administration on one side and the hosting company on the other side.[11] This legal matter is called a "Hosting Agreement"[12].[13]

2.1. Insight into Land Registries

Access to the Real Property and Land Database System (hereinafter: RPLDS) is today provided electronically. In fact, land registration courts and cadastres offer all real property and land data stored in the said database regardless of a cadastral municipality. An insight into land registries can be achieved by visiting the respective webpage or by obtaining an extract from the respective land registry. Authorized (registered) users are entitled to issue the extracts

9 Article 4 paragraph 2 of the Rulebook of the Real Property Registration and Cadastre Joint Information System, *Official Gazette* no. 6/21, hereinafter: RRPRCJIS.

10 Article 14 paragraphs 1-2 of the LRA.

11 Article 4 paragraphs 1-4 of the Ordinance on the Organization and Operations of the Real Property Registration and Cadastre Joint Information System, *Official Gazette* no. 107/10, hereinafter: OORPRCJIS.

12 Article 4 paragraph 4 of the OORPRCJIS.

13 For more details about the Hosting Agreement see *infra*.

and submit applications for electronic registration in land registries. In this light, authorized users mean a notary public, lawyer or State Attorney's Office, if such is required by certain judicial or administrative proceedings.[14] The Ministry of Justice performs the role of the system administrator.[15] Electronic access to land registries is provided through a JIS one-stop-shop.[16] Authorized users are granted access through their user accounts while regular users can obtain desired land data via the e-Citizens application[17].[18] In order to create an

14 Article 4 paragraph 1 of the Ordinance on e-Services for Users and Registered Users of the JIS (hereinafter: the OESUAUJIS), *Official Gazette* no. 108/19.

15 Article 4 paragraph 3 of the OESUAUJIS.

16 *One-Stop-Shop* (OSS) is a single service point enabling access to real property and cadastral data (oss.uređenazemlja.hr). Through the Ministry of Justice and Administration and State Geodetic Administration, the Government of the Republic of Croatia launched the National Land Registry and Cadastre Consolidation Programme in 2003. The short name of the programme is *"Uređena zemlja"* (Organized Land). The JIS was developed within its framework. The modernization of the real property and cadastre system has resulted in a swifter and simpler procedure for registration of real property and relating ownership rights. Moreover, online information from land registries and cadastres have become available 24/7. The main goal of the Programme was to prepare a more efficient land and real property registration system in order to develop a more effective real property market. Aiming to provide the project with further support, the World Bank granted the Republic of Croatia a loan (no. 8900-HR) in 2018 and thus secured additional funds for new activities within the Croatian land administration modernization process for the benefit of citizens, entrepreneurs and government institutions. The new loan was effected on 19 December 2018 while the new deadline for project completionwas 16 January 2023. The project was implemented by two state administration bodies in charge of the registration of real property and relating ownership rights: the Ministry of Justice and Administration, and municipal courts with their 108 land registration departments. The State Geodetic Administration regulates, among other things, the operations of the cadastral system (20 regional cadastral offices and 92 extensions). The project was operatively implemented by the Project Implementation Unit and teams from both state administration units (Uređena zemlja 2023, http://www.uredjenazemlja.hr/default.aspx?id=7, accessed on 30 March 2023).

17 Article 5 paragraphs 1-3 of the OESUAUJIS.

18 The *e-Citizens* system was established by the Croatian Government and its goal is to modernize, simplify and accelerate the communication between the citizens and public sector as well as to raise the transparency of providing public services. The e-Citizens system encompasses: the Central Government Portal, the User Box and the National Identification and Authentication System. The fundamental purpose of the Central Government Portal is integration of the information possessed by government institutions as to enable the citizens to obtain desired information as simply as possible. Information appearing at the Central Government Portal is regulated by the Central State Office for the Development of the Digital Society. The User Box enables every citizen with a valid personal identification number to receive official messages related to public services, procedures and statuses as well as their overview and storage. The National Identification and Authentication System (hereinafter: NIAS) ensures safe and trustworthy identification and authentication of us-

authorized (registered) user account, users shall submit an application to the system administrator through the Croatian Bar Association, Croatian Notaries Chamber and State Attorney's Office.[19]

3. Forms of Compromising the Real Property Registration and Cadastre Joint Information System

The security of every information system depends on meeting three basic requirements: confidentiality, integrity, and availability of its data (Death, 2017: 13). In this view, confidentiality or privacy implies that confidential information is not accessible to unauthorized persons; integrity entails that unauthorized persons are prevented from modifying the data or computer programmes managing those data and from unauthorized computer programme management. Finally, availability means that information system data and network services are available to authorized (registered) users whenever they request those data and services. To accomplish all of the set goals, unambiguous authentication is also needed. Such authentication implies non-repudiation of a user-completed activity within an information system.

