

Legislation to Support the Digital Transformation of Land Governance and Land Administration

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Key words: Digital cadastre, E-Economy, e-Governance, Legislation, Industry 4.0, Standards; Smart-City, Capacity building

SUMMARY

In any field of economy, digital transformation is impossible without updating of the existing legislation, adoption of new laws and standards. Delay in changing of the regulatory base becomes a barrier of the Digital Economy Development. It is important that legislation not only define a basic possibility of using these or those technologies, but also are action directives for the authorized state bodies. The main purpose of this paper is to consider the relevant directions of the legislation development for ensuring modern digital transformation and reengineering of management processes in sphere of land governance and land administration. The paper is devoted to several directions of such development.

The first direction is a problem of the legal importance giving to uniform IT-platforms (PPGIS/PPSS) with electronic administrative Reglaments for inclusive, participatory e-governance.

The second direction is a problem of new legal relationship regulations in e-Land Governance. In particular, legal relationship of the state(G), business (B), citizens (C) with intellectual agents (AI), such as AI-registrar, AI-bank, AI-valuator; G,B,C legal relationship with the Smart City and the Internet of Things; legal relationship "Smart contract"–"Smart law"– persons of property market infrastructure (notaries, lawyers, registrars, realtors, banks and others); B&C legal relationship with the G during administrative inspections of the land relations objects using Earth remote sensing; legal relationship of G, B, C, cadastral engineers, registrars and others persons in Blockchain, during different land administration processes.

The third direction is a problem of new business processes standardization for e-Land Governance and digital cadastre. It is planning to use ISO, OGF, IEEE standards in the field of a geomatics, Smart cities, SDI to support smart cities in all sectors, BIM&GIS integration, e-Governance and SDI in supporting decision making, 3D and 4D geospatial standards. In Belarus this work will be done in frames of special technical committee for standardization "Digital transformation" that was created in 2018.

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1. INTRODUCTION.

Technical revolution Industry 4.0 has an interesting phenomenon. Inadequate, slowly developing legislation became a barrier on the way of rapidly developing technologies. The article provides recommendations regarding legislation to eliminate barriers to the digital transformation of business processes in the Real Estate market, including land administration processes. The recommendations are based on the specification of business processes in the problem area (objects of digital transformation) and on the analysis of the main strategies of digital transformation taking shape in the world today. They relate to the development of a regulatory framework, both in the form of laws and in the form of technical standards for business processes and services.

2. OBJECTS OF DIGITAL TRANSFORMATION

The objects of digital transformation in digital economy are business processes. We have identified 11 classes of business processes in the Real Estate market, which include a set of their subtypes. For each type, the description in BPMN notation is formed and proposals for reengineering business processes using innovative methodologies are developed. Examples for several classes are given below.

2.1. Land Distribution, Land Allotment, Land Allocation. The Processes of the first stage of land reform. They include processes of Privatization through Sale of State Land, processes of Restitution, processes of Distribution in Land Shares, processes of Distribution in Physical Parcels, processes of Compensation Vouchers, provision of land plots from the lands of public foundation.

2.2. Land Administration. The Processes of the second stage of land reform. They include processes of Inventory Management and Cadaster, Land Acquisitions, Mass Assessment, Land Titling, Real Estate Formation, processes of the Real Estate mass formation, Adjudication.

2.3. Redistribution of rights on Real Estate Market. Include processes of Land Transactions, Land Transfers, Land Alienation, processes of donation, exchange, rent, Land Speculation, Land Inheritance Rights, Marital Property Rights, Informal Property Legalization, Land Conflict Resolutions.

2.4. Termination of Real Property Rights. Include business-processes of Confiscation, Requisition, Compulsory Seizure of Property in the Public Interest (Compulsory Acquisitions, Expropriation), Nationalization, Voluntary Abandonment of Property.

