Marta Rękawek-Pachwicewicz[1]

Nowoczesne rozwiązania prawne w sądowych rejestrach gruntów Estonii jako przykład efektywnego wykorzystania instrumentów IT oraz współpracy informatyczno-prawnej

DOI: 10.5604/01.3001.0015.5423

Streszczenie

W poszukiwaniu ciekawych rozwiązań prawnych związanych z nowoczesnym i efektywnym funkcjonowaniem prawnych rejestrów gruntów Autorka zwraca uwagę na rozwiązania IT wykorzystywane w Estonii, która już od ponad piętnastu lat jest jednym z najbardziej zaawansowanych technologicznie państw w Europie. Rozwiązanie te mogą być traktowane jako wzorcowe w poszukiwaniu pomysłu na założenia organizacyjno-prawnej strategii kolejnych etapów informatyzacji rejestrów sądowych.
W opracowaniu opisano pokrótce historię rozwoju e-rejestrów gruntów, z szczególnym naciskiem na rozwiązania legislacyjne i techniczne, pozwalające na całościową cyfryzację procesu składania wniosku o wpis, korzystania z dokumentów w postaci cyfrowej oraz e-archiwów, z naciskiem na likwidację papierowej formy ksiąg wieczystych. W dalszej części opracowania odniesiono się do rozwiązań e-Notariatu i Immovable Portal, przy wykorzystaniu zastosowania systemu operacyjnego X-Road, który pomaga na wymianę i sprawdzenie danych oraz ich aktualizację. Innowacje te w estońskich księgach wieczystych przekładają się m.in. na regularną aktualizację ex *officio* wpisów obejmujących dane faktyczne o nieruchomości oraz danych objętych ewidencją ludności (np. zmiany nazwiska właściciela przy zdarzeniu prawnym typu zawarcie związku małżeńskiego). Podsumowaniem analizy jest ocena, z której wynika, że Estonia jest bardzo dobrym wzorcem w poszukiwaniu pomysłów usprawnienia funkcjonowania ksiąg wieczystych w Polsce, jednakże należy mieć na uwadze różnice związane ze stopniem zaawansowania technologicznego, czy obszaru państwa. Nie bez znaczenia jest idąca za informatyzacją i uzależnieniem od internetu w sferze publicznej podatność na cyberataki, których celem jest również e-Estonia. Istotny jest zatem również harmonijny rozwój cyberbezpieczeństwa. Należy wyważyć proporcje między podążaniem rejestrów za oczekiwaniami społeczeństwa i duchem czasu, a bezpieczeństwem danych publicznych.

Słowa kluczowe: rejestry nieruchomości, nowoczesne technologie, informatyzacja i digitalizacja dokumentów, cyfryzacja archiwów, interoperacyjność systemów i integracja danych, e-Notariat, system X-Road, cyberatak i cyberbezpieczeństwo

[1] Doctor of law, judge – chief specialist in the Procedural Division of the Department of European Law of the Ministry of Justice – delegated from the District Court in Sokołów Podlaski, lecturer, authors of publications. Participant of the European Land Registry Association (ELRA) meetings in Brussels, speaker at conferences and seminars devoted to land and mortgage register and civil issues.
ORCID: 0000-0001-8858-1089

Modern legal solutions in Estonia's judicial land registers as an example of effective use of IT instruments as well as IT and legal cooperation Abstract

In search of interesting legal solutions related to the modern and effective functioning of legal land registers, the author draws attention to IT solutions used in Estonia, which has been one of the most technologically advanced countries in Europe for over fifteen years. This solution can be treated as an exemplary solution in the search for an idea for the organisational and legal strategy of the next stages of informatisation of court registers.

The study briefly describes the history of the development of land e-registers, with particular emphasis on legislative and technical solutions that allow the comprehensive digitization of the application process for entry, the use of digital documents and e-archives, with emphasis on the elimination of the paper form of land and mortgage registers. In the further part of the study, reference was made to the e-Notariat and Immovable Portal solutions, using the X-Road as operating system, which helps to exchange, check and update data. These innovations in Estonian land and mortgage registers translate, for example, into regular ex officio updating of entries including factual data on real estate and data included in the population register (e.g. change of the surname of the owner in a legal event such as a marriage).

The summary of the analysis is the assessment, which shows that Estonia is a very good model in searching for ideas to improve the functioning of land and mortgage registers in Poland, however, one should take into account differences related to the level of technological advancement or the area of the state. The susceptibility to cyber-attacks addressed also against e-Estonia, which follows computerisation and dependence on the Internet in the public sphere, is also a crucial issue. Therefore, the harmonious development of cybersecurity is also of great importance. It is necessary to balance the proportions between following by the registers the expectations of society and the spirit of the times, and the security of public data.

Keywords: real property registers, modern technologies, computerisation and digitisation of documents, digitisation of archives, interoperability of systems and data integration, e-Notary, X-Road system, cyber attack and cybersecurity

1. Introduction

In still up-to-date publication from 2020 *Digital Economy. How Modern Technologies Change the World (Gospodarka cyfrowa. Jak nowoczesne technologie zmieniają świat),* Katarzyna Śledziewska and Renata Włoch drew attention to an important process taking place before our eyes, namely shaping of a new type of economy, i.e. digital economy[2]. The authors point out that it is conditioned by the acceleration and intensification of digitisation processes, i.e. the application of digital technologies not only by businesses, but also by public institutions and non-governmental organisations. It is worth drawing attention to actual characteristics of this type of economy. According to the above-mentioned publication, digital economy is based on the Internet economy, although it is essentially different from it. Such new technologies as: artificial intelligence, cloud, Internet of Things, autonomous robots[3] or*blockchain*[4] – accelerate the process of the so-called *datafication,* i.e. the 'creation of digital representations of subsequent areas of the real world, as well as increase networking and foster personalisation. Specific nature of digital economy is defined by non-physical flow of data and information, unprecedented integration of data, blurring of the boundaries between goods, production factors and services, progressive automation of physical and mental work taking place in conditions of increasing flexibility and autonomisation of machines and processes due to the use of artificial intelligence'[5].