Since the RPLDS is, by its very nature, a public database, the main task of the JIS is to ensure security mechanisms when entering, modifying and deleting data as well as their integrity and availability to the users. Unauthorized access to the JIS and corresponding distortions of the RPLDS are the severest form of compromising the Real Property Registration and Cadastre Joint Information System; hence, it is necessary to protect it with all possible measures, particularly from the outside. The JIS is a publicly available service and thus requires protection from the inside as well, due to the relevance of its data and possible distortion consequences. Other forms of compromising the JIS include eavesdropping and interception of network traffic, denial-of-service (DoS) attacks and taking control over the devices that belong to the computing and communication-based e-infrastructure.

ers who access public electronic services by means of valid credentials. Every citizen of the Republic of Croatia with valid credentials is provided with a unique electronic identity by the NIAS and can use the credentials to access public e-services. The NIAS serves as a safe and simple tool to access the e-Citizens system with one click. Indeed, when someone logs in to the said system via the NIAS, he/she does not have to log in again to be provided with another NIAS-related e-service. The Financial Agency is in charge of the NIAS management (FINA, 2023, https://www.fina.hr/e-gradani, accessed on 30 March 2023.

19 Article 6 paragraph 1 of the OESUAUJIS.

4. Possibility of Demonstrating Data Modification in the JIS

The Republic of Croatia shall be liable for any damage arising from the use of the JIS if such damage has resulted from an error or malfunction of the applied computer programme or the computer itself. Hence, the users should pay attention to the time when data modification occurred, who is to blame for the modification and which data have been changed. The basis of computer forensics entail monitoring of every transaction completed within the RPLDS (who made it, when, from which IP address, and which data have been modified), creating an archive in which every change is recorded, making a backup and data archive at the level of the computer programme and database, and related event logs of the information system, computer programme, database, network services and computing and communication-based e-infrastructure. Receiving and processing applications submitted electronically in the form of an electronic file, using the NIAS infrastructure for authorized (registered) user authentication and the necessity of a qualified electronic signature provided by a qualified service provider as well as the possibility of submitting applications for real property land registration and their amendments via a network service, accompanied with a valid certificate of the registered user system administrator considerably reduce the chance of manipulation and simultaneously facilitate detection of subsequent accidental and deliberate unauthorized data modification within the system. The same procedure refers to written enclosures, both those submitted as original documents and those submitted as certified copies, which are converted into the electronic format by a registered user who is obliged to provide every attached document with a qualified electronic signature; after being converted into the electronic format, the written enclosures are returned to the applicant and the transformed documents are saved and kept according to special saving and keeping regulations by registered users.

In order to detect changes in the system, one needs to determine the time when they occurred. Applications for real property and land registration, submitted electronically, are deemed received by the land registration court when they are registered by the receiver's server, where the applications are all accompanied with the day, month, year, hour and minute of application reception. Real-time clock harmonization in all information systems[20] is a prime prerequisite for mutual linking and analysing data from different sources for the purpose of finding out the time and character of an incident. This procedure is necessary not only for proving a security incident but also for future system upgrade and incident prevention.