Among the other classes of business processes there are: Encumbrance of Property Rights, Land Development, Urbanization, Tenure Regularization, Operation (maintenance) of Real Estate, Administrative Procedures, Real Estate infrastructure business processes, Monitoring and Protection of Land Recourse, Land Management Quality Control, Property Tax Administration, Town, Country Planning and Land Use Planning.

Business processes models are the basis for the development of consulting expert systems knowledge base.

3. STRATEGY FOR DIGITAL TRANSFORMATION

Digital transformation adheres to certain general strategies. Let's consider some of them.

3.1. Strategy for building the National Data Infrastructure. Data-centric approach, which means primacy of data, is the cornerstone of such strategy. Documents become derivative of data. Data are not divided according to "documents" as it is accepted in a classical paradigm. Different services use the same data in various purposes. The problem of transition to a data-centric digital State is that the current legislation which traditionally focused on the document-centric approach. In a data-centric digital State, the basis of its architecture is data infrastructure (data warehouses, metadata, basic universal services, agreements on access, use and distribution of data, organizational structures that ensure the interaction of many data producers and users).

3.2. The strategy of creation of the uniform entrusted environment of remote electronic identification. Digital transformation is impossible without creation of the uniform entrusted environment of identification and authentication. Such environment through a uniform profile and a user interface, undergone identification procedure, provides implementation of remote access to all services of the digital State.

3.3. The Open Data Strategy. Certain data have to be available for use and further republication without restrictions of copyright, patents and other mechanisms of protection. The UN (United Nations Resolution, 2015; UN E-Government Survey 2016) proves the relevance of this concept in problems of digitalization of society and development of the electronic government.

3.4. The strategy of transfer of sought-after services into electronic form. Rendering services of the State in an electronic form directly follows from the concept of the electronic governments accepted by the majority of the countries of the world. The World Bank distinguishes three classes of such services – e-consultation, e informing and e-decision-making (UN E-Government Survey 2016).

3.5. The strategy of transition to automatically executed "smart contracts". Of course, smart contracts can be legally recognized if they comply with the laws of the State. It is necessary that they contain the conditions and restrictions established by law. "Smart laws" can check whether the smart contract meets the laws of the State.

Smart law, in principle, can verify the presence of any licenses, permits to fulfill any conditions, property ownership, the absence of arrests or other restrictions on the disposal of property, which is necessary to execute the smart contract. Thus, the content of a smart contract can be checked not by the authorized representative (for example, the State registrar, the notary or the lawyer), but a special program.

3.6. The strategy of translating the electronic interaction of public servants, business and citizens on uniform National digital platforms. The best practice consists in legal regulation of this process. The result are the thematic industrial uniform National Web platforms, which are responsible for the quality of services. For example, E-Health; E-Education; E-Government, E-Taxation, Unified E-Procurement, Unified National Geospatial platforms.

3.7. The strategy of transition to decision-making expert systems of artificial intelligence. It is becoming more and more obvious that, in the near future, well-programmable management solutions can be transferred to software systems of artificial intelligence (so-called «AI intelligent agents»). European Union Resolution 2015.2013 (INL) on the Charter of Robotics contains recommendations on changes in civil legislation in terms of registration of robots, their civil liability, intellectual property rights, licenses for developers of expert artificial intelligence systems, for users and control organization.

3.8. Cross-border electronic interaction strategy. Digital transformation leads to the emergence of cross-border e-services. Such a strategy is being met by well-known European projects EULIS, IMOLA, CROBECO, e-JUSTICE in the field of land administration.

3.9. The strategy of automatic monitoring of the quality of public administration. It is believed that the control and supervisory functions are among the first to be transferred from the bureaucratic apparatus to a system that eliminates the human factor, corruption capacity and the possibility of other abuses. The strategy is implemented by artificial intelligence technologies, risk-oriented models of control and surveillance activities, integrated geomonitoring with the sharing of Earth remote sensing data and data from State information resources.

3.10. The strategy of transition to the "Smart Home" and "Smart City". The smart city is based on the integration of data infrastructures, communication technologies and the Internet of Things (IoT) for urban property management (schools, libraries, transport, hospitals, power plants, housing, water supply and waste management systems, law enforcement agencies and other public services).