Undoubtedly, this process was accelerated in connection with the announcement in 2020 of the state of the coronavirus pandemic around the world[6]. Many scientific publications devoted to the new phenomenon in different areas of public, social and private life have appeared in the literature. Currently, it is probably the most frequently discussed topic, also in the area of legal science. Effects of fight against the virus have led to the revaluation of the current way of thinking and acting, and new living conditions have set also before layers the task consisting in verification of common patterns of functioning of social relationships and operational procedures of different public institutions, including those that maintain registers.

---

2 K. Śledziewska, R. Włoch, *Digital Economy. How Modern Technologies Change the World (Gospodarka cyfrowa. Jak nowe technologie zmieniają świat),* Warsaw 2020, p. 10.

3 L. Bosek, *Perspectives of Development of Civil Liability for Intelligent Robots (Perspektywy rozwoju odpowiedzialności cywilnej za inteligentne roboty),* 'Legal Forum' (Forum Prawnicze) 2019, no. 2.

4 Compare P. Opitek, *Application of the Blockchain Technology on the Real Estate Market (Zastosowanie technologii blockchain na rynku nieruchomości),* 'Nieruchomości®. Quarterly of the Ministry of Justice, Series: Interpretation and Application of Law' (Nieruchomości®. Kwartalnik Ministerstwa Sprawiedliwości, Seria: Wykładnia i stosowanie prawa) 2020, no. 1/19.

5 *Ibidem;* K. Śledziewska, R. Włoch, *op.cit.,* p. 10.

6 The COVID-19 pandemic, i.e. the global pandemic of the COVID-19 infectious disease caused by the SARS-CoV-2 coronavirus. The first outbreak of the epidemic started in November 2019 in Wuhan, Hubei, in central China, and on 11 March 2020 it was recognised by the World Health Organisation (WHO) as a pandemic, see: https://pl.wikipedia.org/wiki/Pandemia_COVID-19 and https://www.who.int/emergencies/diseases/novel-coronavirus-2019 [access: 07/01/2021].

In an effort to solve problems, the legal comparative method of developing adequate legal solutions, particularly in the European Union Member States, has acquired a new dimension. It partly results from the same externally shaped conditions of the state operation and the ease of reaching for solutions from legislation development standards unified in accordance with the Community law. In search of interesting regulatory solutions related to the modern and effective functioning of land registers, it is worth drawing attention to Estonia, which has been one of the most technologically advanced countries for over fifteen years, and solutions adopted there may be treated as models[7]. This is an important observation in searching for ideas to improve the functioning of land and mortgage registers in Poland, which are generally at a fairly good level of technological advancement, taking into account the land area of Poland and the volume of public databases resulting from it, however technological and economic development abhors a vacuum and stagnation, setting before legislators a difficult task of continuous searching for legal solutions adequate to a given moment so that court registers could keep pace with expectations of society and the spirit of times, also in the international meaning. Obviously it is necessary to underline that the model form of e-Estonia solutions in comparison with the direction of technological development of Polish land and mortgage registers should be captured in the context of external factors resulting mainly from the scale of the land size of both countries, number of land and mortgage registers and structure of the judiciary, which of course translates to a completely different economic, organisational and technological effort in the case of attempt to implement similar legal and technical regulations in Poland[8].

2. Estonia as *a leader* in the implementation of modern legal and IT solutions in the real property register

In order to avoid inconsistencies in the legal-comparative international aspect, legal concept should be carefully chosen. Concepts used by the author in the article include the 'land register'. This concept used interchangeably with the 'real property register' adopted in the Polish legal doctrine should be explained. For the purposes of this study, they mean a public register of real properties maintained by entities authorised to it in other countries on the grounds of national law, and it is the equivalent of the Polish term 'land and mortgage registers'[9]. The adoption of appropriate terminological assumptions is important for proper understanding of the subjective and objective character of the analysis. Nevertheless, it should be added that they have slightly simplified character as according to experts on the subject in Europe alone at least several models of maintaining these registers are distinguished[10]. The importance of this issue results also from the fact that national regulations concerning real property registers are not subject to the pan-

[7] Compare Ł. Małecki-Tepicht, Digital Revolution in Judicature – Review of Areas and Tools that Reinforce the Effectiveness of Justice (*Rewolucja cyfrowa w sądownictwie – przegląd obszarów i narzędzi wzmacniania efektywności wymiaru sprawiedliwości),* 'Iustitia', 2019, no. 4, p. 1-6.

[8] The best indication for comparing the scale of the problem in both countries would be the comparison of statistics of the volume of cases regarding entries into land and mortgage registers in the adopted period of time. Unfortunately, statistics concerning Estonia are not available on the Internet. Due to the legal comparative value, this issue should be discussed in a separate study.

[9] Similarly also P. Blajer, *Real Property Registers. Legal Comparative Study (Rejestry nieruchomości. Studium prawnoporównawcze),* Warsaw 2018; J. Gołaczyński (ed.), *Computerisation of Land and Mortgage Registers and Land and Mortgage Register Proceedings (informatyzacja ksiąg wieczystych i postępowania wieczystoksięgowego),* Warsaw 2020; A. Gryszczyńska, *New Land and Mortgage Register. Computerisation of Public Register (Nowa księga wieczysta. Informatyzacja rejestru publicznego),* LexisNexis 2011 and M. Rękawek-Pachwicewicz, *Electronic Land and Mortgage Registers (General Characteristics, Basic Practical Problems) (Elektroniczne księgi wieczyste (ogólna charakterystyka, podstawowe problemy praktyczne))* [in:] A. Marciniak (ed.), *Court Enforcement Proceedings. Basic Directions of Changes from 2016 (Sądowe postępowanie egzekucyjne. Zasadnicze kierunki zmian z 2016 roku),* Sopot 2017.