20 RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification.

5. Possibility of Information System Protection

Pursuant to the internationally recognized OSI security infrastructure,[21] it is necessary to ensure security mechanisms and services aimed at detecting and preventing security attacks, i.e. to enhance the security and resistance of the data transfer, storage and processing system as to reduce the chances of compromising the information system. Since attacks can be both passive (which have no impact on the content and availability of data) and active (which include manipulation with data and data streams) permanent control and active mechanisms for the protection of the JIS are required (Verwoerd, 1999: 5-7). Such protection should be seen as an imperative because the JIS is accessible to a wide circle of registered users with the powers of data administration, who use public internet-based infrastructure to access the system without employing virtual private networks providing secure communication channels. The foundation of such protection should be NIAS-based user authentication and subsequent information system access control allowing an access only to registered users by creating their own user account. Additional security mechanisms for data encryption involve SSL encryption at the application level, one-stop-shop web services using PKI (*Public Key Infrastructure*), and the application of a digital signature which is employed by the data provider to undeniably ratify the source and integrity of provided documents by applying a qualified electronic signature as defined by the OESUAUJIS. Moreover, if an application for registration in the RPLDS and accompanying amendments are submitted through a network service, they can be electronically signed by using a valid certificate of the registered user-system administrator[22], which bears great relevance for ensuring data integrity in the RPLDS.

With a view to provide technical-technological protection of the JIS, which encompasses the security of the computing and communication-based e-infrastructure and data management computer programme, one needs to take account of all standard mechanisms prescribed by the ISO 27001 standard[23]: physical and technical protection of the computing and communication-based e-infrastructure hosting the JIS, regular and registered user authentication, application of cryptographic protection methods at the application level, usage of virtual private networks for remote access (if possible), digital document and transaction signage, network traffic limitation and control (firewalls, web application firewalls, intrusion detection and prevention systems), security zone establishment, locally redundant storage, backups and data archives, saving

21 ITU-T recommendation X.800, Security Architecture for OSI.

22 Article 12 of the OESUAUJIS.

23 ISO/IEC 27001 – Information security management system.

individual transactions in the RPLDS and the creation, storage and monitoring of event logs within the JIS (network equipment, servers, programmes, network services, databases).

The accomplishment of set goals is fostered by the fact that smooth performance of JIS operations implies not only security but also ensuring service continuity and quality by specifying an adequate service level (*Service Licence Agreement*/ SLA) and deploying a redundant JIS site in the active-active or active-passive mode in an independent data centre (DR site).

6. Damage Liability Model

The Land Registry Act sets forth that the Republic of Croatia is strictly liable for any damage arising from flaws in keeping land registries. The state is discharged of such a liability when damage results from force majeure, but it is held liable for the damage suffered due to flaws or errors in a computer programme or from computer malfunctions.[24] The applicable damage liability model in this view, when there is no injurer's fault (person responsible for the damage), is the strict liability model.[25] Thus, one can speak about liability arising from the bare fact that damage has occurred (Klarić, Vedriš, 2006: 612-613)[26].[27] Damage liability requires fulfilling the following conditions: the harmful action, damage,

24 Article 9 paragraphs 1-2 of the LRA.

25 The Croatian law of damages includes a legal ground for strict damage liability application. Indeed, the Civil Obligations Act foresees strict liability for damage caused in relation with a dangerous thing or dangerous activity (Article 1063), strict liability for damage caused by a defective product (Article 1073) and strict liability of an organizer of a gathering (Article 1081). The Civil Obligations Act, *Official Gazette* no. 35/05, 41/08, 125/11, 78/15, 29/18, 126/21, 114/22, 156/22, hereinafter: COA.

26 Fault liability used to be the dominant model for defining damage liability and thus the liability based on the causality criterion generally represented an exception. However, swift economic development and the complexity of social relationships indicate that it is unfair and sometimes even impossible to base damage liability solely on someone's fault. Accordingly, legal theory has embraced the concept of strict liability. Furthermore, legal doctrine has generated, among other concepts, risk theory, based on which damage liability is established on the ground of created risk. Every human activity bearing a certain risk (e.g. railway, industry) implies that he who undertakes such an activity is liable for potential damage that can be attributed to that activity without examining possible fault of the person having initiated it. (Klarić, Vedriš, 2006: 613-614).