4. LEGISLATION TO SUPPORT THE DIGITAL TRANSFORMATION OF LAND GOVERNANCE AND LAND ADMINISTRATION

It is advisable to carry out the following steps for the development of legislation in support of the digital transformation of business processes, which are specified in Section 1, and for the implementation of the strategies specified in Section 2.

4.1. The legislation in support of remote identification. Business processes of land administration are closely connected with identification of the parties of transactions, the subjects of the immovable property registration. Reengineering of these processes is based on remote identification and authentication of civil rights subjects. It is necessary to have the legislation, which determines conditions of identification and authentication implementation by each of ways known today. Not only by means of the digital signature ("mobile", "cloudy"), but also biometric ways (fingerprints, a retina, the photo). It is necessary to settle the work with electronic documents signed by the analogue of the client's handwritten signature on the electronic tablet. Legislation should allow the delegation of the individual's identification. It may be necessary to clarify the range of operations and limits on operations for which no identification is required or whether simplified identification is possible. Considering that transactions in the Real Estate market may be transboundary, the international standard is needed by definition of the term "trusted third party".

4.2. Legislation on access to personal data. Business processes in the Real Estate market are connected with access to personal data from State information resources. The digitization of the processes of various types of activity determines the necessity of endowing the participants in the infrastructure of the Real Estate market with the right to receive, in certain cases and according to certain rules, personal information from State information systems. It may be necessary to envisage the creation of a registry of access rights for each type of such information in the E-government infrastructure.

4.3. The legislation regarding the execution of Real Estate transactions in electronic form. Nowadays, nothing prevents the creation of platforms that allow to remote execution of Real Estate transactions in electronic form. To ensure effective e-civil circulation, civil law reform is needed. The reform should, in particular, provide for clarification and, if necessary, defining new requirements for the forms of transactions, requirements for interconnection agreements, standard contract terms, general requirements to a form and moment of signing of the contract. Even to the formats of their representation in the electronic civil circulation.

4.4. The legislation in support of the automated self-executing Real Estate deals. There is a need for a regulatory legal act containing a definition of automated (self-executing) deals, including contracts as a form of fulfillment of an obligation, as well as principles for creating the base of standard contracts (approximate terms of the contract). In this regard, it is necessary to specify a concept of the electronic document, storage procedures, including smart contracts.

4.5. The development of legislation on robotics, on intelligent agents AI, an order of their input in operation and civil circulation, determination of responsibility. It is necessary to establish hierarchy of legal concepts of the sphere of creation, use and distribution of AI, AI classification. Norms concerning structure of the rights and duties of the persons participating in the relations connected with AI application are necessary. Responsibility in the sphere of AI use, the system of insurance of the risks connected with AI use has to be defined. The legislation has to determine an order of personal data use by various AI forms (a chat bots, devices on the Internet of things, etc.); their activities for collecting, transfer, storage, processing and access to data. Including, regarding data collection depending on will of subjects.

4.6. Legal regulation of dispute resolution in electronic form. The legal framework should be established for alternative dispute resolution mechanisms using electronic systems. For example, online resolution of land disputes, online resolution of disputes regarding the State registration of immovable property and rights on it, disputes in case of expropriation, etc.

4.7. Legal regulation of inclusive e-decision making. Public Participation GIS (PPGIS) are widespread today. They began to be considered as the most important part of the e-Governments, as the effective instrument of inclusive territorial management with electronic interaction of the State, citizens and business (Obermeyer, 2016). PPGIS significantly increase the national levels of E-governments in the UN ranking by the criteria of electronic participation EPI (E-participation indexes). It seems that the legislation has to give the legal importance to actions of volunteers on the principles of crowdsourcing and voluntary geographical information (VGI), standardize an order of adoption e-solutions and appeals to them.