[10] This issue is widely described primarily by P. Blajer in monograph *Real Property Registers*... (*Rejestry nieruchomości...), op.cit.,* in which he distinguishes the following models of registers: Central European model of land registers (Germany, Austria, Poland, Croatia, Slovenia, Greece), model of transcriptions (France, Italy, Belgium, Luxembourg, Portugal), model of inscriptions (Spain), *title registration* model (England and Wales, part of the territory of Ireland and Scotland, Malta, Cyprus) and *deeds recordation* model (part of the territory of Ireland and Scotland).

European unification connected with the development of the European Union law, as this area is always excluded from the scope of the Community regulations, which marginally refer to the subject of land registers[11]. This situation causes that in the case of land registers the level of solution unification is significantly lower. Hence, in this area national differences are at a definitely higher level[12].

Moving towards the essence of the discussed issue, we should put forward the thesis that Estonia is a very good example of a country in which the progress of computerisation and the use of databases, blockchain, smart contracts, and even artificial intelligence by institutions related to the real estate market, i.e. estate agencies, lawyers, notaries and primarily public entities maintaining land registers, have a very strong impact on maintaining the stabilisation and standard functioning of the market. It is also an example of paying proper attention to a careful and long-term balance of financial proportions in the functioning of the judicature, also in the aspect of the return on investments for the development of modern information technologies, including in the context of the reduction of organisational and personnel costs. We can observe the so-called business approach to the topic of budgeting the state tasks, characteristic for the *new public management* philosophy[13]. The first year of the pandemic also showed that countries which had given a high priority to the regular implementation of state-of-the-art digitisation technologies in this area today benefit from their pragmatism[14].

It results from the research entitled *COVID-2019 Special Measures in EU Land Registries* carried out by the Author together with *the European Land Registry Association* (ELRA)[15] in April 2020, i.e. shortly after the announcement of the state of the pandemic that Estonia is one of few countries in which the effects of the pandemic in practice did not occur in the area of the public institution functioning According to the findings, 20 out of 27 examined EU Member States introduced less or more restrictive pandemic countermeasures (consisting in isolating society in order to avoid the spread of the virus) which affected the functioning of land registers. Four countries, which in practice did not introduce any restrictions in the examined registers, constituted an exception. They were: Sweden, Estonia, Latvia and Lithuania. The author identified at least three reasons for such a situation, from which the most important reason constituted fully computerised and technologically advanced public registers, which in the first place allowed remote work, without physical presence of employees and customers at the office[16].

As Ingmar Vali, Kadri Laud and Heidi Leppikus write in the study *Smart service – home office for land*

---

11 An example of this type of regulation is Article 69(5) of Regulation (EU) no. 650/2012 of the European Parliament and of the Council of 4 July 2012 on jurisdiction, applicable law, recognition and enforcement of decisions and acceptance and enforcement of authentic instruments in matters of succession and on the creation of a European Certificate of Succession.

12 A detailed description of land registers in individual European Union Member States is available on websites of *the European Land Registry Association* (ELRA) with its registered office in Brussels, which is a non-profit organisation, established under Belgian law in 2004 by representatives of national institutions maintaining real property registers of several EU Member States. Currently, the ELRA associates 33 such institutions, representing 26 European countries, mainly from the EU, https://www.elra.eu [access: 06/01/2021].

13 Currently, the costs of functioning of the land register has been reduced by 50%. Saved funds have been allocated for 30% pay increases for all groups of employees and further IT development. The New Public Management is a doctrine regarding management in the public administration. It is characterised by defining result-oriented activities of the public administration and its purpose is to increase the efficiency and effectiveness of the public administration functioning [online] http://encyklopediaap.uw.edu.pl/index.php/Nowe_Zarz%C4%85dzanie_Publiczne.

14 They include e.g. Austria, Belgium, Estonia, Finland, the Netherlands, Lithuania, Latvia, Sweden.

15 The *COVID-2019 Special Measures in EU Land Registries* research survey was sent to respondents on 4 March 2020. Its content together with the report prepared by the author of this publication and approved by the Board of the ELRA on 20 March 2020 was published on the ELRA websites on 24 April 2020. Moreover, the report was published by the EJN on the official website of the European Commission www.e-justice.europa.eu [access: 06/01/2020].
The research also resulted in the publication of M. Rękawek-Pachwicewicz, *Anti-Crisis Measures in the Area of Land and Mortgage Registers in countries associated in the ELRA in Response to COVID-19 Threats – Initial Comparative Analysis (part I) (Działania antykryzysowe w obszarze ksiąg wieczystych w państwach zrzeszonych w ELRA w reakcji na zagrożenia COVID-19 – wstępna analiza porównawcza (część I)),* 'Nieruchomości®. Quarterly of the Ministry of Justice, Series: Interpretation and application of law' (Nieruchomości®. Kwartalnik Ministerstwa Sprawiedliwości, Seria: Wykładnia i stosowanie prawa), 2020, II(II), p. 66-80.

16 See materials from the Land Registers Interconnected conference, which was held on 9-10 May 2019 in Tallinn, [online] https://lri-ms.eu/conference.

registrars, presented during the 20th World Land Registration Congress in Dubai[17], the example of Estonia shows a planned progress in the development of systems of real property registration, and in the background savings generated by it. From the point of view of owners of real properties, these changes have been very beneficial as they have caused that their rights are better protected, procedures are fast and transparent, and the misappropriation of property is in practice impossible. When it comes to the work of Estonian clerks (currently there are 27 clerks in Estonia), it has also become faster. It is connected with the fact that the IT system automatically analyses data and 'warns' the land registrar against making a mistake, documents in traditional (paper) form are currently not used anymore and all operations are performed in a digital environment. Due to this, work may be performed exclusively remotely, without compromising the number and quality of examined cases. The co-author of the discussed publication, Ingmar Vali, in 2016 stated that in financial terms this action did not generated at that time any financial benefits because transfer from the paper form of files and digitalisation of the entire process required many investments in modern technologies. However, current changes in Estonia give reason to assume that long-term investments in technology have begun to be profitable, which Vali confirms in his statements as the Director of the Department of Court Registers at the Ministry of Justice of Estonia[18].