27 Damages resulting from the use of particular technical devices and cutting-edge technologies (e.g. robotic surgery in medicine) encourage application of the strict liability model since the consequences of the use of such technical devices are not fully predictable. Also, artificial intelligence entails the issue of unexplainability and incomprehensibility. Designers of such systems do not know, due to system complexity and big data, how the system produced a certain solution. Those systems are not programmed to find solutions

wrongfulness of the harmful action, and the causal link between the harmful action and the damage. However, although the strict liability model does not require the existence of an injurer's fault, the victim's status is aggravated by the fact that the victim (injured person) is forced to prove a causal link[28] between a flaw in keeping land registries or the employed programme or system malfunction and the damage sustained. In order to establish what actually happened in each individual case of a system malfunction and damage occurrence, an expert witness has to be invited to reconstruct the manipulation with the computer/programme[29] which resulted in the occurrence of damage. On such an occasion, the expert witness informs the court about the facts that took place in the past and draws appertaining conclusions (Triva, 1978: 418). One of the great advantages of digital evidence is that it is basically indestructible and can be copied (Šimundić, Franjić, 2009: 46). The expertise of expert witnesses on the impact of the causes and consequences of an incident is essential for establishing a causal link between a flaw or error in a computer programme or system malfunction and the occurrence of damage. A causal link or causal nexus is a link between a harmful action and the damage, whereby the latter results from the former. It is in the nature of things that damage emanates from a multitude of causes. Among all those causes, one needs to find the cause that legally matters most. In this view, the Republic of Croatia relies on adequate causation which entails that, among many circumstances leading to damage, the one that can be associated with the natural way of things (usual course of events) should be regarded as the cause of damage (Crnić, 2006: 705). In our context, an IT expert witness is expected to detect the circumstance/activity that triggered the occurrence of damage.

7. Hosting Agreement

For the sake of further analysis of the standpoint of the Republic of Croatia on the liability for damage sustained by compromising the JIS, the authors gained an insight into the files of the Ministry of Justice and Administration of the Republic of Croatia to inspect the Agreement on the Operation and Servicing of the Computing- and Communication-Based e-Infrastructure for the Application

but to create rules themselves during the learning process and performance of operations. Consequently, they could fail in detecting some obvious causal links (Bracanović. 2021: 66-74).

28 When it comes to damage caused in relation with a dangerous thing or dangerous activity, the injured person does not have to demonstrate a causal link between them. Such a link is implied. However, this is not the case with flaws in keeping land registries.

29 The most popular computer manipulation methods are: unauthorized access to an information system, data manipulation, illegal use of software tools, login to a system with a stolen password (Šimundić, Franjić, 2009: 46-49).

System Real Property Registration and Cadastre Joint Information System (JIS) without a *Disaster Recovery* (DR) Site (hereinafter: the Hosting Agreement).[30] The Hosting Agreement regulates the rights and liabilities of the Contracting Authority and Service Provider, i.e. Ministry of Justice and Administration, and State Geodetic Administration on the one side, and the Information Systems and Information Technologies Support Agency LLC) on the other side.[31] It should be noted that the integral parts of his agreement are the annexes stated in Article 2 of the Hosting Agreement (Service Licence Agreement, JIS Preventive Maintenance Plan, Operational Level Agreement, HD SD Procedure, Backup Policy, Remote Desktop Protocol, Remote Desktop Instructions, Service Delivery Status Report) Yet, the authors have not been provided with an insight into these annexes by the Service Provider.[32]

The parties to the Hosting Agreement are bound to compensate for any damage done to the counterparty, resulting from a failure to meet their contractual liabilities either fully or partially. This does not involve damage caused by force majeure. As laid down in Article 17 of the Hosting Agreement, force majeure encompasses neither a lack of staff or software nor omission of subcontractors or outsourcers of either party. Article 18 (para. 3) of the agreement prescribes the Service Provider's liability to ensure the highest level of physical surveillance of the room in which the data storing equipment is situated. This means 24/7 surveillance of the room and strict entrance control. All real property and cadastral data, and other data in possession of the Contracting Authority remains their property. Upon the expiration of the Hosting Agreement, all the data shall be returned to the Contracting Authority and the Service Provider is not entitled to keep a single copy thereof. Those data are confidential and the

30 Agreement on the Operation and Servicing of the Computing- and Communication-Based e-Infrastructure for the Application System Real Property Registration and Cadastre Joint Information System (JIS) without a *Disaster Recovery* (DR) site, Class: 150-30/22-01/73, File no: APIS IT-06-04-22-1 of 29. 12. 2022 (hereinafter: the Hosting Agreement).