4.8. The legislation in support of cross-border e-transactions. This is the most difficult area of legislation development. The digital transformation of business processes in sphere of cross-border transactions, on the one hand, is faced with many problems; on the other hand, it is noticeably activated. Problems arise for a set of the reasons: cross-border electronic payments; cross-border trust to electronic documents; lack of confidence in sufficient legal protection; different languages; different legislation and different standard provisions of lawyers; need of ensuring protection against the unknown legislation. At such approach there are new questions: whether it is authorized to registrar of one country to accept the documents transferred by other country? How to check the identity of characters? How to work if the same documents are called in legal systems differently? What consequences of immovable property registration in different countries? Naturally, there are also questions of compatibility (interoperability) of computer systems.

4.9. Determination of digital technologies legal status applied both in the Real Estate market and in the financial sphere. Such technologies include «distributed registry technology», «digital letter of credit», «digital mortgage», «cryptocurrency», «token», «smart contract». It is represented that their status has to be defined proceeding from obligation of national currency as the only lawful means of payment.

4.10. The legislation in support of digital transformation of joint activities of notaries, information intermediaries and registrars. It is necessary to establish the possibility of performing a notarial act by producing a notarial document in electronic form; certification of the fact of signing the document in the presence of a notary. Legislation should introduce a mechanism for remote notaries to perform certain notarial actions (certifying transactions, certifying the accuracy of electronic documents and extracts from them, certifying the translator's signature on translating documents and so on). It is necessary to define opportunities, an order and levels of access to electronic notarial registers and archives; to provide an opportunity and conditions of property transactions automatic registration after submission of documents by notaries or information intermediaries.

4.11. The legislation in support implementation of control and supervising procedures in an electronic form. It is necessary to create legal conditions for implementation of control and supervising procedures of observance of the civil, land, administrative legislation, based on the State cadaster/land registry and Earth remote sensing.

5. TECHNICAL STANDARDS OF DIGITAL TRANSFORMATION

Due to the globalization of society, international standardization have particular importance. The World Trade Organization designated the six principles of such standardization. There are many technical standards systems in the field of land administration: ISO standards in the field of geomatics (ISO19XXX), standards of the international geospatial consortium OGC (for example, LandInfra, CityGML, IndoorGML), International Property Measurement Standards IPMSC, International Land Measurement Standards ILMS, International Association of Assessing Officers (IAAO) standards. A number of international standards of digital transformation in the direction of «smart cities» have appeared. For example, ISO 37120: 2014 «Sustainable development of communities - Indicators for city services and quality of life», ISO 37151: 2015 «Smart community infrastructures - Principles and requirements for performance metrics». The European innovative partnership in the field of the smart cities and communities U4SSC offered the standard draft of "smart cities KPI". The IEEE/ISO standards regulate use of the sensors, measuring instruments and measuring systems, providing IoT functioning.

In Belarus special technical committee for standardization "Digital transformation TK BY 38" was created in 2018. The committee have been established to develop interstate standards, their harmonization with international and regional standards. Standards for business processes and e-services acquire legal significance after the regulatory government's Acts adopt them for action.

REFERENCES

United Nations Resolution "Transforming Our World: A 2030 Agenda for Sustainable Development" [Electronic resource]: UN. – A/RES/70/1, 25.09.2015r. . – Mode of access: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&referer=http://mfa.gov.by/multilateral/sdg/&Lang=R. – Date of access: 1.02.2018.

UN E-Government Survey 2016: E-Government in support of sustainable development [Electronic resource] : proc. of Department of Economic and Social Affairs, United Nations. – – Mode of access: <https://publicadministration.un.org/egovkb/en-us/reports/un-e-government-survey-2016>. – Date of access: 1.02.2018.

Obermeyer, N. J. PPGIS: The Evolution of Public Participation GIS [Electronic resource] // Indiana State University, Terre Haute, 2016. – Mode of access: <http://dusk2.geo.orst.edu/ucgis/web/oregon/ppgis.pdf>. – Date of success: 1.02.2018.

BIOGRAPHICAL NOTES

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