Summing up, in 2021 document in paper form is not used in Estonia any more and technical works on IT system are completed. It results in the decrease in demand on employees as well as savings visible mainly in the decrease in demand on premises where traditionally archives of land and mortgage registers, customer service offices, offices of land registrars and rooms of secretariats were located. Most employees work remotely from home, and files are digital. According to preliminary estimates, consistent reforms and investments in technology has generated about 50% of savings in the scope of maintenance of the personnel and office space, without detriment to customers in the scope of quality and speed of the performance of entries, which are in practice made at once[19]. To assess the value of this achievement of the Ministry of Justice of Estonia, it should be preceded by a brief historical summary of the reform.

3. Real property registers in Estonia in the historical perspective, i.e. key milestones

It results from few available publications concerning the real estate market in Estonia in the historical perspective that under the Act on agricultural reform of 1991 this country tried to restore former ownership of small family farms, on which Estonia was based before World War Two. Under this act, the pre-emption right with respect to land was granted also to owners of buildings located on this land. In 1992, another Act on agricultural reform, liquidating collective farms, was adopted. In accordance with this act, 11.7 thousand private farms and 700 agricultural undertakings in the form of commercial law companies were established on the basis of 360 collective farm. As one may see, the restitution of ownership rights to land led to fragmentation of agricultural land. In 2000–2006, the characteristic feature of the land market in

17 I. Vali, Kadri Laud, Heidi Leppikus, *Smart service – home office for land registrars* [in:] XX Congreso Mundial de Derecho Registral. 20th World Land Registration Congress Dubai 2016, Tirant lo Blanch Hiszpania 2017, p. 389-406. They are employees of RIK – the Centre of Registers and Information Systems, i.e. the Department of Court Registers at the Ministry of Justice of Estonia, more information available on https://www.rik.ee/en. More information about the Congress available on http://ipra-cinder.info/xx-congreso-de--dubai-2016. This document constitutes the basis for preparing this article.

18 More information about Ingmar Vali available on: https://www.just.ee/en/ingmar-vali.

19 *Idem,* I. Vali, K. Laud, H. Leppikus, *op.cit,* p. 389-406.

Estonia was the promotion of land purchases for non-agricultural purposes, particularly near such large cities as Tallinn or Tartu and the sea coast, which was fostered by tax regulations. In connection with the accession of Estonia to the EU the prices of land increased, and this phenomenon is visible until today[20]. In 2005 in Estonia, plots of land on 80% of the total area of land had their documented owners entered to the so-called cadastral register. The institution liable for maintaining the cadastral register was the National Land Office subordinated to the Ministry of the Environment. At that time, there was a court register of real properties, constituting the equivalent of Polish land and mortgage registers, but is was ineffective. All applications for entries into the registers were submitted in paper form, and procedures lasted quite long – the procedure of entry into the land and mortgage register lasted about three months. Although more employees were hired, the increasing number of transactions on the real estate market made the speed of procedure even more slower. In connection with dissatisfaction of citizens, banks and other participants of real estate transactions, the state set itself the objective of improving the quality, transparency and speed of customer service at the real property register. The assumptions of the reforms included two options – one option was to increase the number of employees and to optimise traditional processes, the second option was to optimise the operation through the implementation of modern IT technologies. Young politicians who at that time came to power chose the implementation of modern technologies, and the majority of political parties supported them[21].

Within the implementation of the plan, it was rightly decided to divide operations into individual stages. The first task was to create the IT system, which would cover the entire process of real property registration – from the land survey to the entry. This task was allocated in Estonia to two groups, i.e. the Ministry of the Environment and authorities of the land register (cadastre) subordinated to it were liable for technical measurements and maps, and the Ministry of Justice and courts were liable for entries into the registers. It is a common division of competences related to the reflection of the actual and legal state of real properties, encountered in European countries[22]. In order to ensure mutual compatibility of these two systems, they were linked by the same identification number of the plot in the cadastre and the land register. After the implementation of the IT system, the second stage started – long and tedious process of transfer of data from paper registers to the ICT database. In order to do it, additional technical employees were temporarily employed for entering data.

Another important step was to give legal status to electronic data. For this purpose, each paper document containing an ownership title had to be compared with ownership title in digital form so that the correctness of data could be confirmed. The process of data comparison was of high importance because it ensured the quality and level of confidence in entries in registers. Entries, which had errors, were identified and corrected under an appropriate formal procedure. The key moment in the digitalisation process was the adoption of appropriate legislation, in the light of which the electronic database is the exclusive system, while work on document in paper form in the real property register is non-compliant with

20 A. Zadura *Management of Agricultural Land in Central and Eastern European Countries (Zarządzanie gruntami rolnymi w krajach Europy Środkowo-Wschodniej),* Warsaw 2005, p. 22-23.

21 *Ibidem,* I. Vali, K. Laud, H. Leppikus, *op.cit,* p. 389-406.

22 It also occurs e.g. in Poland, Austria, Germany, Spain, the Netherlands, Portugal and Romania.

law. Since that time, clerks have been making only electronic entries, signing them in the same form[23].