31 In terms of meeting their contractual liabilities, the Service Provide shall act with due skill, care and diligence as foreseen in Article 15 par. 2 and Article 23 para.5 of the Hosting Agreement. Moreover, Article 11 paragraphs 1-4 thereof stipulates that the Contracting Authority is entitled to appoint a person to conduct IT monitoring to check whether the Service Provider meets their contractual liabilities (e.g. protection of personal and other data).

32 These annexes contain data related to: the technical description of the computing- and communication-based e-infrastructure, operations manuals, detailed data for accessing particular JIS zones and similar, so they are considered a top secret. Article 20 para.1 of the Hosting Agreement governs that all the information and data provided to the counterparty for the sake of performance of the agreement and the whole agreement itself shall be deemed as a business secret. In the end, Article 20 para.2 thereof stipulates that confidential data shall not be used for any purposes other than those laid down therein without an explicit written approval of the counterparty.

Service Provider is not entitled to disclose them to third parties without an explicit written approval of the Contracting Authority to the extent and scope defined by the latter. The Service Provider may only make use of the said data if the use is in compliance with their designated purpose. The Service Provider guarantees that the data will not be used for any other purposes and that they will not be handled in any other way but the one specified in the Hosting Agreement. In case of violation of these provisions, the Contacting Authority shall be entitled to compensation (damages).[33] In the event of clause violation, the Contracting Authority is entitled to activate one of the following Service Provider's performance guarantees: promissory notes or blank promissory notes, bank guarantees or cash deposit amounting to 10% of the agreed service price. If the damage suffered by the Contracting Authority exceeds the guarantee amount, the Contracting Authority may require from the Service Provider to provide compensation for the difference in value.[34]

8. Possibility of Further Improvements of the Victim/ Injured Person Compensation System

The reasons behind the use of the model of strict liability for damage resulting from a flaw or error in the computer programme or from a system malfunction can be find in the complexity of the operations of information systems and computer programmes, and the relating impossibility to find the fault and the person responsible for damage. Furthermore, the strict liability model is expected to provide the victim (injured party) with swift and just compensation (Ćepulić, Roksandić Vidlička, Babić, 2008: 130). In this light, the legislator should, *de lege ferenda*, define the procedure according to which notice of damage (violation of ownership rights) could be submitted both by a competent officer of the land registration department and the injured person himself/herself. In this view, compensation for damage should take place within the framework of administrative proceedings instead of civil proceedings (Proso, 2009: 368). That would take pressure off the justice system and accelerate the victim compensation procedure.[35] Hence, the legislator should prescribe a liability of the Republic of

33 Article 14 paragraph 1-4 of the Hosting Agreement.

34 Article 15 paragraph 1-3 of the Hosting Agreement.

35 One should bear in mind that a person who intends to bring an action against the Republic of Croatia, is obliged to submit an application for amicable settlement of the dispute to the State Attorney's Office beforehand since the State Attorney's Office has substantive and territorial jurisdiction to represent the Republic of Croatia before any court chosen by the applicant (claimant). Only if the application for amicable settlement of the dispute is rejected or if it is not handled within three months after its submission, the applicant (claimant) may bring the action before the competent court. Article 186a para.5 of the Civil Procedure Act,

Croatia to enter into an insurance contract. Such a contract would be based on a liability-insurance policy covering the exercise of a professional activity. If the injured person is not satisfied with the offered compensation, he/she would be provided with the right to bring an action for damages. Still, in such a case, the injured person would be exposed to the risk of bearing the judicial costs. The value of the respective insurance premium could be compensated with the amount of judicial fees when registering land or real property.[36]

When it comes to land registry keeping-related damage resulting from a flaw or error in the computer programme or from a system malfunction, the legislator should, *de lege ferenda*, design a system for recording such flaws, errors or malfunctions.[37] Recording error emergence and its harmful consequences is aimed at avoiding similar situations in the future. Computerization of the RPLDB and introduction of an error recording system enable expert analysis and undertaking measures for eliminating all kinds of failures in the JIS.