After the implementation of the above-described assumptions of comprehensive transformation of the register system, the Estonians decided to entirely digitise the process of submitting applications for entry into the land and mortgage register in order to reduce the employees' burden of repetitive activities consisting in entering data from the application for entry and to stop the extension of 'paper' archives. The overall purpose was to develop fully digital process of entries within *e-delivery system*, with elimination of traditional documents. Statistically, in 2016 about 75–80% applications for entries was sent electronically by notaries, about 20–25% through a self-service Immovable Portal, and only about 1% was sent to the registry office of land and mortgage registers, but anyway customers delivered most of them by e-mail. Currently, these proportions are similar, which proves the thesis that the assumed purpose has been achieved. Occasionally, however, some additional documents are still submitted in traditional form as it is the only original and the parties to the transaction cannot sign it electronically (e.g. in the case of foreigners). In such a case, documents are scanned at the registry office and in this way they are converted into digital form, while original documents are returned to the applicant[24].

Another important element of the reforms was the integration of cross-sector databases within cooperation between state institutions, and it further improved the quality of entries in the real property register, eliminating their defects. The interoperability[25] of systems of the cadastre and the real property register can be indicated as a model example. Due to it all factual data concerning plots of land, such as the address, area, land allocation, etc., are imported directly to the court register from the cadastre, and in the case of changes in the latter, they are also automatically entered to the court register during nightly update. Another example is the interoperability of land and mortgage registers with the population register system, where in the case of entering new data, they are imported directly by the system to the land and mortgage register. It is so perfect that it monitors entries automatically and blocks the registration of such processes which are not permitted by law, e.g. data of a natural person cannot be entered without the equivalent of the Polish PESEL number, and an entry of joint mortgage encumbering two or more real properties cannot be changed without an adequate change in entries of all encumbered real properties. Therefore, ultimately the number of technical and substantive errors made by clerks was minimised.

The process of implementing modern IT tools in the form of *E-notary, Land Register E-conveyancing* and *Online query IS* was initiated in 2005, while the development of its subsequent versions and modules lasts until today. Another great achievement was the implementation of the *ID-card authentication system* and *the Immovable Portal* in 2011 and the use of the so-called *X-Road,* discussed below.

---

23 Article 79^2(3) of the Estonian *Land Register Act* of 15/09/1993 (English translation published on 12/12/2019) with the following wording: After *transfer to the electronic land registry file and digital archives access to file in paper form is not allowed.* Other provisions that regulate the functioning of the real property registry in Estonia are Articles 591-601 of the Code of Civil Procedure of 20/04/2005 (English translation published on 22/06/2020) and Article 25, Article 59(4) in connection with Articles 74-82 of *the State Fees Act* of 10/12/2014 (English translation published on 04/11/2020).

24 It is regulated by Article 38 of *the Land Registry Act.*

25 Interoperability is a characteristic feature of a product or system whose interfaces function in full compliance so that they could cooperate with other products or systems which exist or will exist in the future, without limiting access or implementation possibility, source: https://pl.wikipedia.org/wiki/Interoperacyjno%C5%9B%C4%87 [access: 31/01/2021].

4. Basic organisational and IT solutions related to the functioning of the real property register in Estonia

Undoubtedly, the key to the e-Estonia success was good cooperation with notaries open to changes. The progress was accelerated by the increase in workload in land and mortgage registers in the period of the boom on the real property market at the end of 2010. It allowed the implementation of software called *e-Notary,* which consists in the electronic transmission to land and mortgage registers of all applications and notarial deeds signed digitally. Without this move, full digitisation of land registers would not have happened. In practice, it consisted in the fact that, mainly for fear of mistakes in the course of entering data from notarial agreements, notaries also began to use interoperability data from the system. It means that all necessary data about parties to the agreement and real properties are imported directly to the agreement, which of course, apart from convenience and saving time, also eliminates the risk of errors or inconsistencies. For a long time however, a visit to a notary and physical signature on a document were in Estonia necessary due to the guarantee of the validity of the notarial act. Even in this situation, the party to a notarial deed did not have to bring any other documents, apart from the identity document, as the notary had access to necessary information and documents in all state registers. In practice, after signing the notarial deed the notary makes a digital copy, signs it with trusted signature and transfers to the land and mortgage register together with the application for entry, then the party to the deed is entitled, of course, to request an electronic excerpt of the notarial deed. The notary does not have to send it by e-mail as participants to the notarial act have electronic access to it through a public portal. It is possible to obtain access when the party authenticates using the PKI identification card (Estonian identity card). Then the parties to the notarial agreement wait a few days for the notification about the entry into the land and mortgage register (on average about 6 days). Due to the fact that the land and mortgage register is in electronic form, the identity card and digital identity related to it allow the user to independently check entries as the notification about the entry contains the URL address, which may be used for viewing data in the register after the performance of the entry by the clerk. Solutions connected with counteracting the COVID-19 virus gave the possibility to identify the parties exclusively online with the use of a videoconference and signature through a trusted profile, while recent works carried out in the Ministry of Justice of Estonia in cooperation with Notaries concern the application of geolocation and digital face identification (biometrics) in the notary's work. Interestingly, it also concerns the preparation of videotestaments[26].

Obviously, not all land and mortgage register applications are submitted by a notary, which has been previously discussed. They can be also submitted by other entities and natural persons. For their purposes, in 2011 a public portal concerning real properties, i.e. *the Immovable Portal*[27] was launched. In this way the number of paper documents submitted at courts was reduced in practice to zero and, at the same time, the quality of data was improved due to the application of initially automatically completed applications for

[26] Compare M. Załucki *Direction of Changes in Provisions on the Form of Testament in the Age of New Technologies on the Example of Switzerland (Kierunek zmian przepisów o formie testamentu w dobie nowych technologii na przykładzie Szwajcarii),* 'Białystok Legal Studies' (Białostockie Studia Prawnicze) 2017, volume 22, no. 4, p. 15-23 and information on websites of Notaries of Estonia https://www.just.ee/en/news/remote-notarial-authentication-options-be-significantly-expanded.

[27] *The Immovable Portal* (*Kinnistuportaal* – in the Estonian language) an integrated online environment that allows the preparation and submission of applications for the registration of real properties and the monitoring in real time of information about the status of processing applications submitted, see more on https://www.rik.ee/en/immovables-portal.

entries. The safety of this system and the entire process is ensured by IT secure authentication with the use of a smart card (PKI) 'hidden' in the identity document and qualified electronic signature. In Estonia through this portal it is possible e.g. to submit applications for entry into the land and mortgage register, change/withdraw the application and submit additional documents, submit the required consent to the entry performance, authorise another person to file the application for entry, pay the court fee, prepare and submit an appeal against the clerk's entry, monitor the status of the application submitted, view entries concerning real properties, display related information concerning real properties (only the owner).

Each citizen may use the Immovable Portal and submit the application for entry in the situation when it does not have to be performed by a notary[28]. Launching the portal has not caused, of course, the imitation of number of applications prepared by notaries as this possibility is available in all other cases. All activities performed through it are signed digitally, while documents attached to the application, including consents, authorisations and decisions, are also signed in this form by the sender. Main groups of the portal users are companies, banks, lawyers, employees of the public sector, debt collectors, receivers, owners of real properties and other entities that should submit the application for entry due to their authorisations. All users are securely authenticated with the use of the above-mentioned PKI, while the system additionally automatically checks in the economic register, i.e. *e-ariregister* (in the Estonian language)[29], the right and mode of representation in the company.

5. Application of modern IT solutions in the area of safety and transfer of data in transactions concerning real properties – selected issues

While writing about essential issues in the process of transfer of land and mortgage registers to the exclusively electronic dimension, it is impossible not to mention the application of electronic signatures, which are the *sine qua non* condition of the entire undertaking. The application of these solutions allows the implementation of fully computerised register of real properties. A typical example of this standard is e.g. Article 34(2^1) of *the Land Registry Act* stating that *a registration application shall be certified by a notary or digitally signed* or Article 34(2^2) of the same Act specifying that *an authorisation document for submission of the registration application shall be certified by a notary or digitally signed.* There are many such regulations in *the Land Registry Act* or *the Code of Civil Procedure.*

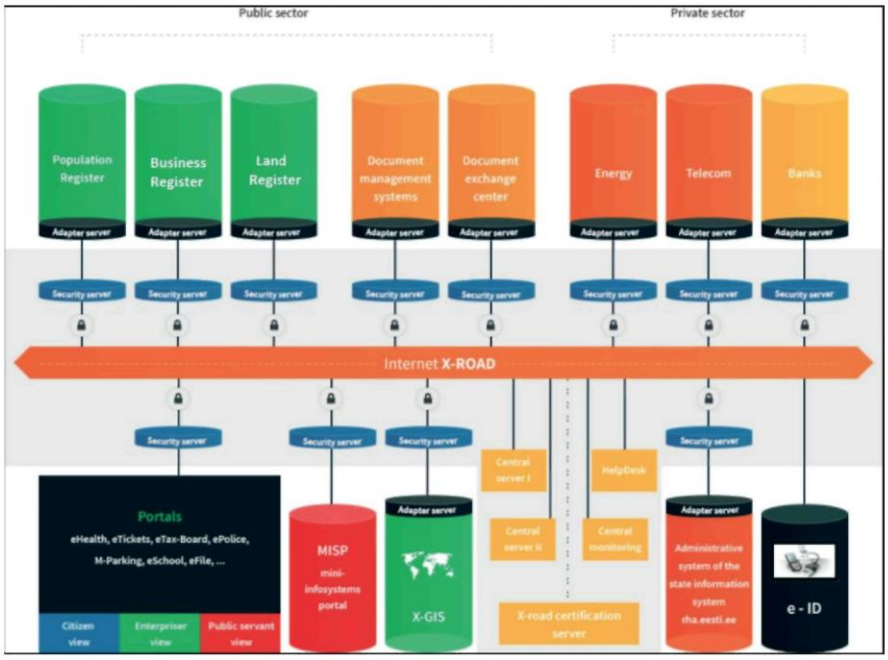
The second necessary *driving force* in the digitisation process is the integration of the system of state databases and the exchange of data included there. In the case of Estonia, this process was quite simple as all public systems and databases have legal authorisation in the operating system called *X-Road*. Therefore, both the Immovable Portal and land and mortgage registers contain information from the database of the population register, register of businesses, land and property register, bank register, database of contact addresses, etc. It should be assumed that the combination of the *e-Notary* system with state databases in many ways has improved the efficiency and safety of the process of information

[28] These activities include e.g. the division of the ownership of real property into residential premises (registered as separate titles/real properties), entry into the so-called court mortgage, division of real property, removal of the mortgage entry, entry of the ownership title to a flat, change or correction of error in the entry (e.g. change of the last name after marriage).

[29] https://www.rik.ee/et/e-ariregister.

transmission. It is conceivable that e.g. not entering manually data concerning parties to the procedure results in lack of orthographic errors or misspelling of words, and the automatic update of information about plots of land, such as: division of land, entry of the area update, change of the land allocation or changes of address, results in significant reduction of land and mortgage cases, which e.g. caused in Poland so many proceedings in the process of the so-called decommunisation of street names.

The *X-Road* operating system is called the 'backbone of e-Estonia'[30]. According to authors already cited many times I. Vali, K. Laud and H. Leppikus[31], it is basic digital environment which allows different national databases of e-services, both in the public and in the private sector, to connect and act harmoniously. It should be mentioned here that one of key elements of the e-Estonia policy is the decentralisation of databases, which means that they do not have one owner or supervisory authority, and each government agency or private entity may choose a module appropriate for them. *X-Road* is a tool, which enables cooperation and that, is why all Estonian IT solutions based on many databases use it. Originally, it was a system used to transfer enquiries to different databases, which then was developed into a powerful active IT tool with authorisations even to perform entries in other databases. It can also send the so-called *big data*[32] or retrieve information in several databases at the same time. Due to the fact that the *X-Road* system was designed in view of future advancements, it can be developed according to the needs along with new digital platforms. It is worth mentioning that documents generated by it receive a digital stamp with signature, which means that they may constitute evidence at court in the case of dispute about the integrity of data included in them. In order to present the level of complexity of connections between operating systems within *X-Road*, the following graphic scheme is used.