Even though the strict liability model does not rely on the need to exhibit the fault of the injurer,[38] the injured person still has to demonstrate the following: the harmful action,[39] the sustained damage, the causal link between the harmful action and the damage, and the wrongfulness of harmful action in the strict sense. The position of the injured person is here particularly unfavourable since

*Official Gazette of the Socialist Federal Republic of Yugoslavi*a no. 4/77, 36/77, 6/80, 36/80, 43/82, 69/82, 58/84, 74/87, 57/89, 20/90, 27/90, 35/91 and *Official Gazette of the Republic of Croatia* no. 53/91, 91/92, 58/93, 112/99, 88/01, 117/03, 88/05, 02/07, 84/08, 96/08, 123/08, 57/11, 148/11, 25/13, 89/14, 70/19, 80/22, 114/22, hereinafter: CPA.

36 Tariffs 14-19 of the Regulation on the Tariff of Court Fees, *Official Gazette* no. 53/19, 92/21.

37 Recording flaws in the operation of technical devices is a practice pertinent to the countries that have embraced the strict damage liability model in medicine (e.g. Sweden, Denmark, New Zealand). That practice is part of the so-called *''no fault – no guilt''* system of damage compensation. It requires registration of every error and flaw, and notice of every harmful event during medical interventions as to avoid similar omissions in the future (Pichler, 2018: 247).

38 The Croatian law of damages imposes the strict damage liability model wherein an injurer's fault is implied. In such cases, fault means the lowest negligence level (ordinary negligence). Every other negligence level shall be proved by the injured person. The application of the strict liability model results in long court proceedings since the injurer is most often expected to prove his innocence (Klarić, Vedriš, 2006: 610-611).

39 Light should also be shed on the fact that legal theory frequently defines damage as harmful action-related violation of someone's subjective right or interest. Harmful action is thus defined as an act or omission of the injurer to the detriment of the injured person. In this context, harmful action can only be performed by a human being. For that reason, from the perspective of legal doctrine, it is nomotechnically hard to justify the formulation laid down in Article 9 para. 2 of the LRA, which sets forth that the Republic of Croatia is liable for any damage arising from a flaw or error of a computer programme, or to a system malfunction.

he/she can be thus deprived of his/her ownership rights and be forced to initiate long-lasting and expensive court proceedings for compensation of the damage sustained. It is such situations that impose the need to implement a compensation system aimed at redressing injustice, providing swift and fair compensation for damages and avoiding lengthy and costly judicial proceedings.

9. Conclusion

The new Land Registry Act stipulates that land registries in the Republic of Croatia are kept electronically by means of a Real Property Registration and Cadastre Joint Information System (JIS), containing harmonized real property and cadastral data. The JIS is an information system in which real property and cadastral data are stored and kept in a single database. The transformation of real property and cadastral data into the digital format and their storage in the above information system, which is in fact a public registry, raises the question of the liability for any damage suffered due to distortions of the system. The security of every information system depends on meeting three basic requirements: confidentiality, integrity, and availability of its data. Unauthorized access to the JIS and corresponding distortions of the RPLDB represents the severest form of compromising the Real Property Registration and Cadastre Joint Information System, and hence, it is necessary to protect it with all possible measures, particularly from external intrusions. The JIS is a publicly available service and requires protection from the inside as well, due to the relevance of its data and possible distortion consequences. For the purpose of combating security attacks or activities intended to harm ICT systems, it is necessary to ensure security mechanisms and services aimed at detecting and preventing such incidents, i.e. to enhance the security and resistance of the data transfer, storage and processing system and to reduce the chances of compromising the information system.

The LRA sets forth that the Republic of Croatia is liable for any damage arising from a flaw in keeping land registries. The strict or causal damage liability model is not based on an injurer's liability for damage. Although this model does not require the existence of an injurer's fault, the victim's status is aggravated by the fact that the victim (injured person) is forced to prove a causal link between a flaw in keeping land registries or the employed programme or computer malfunction and the damage. The position of the injured person is here particularly unfavourable since he/she can be thus deprived of his/her ownership rights and be forced to initiate long-lasting and expensive court proceedings for compensation for the damage sustained. In order to establish what actually happened in each individual case of a system malfunction and damage occurrence, an expert