Source: *Scheme developed by I. Vali, K. Laud, H. Leppikus,* Smart service..., p. *389-406.*

30 *Idem;* I. Vali, K. Laud, H. Leppikus, *op.cit,* p. 389-406.

31 *Ibidem.*

32 *Big data* is a term referring to big, changeable and diverse databases, whose processing and analysis are difficult, but at the same time valuable, as it may lead to acquiring new knowledge, source: https://pl.wikipedia.org/wiki/Big_data [access: 31/01/2021].

In relation to land and mortgage registers, *X-Road* means an increase in automation, which may further improve their operational efficiency, especially that automation of land and mortgage register processes in Estonia is perceived as the challenges of the new times. Obviously it is not possible to enter automatically e.g. a new owner of real property into the land and mortgage register online without the participation of a notary or clerk, but typically technical work has been fully automated there. As an example, archives of land and mortgage registers in Estonia are exclusively electronic, due to which there is no need to keep paper archives and to maintain premises and employees related to it, who were entrusted with other tasks. Clerks work on standardised templates of decisions and notifications, due to which they do not spend much time on the preparation of draft entries. Notifications about entries or other decisions are sent to parties automatically to the e-mail address indicated by them (an e-mail account does not have to be established on a special public portal as private e-mails are permitted). Moreover, in cases of more complicated entries, such as mortgages or other encumbrances that affect several real properties, it is possible to enter them into land and mortgage registers within one entry. For example, mortgages for developers that construct residential buildings may be entered into the entire set of applications for establishing land and mortgage register for premises in one land and mortgage register case, as the system automatically generates all entries for each ownership title that will be entered in the correct order into the land and mortgage register. In this way it is possible to enter the mortgage encumbrance for the entire residential building. The clerk must only check whether all numbers of real properties listed in the application were correctly entered by a notary into the system, although also in this scope the system performs automatic verification[33]. It is a challenge, which the Estonians will certainly take up willingly in connection with the European Union's digital policy resulting from deep interest in the application of artificial intelligence[34].

Estonia is considered to be a European leader in the implementation of digitisation in the public sector in a planned and systematic way pursuant to developed strategies, followed also by co-financing of this sector in the public administration. Within a short time from declaring sovereignty, Estonia managed to introduce digital ID cards (the above-mentioned PKI) held by 86% of citizens (since 2001) and common voting via the Internet (since 2005). The most popular service of the state e-administration is online tax return used by more than 96% of citizens[35]. Nevertheless, the leader position carries a price as e-Estonia has become a target of cyber attacks, including the so-called first cyberwar, i.e. events from April 2007, when in connection with acute political crisis between Tallinn and Moscow concerning plans to remove the monument of the 'Bronze Soldier', Russian hackers performed an unprecedented massive attack on Estonian servers and websites of the public and private sectors, blocking websites of e.g.: president of Estonia, government, some ministries, parliament, political parties, media concerns and largest banks[36].

33 Idem, I. Vali, K. Laud, H. Leppikus, *Smart service...,* p. 389-406.

34 See more on https://www.europarl.europa.eu/committees/pl/data-flows-artificial-intelligence-and-i/product-details/20201202CAN58877, https://www.eppgroup.eu/pl/jak-dzialamy/grupy-robocze/grupa-robocza-ds--wewnetrznych-i-prawnych/sztuczna-inteligencja-w-epoce-cyfrowej

35 Compare K. Raś, *Estonia as a Leader in Increasing Cybersecurity (Estonia jako lider w zwiększaniu cyberbezpieczeństwa),* Bulletin of the Polish Institute of International Affairs (Biuletyn PISM) no. 68(1641) of 11/05/2018, [online] https://www.pism.pl/publikacje/Estoniajako_lider_w_zwi_kszaniu_cyberbezpiecze_stwa [access: 02/02/2021].

36 See more M. Łakomy, *Cyberwar as the Reality of the 21st Century (Cyberwojna jako rzeczywistość XXI wieku),* 'Stosunki Międzynarodowe – International Relations' 2011, tom 44, nr 3-4, [online] https://www.researchgate.net/publication/322274797 [access: 02/02/2021]. It should be noted that during the 'first cyberwar' in Estonia attacks on the highly advanced bank system in this country (about 90% of bank transactions) proved to be very dangerous as they basically paralysed it. The attack used the DDoS (Distributed Denial of Service) method, which consists in blocking computer systems by overloading all available resources.

Estonia has drawn conclusions from it and intensified works related to the increased importance of the cybersecurity policy. As an example, it can be mentioned that Estonia as the first country in the world adopted in 2008 a cybersecurity strategy (amended in 2014). Since the Russian cyber attack in 2007, Estonia not only has been treating this area as a strategic dimension of security, but also it has been strengthening it effectively at the EU level, mobilising the EU Member States to take joint actions to accelerate digitisation, for example during its Presidency of the Council of the EU. It is an example of a country, which effectively transposed into the Estonian law Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (the NIS Directive) in 2018. Of course, this issue may be treated here only marginally, but it may constitute material worth preparing a separate publication. These actions concern also works of the above-mentioned RIK, which within court registers performs regular audits, including ISO audits, builds a cybersecurity policy based on confidentiality and government three-level security system as well as has implemented the *blockchain* technology in land and mortgage registers.