witness has to be invited to reconstruct the manipulation with the computer/programme which resulted in the occurrence of damage. The reasons behind the use of the model of strict liability for damage resulting from a flaw or error in the computer programme or from a system malfunction can be found in the complexity of the operations of information systems and computer programmes, and the relating impossibility to find the fault and the person responsible for the damage. Furthermore, the strict damage liability model is expected to provide the victim (injured party) with swift and just compensation. In this light, the legislator should, *de lege ferenda*, define the procedure according to which notice of damage (violation of ownership rights) could be submitted both by a competent officer of the land registration department and the injured person himself/herself. Compensation for sustained damage should, in this view, take place within the framework of administrative proceedings instead of civil proceedings. That would take pressure off the justice system and accelerate the victim compensation procedure. Hence, the legislator should prescribe a liability of the Republic of Croatia to enter into an insurance contract. Such a contract would be based on a liability-insurance policy covering the exercise of a professional activity. The value of the respective insurance premium could be compensated with the amount of judicial fees when registering land or real property. For the purpose of dealing with situations in which the Republic of Croatia can be deemed liable for damages related to keeping land registries, which have resulted from a flaw or error of a computer programme, or from a system malfunction, the legislator should, *de lege ferenda*, design a system for recording such flaws, errors or malfunctions. Recording error emergence and its harmful consequences can help avoid similar situations in the future. It is such situations that impose the need to implement a compensation system aimed at redressing injustice, providing swift and fair compensation for damages, and avoiding lengthy and costly judicial proceedings.

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ОДГОВОРНОСТ РЕПУБЛИКЕ ХРВАТСКЕ ЗА ШТЕТУ ПРОУЗРОКОВАНУ КОМПРОМИТАЦИЈОМ ИНФОРМАЦИОНОГ СИСТЕМА ЗЕМЉИШНИХ КЊИГА И КАТАСТРА

Резиме

Традиционални начин вођења земљишне књиге, до њихове дигитализације у Републици Хрватској, било је ручно вођење земљишних књига. Нови Закон о земљишним књигама одређује да се земљишне књиге, у Републици Хрватској, воде електронски у Заједничком информацијском систему земљишних књига и катастра. Усклађени подаци земљишне књиге и катастра воде

се у Бази земљишних података унутар Заједничког информацијског система земљишних књига и катастра. База земљишних података настаје компјутеризацијом ручно вођене земљишне књиге и катастра некретнина, односно обједињавањем катастарских и земљишнокњижних података у исту базу. На тај начин повећава се правна сигурност промета некретнина јер се на једном месту може утврдити и правни статус земљишта и сва ограничења битна за правни промет некретнина (концесије, статус јавног добра и сл.). База земљишнокњижних података омогућава да данас свака промена на земљишту буде видљива одмах без потребе узајамног обавештавања земљишнокњижног суда и катастра о променама на земљишту и стварним правима на земљишту и другим некретнинама. Заједничким информацијским системом земљишних књига и катастра заједнички координирају и управљају Министарство правосуђа и управе Републике Хрватске и Државна геодетска управа. Закон о земљишним књигама одређује да Република Хрватска објективно одговара за штету проузроковану грешкама у вођењу земљишних књига. Одговорност Републике Хрватске за штету постоји ако је штета проузрокована маном или недостатком рачунарског програма или заказивањем рачунара. У раду ће се истражити адекватност мера заштите информацијског система земљишних књига и катастра, општа правила сигурности и контроле приступа информацијском систему те анализирати опасност компромитације система земљишних књига и катастра. У односу на одговорност Републике Хрватске за штету проузроковану грешкама у вођењу земљишних књига, рад ће приказати модел одговорности за штету који се примењује за штете које носиоцима књижних права настану због неовлашћеног приступа рачунарском систему земљишних књига и катастра. Нагласиће се предности и недостаци примене модела субјективне или објективне одговорности за штету у овим случајевима, истаћи поједина отворена питања у вези с примењеним моделом одштетне одговорности de lege lata, али и указати на могућа правна решења и евентуалну потребу интервенције законодавца de lege ferenda.

***Кључне речи**: штета, земљишне књиге, катастар, информацијски систем, дигитализација.*