6. Conclusion

The improvement of the quality of legally qualified information, such as entries in the land and mortgage register, is the key to success that builds trust in the state. In Estonia after the introduction of solutions presented in this article, each citizen may count on reliable, true and up-to-date information in land and mortgage registers. For example, a bank which intends to grant a loan secured by mortgage does not have to ask the owner for submitting an application for the establishment of a land and mortgage register for the real property and the entry of the mortgage, but it can do it on its own, similarly as a purchaser that wants to check the legal status of a plot of land and its owner. According to available information, during the last 20 years in Estonia only some cases of fraud in the scope of ownership title transfer have been recorded, which indicates that the purpose of the register has been fully achieved. As a result of technological improvements, the transfer process is easier, faster and safer in comparison with work performed with 'paper registers' at the beginning of this century. Land and mortgage registers in Estonia operate exclusively digitally, which ensures the space for focusing on further improvement of the public service and its security through the latest findings, such as artificial intelligence and cybersecurity policy.

Bibliography

Legal acts:

1. Land Register Act z 15.09.1993 r. (t.j. engl. transl. publ. 12.12.2019) RT I 1993, 65, 922; issuer Riigikogu
2. Code of Civil Procedure z 20.04.2005 r. (tj. engl. transl. publ. 22.06.2020) RT I 2005, 26, 197; issuer Riigikogu
3. State Fees Act z 10.12.2014 r. (eng. transl. publ. 04.11.2020) RT I, 30.12.2014, 1; issuer Riigikogu

Scientific books and articles:

1. Blajer R, *Rejestry nieruchomości. Studium prawnoporównawcze,* Warszawa 2018
2. Bosek L, *Perspektywy rozwoju odpowiedzialności cywilnej za inteligentne roboty,* „Forum Prawnicze" 2019, nr 2.
3. Gołaczyński J. (red.), *Informatyzacja ksiąg wieczystych i postępowania wieczystoksięgowego,* Warszawa 2020.
4. Gryszczyńska, *Nowa księga wieczysta. Informatyzacja rejestru publicznego,* LexisNexis A. 2011.
5. Łakomy M., *Cyberwojna jako rzeczywistość XXI wieku,* „Stosunki Międzynarodowe - International Relations" 2011, tom 44, 3-4, [online] https:// www.researchgate.net/publication/322274797.
6. Małecki-Tepicht Ł., *Rewolucja cyfrowa w sądownictwie - przegląd obszarów i narzędzi wzmacniania efektywności wymiaru sprawiedliwości,* „lu-stitia", 2019 nr4.
7. Moerkerke J., *Reflections on trust and the use of distributed ledger technologies in land administration,* [online] https://www.elra.eu/publications/ elra-annual-publication.
8. Opitek P., *Zastosowanie technologii blackchain na rynku nieruchomości,* w: „Nieruchomości©. Kwartalnik Ministerstwa Sprawiedliwości, Seria: Wykładnia i stosowanie prawa" 2020, nr 1/19.
9. Raś K., *Estonia jako lider w zwiększaniu cyberbezpieczeństwa,* Biuletyn PISM nr 68(1641) z 11.05.2018, [online] https://www.pism.pl/publikacje/EstoniaJako_lider_w_zwi_kszaniu_cyberbezpiecze_stwa.
10. Rękawek-Pachwicewicz M., *Elektroniczne księgi wieczyste (ogólna charakterystyka, podstawowe problemy praktyczne),* [w:] A. Marciniak (red.), *Sądowe postępowanie egzekucyjne. Zasadnicze kierunki zmian z 2016 roku,* Sopot 2017.
11. Rękawek-Pachwicewicz M., *Działania antykryzysowe w obszarze ksiąg wieczystych w państwach zrzeszonych w ELRA w reakcji na zagrożenia C0VID-19 - wstępna analiza porównawcza (część I),* w: „Nieruchomości©. Kwartalnik Ministerstwa Sprawiedliwości, Seria: Wykładnia i stosowanie prawa" 2020, nr 20.
12. Śledziewska K., Włoch R., *Gospodarka cyfrowa. Jak nowe technologie zmieniają świat,* Warszawa 2020.
13. Vali I., Laud K., Leppikus H., *Smart service - home office for land registrars,* w: XX Congreso Mundial de Derecho Registral. 20th World Land Registration Congress Dubai 2016, Tirant lo Blanch Hiszpania 2017.
14. Vos J., *The impact of (disruptive) information technology and the role of Registrar in (future) e-conveyancing - part II,* [w]: XX Congreso Mundial de Derecho Registral. 20th World Land Registration Congress Dubai 2016, Tirant lo Blanch Hiszpania 2017.
15. Zadura A., *Zarządzanie gruntami rolnymi w krajach Europy Środkowo-Wschodniej* Warszawa 2005.
16. Załucki M., *Kierunekzmian przepisowo formie testamentu w dobie nowych technologii na przykładzie*

Szwajcarii, „Białostockie Studia Prawnicze", 2017, vol. 22, nr 4.

Online materials:

https://www.elra.eu

https://pl.wikipedia.org

http://encyklopediaap.uw.edu.pl/index.php/Nowe_Zarz%C4%85dzanie_Publiczne

https://www.tkgm.gov.tr/tr

https://www.just.ee/en/news/remote-notarial-authentication-options-be-significantly-expanded

https://lri-ms.eu/conference

https://tvn24.pl/swiat/koronawirus-mapa-i-statystyki-w-jakich-krajach-wystepuje-gdzie-nie-ma-wirusa-3545808

https://www.just.ee/en/ingmar-vali

https://www.rik.ee/en

https://www.rik.ee/et/e-ariregister

https://www.rik.ee/en/immovables-portal

https://www.europarl.europa.eu/committees/pl/data-flows-artificial-intelligence-and-i/product-details/20201202CAN58877

https://www.eppgroup.eu/pl/jak-dzialamy/grupy-robocze/grupa-robocza-ds-wewnetrznych-i-prawnych/sztuczna-inteligencja-w-epoce-cyfrowej