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## ***Editorial Words***

*Dear esteemed readers,*

It is my great pleasure to welcome you to the latest edition of ASEJ, the academic journal that brings you the latest research in the fields of law, economics, logistics, finance, psychology, criminology, computer science, and security. This issue features a diverse range of articles from leading experts in these fields, showcasing their latest research and insights into current trends and challenges.

As we continue to face unprecedented challenges and rapidly evolving technological advancements, it is more important than ever to stay up-to-date with the latest research and trends in these fields. This issue of ASEJ offers valuable insights and perspectives that are essential for anyone seeking to stay at the forefront of their respective disciplines.

We would like to take this opportunity to express our sincere gratitude to the authors for their hard work and contributions to the advancement of knowledge. We would also like to acknowledge the invaluable support of the Bielsko-Biala School of Finance and Law for their continued commitment to publishing this journal, which serves as a platform for the exchange of the latest knowledge and insights.

Virtual reality (VR) technology has been advancing at a rapid pace, and with its growth come a range of challenges in various fields, including economics, law, security, and computer science. In the realm of economics, one challenge is determining how to integrate VR technology into existing business models. VR has the potential to revolutionize the way companies conduct business, but it also requires significant investment and infrastructure to do so. Additionally, there are concerns about how VR will impact the job market, as it could potentially eliminate the need for certain types of jobs while creating new ones in the VR industry.

In this issue, we also explore the growing significance of virtual reality in law, economics, finance, and security. As VR technology continues to evolve, it presents both opportunities and challenges in these fields. For example, in economics, VR has the potential to revolutionize the way businesses operate, but it also requires significant investment and infrastructure. In law, the use of VR raises important questions around data protection, privacy, and intellectual property rights. In finance, VR can be used to enhance customer experiences and provide new insights into investment opportunities. In security, VR presents new risks and challenges, such as ensuring the safety of users and protecting sensitive data from cyber threats.

We hope that this issue of ASEJ will prove insightful and informative for our readers, and we look forward to your feedback and contributions in future editions.

Sincerely,

*Dr Muhammad Jammal*  
*Editor of the ASEJ, Issue 4, Volume 26, 2022*

# Digitization of Administration in Poland on the Example of Services Rendered by the Social Insurance Institution (ZUS)

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**Abstract**— The development of information society and continuous demand for fast and efficient administration services rendered for the benefit of citizens call for constant improvement of e-services and automation processes in administrative formalities. This paper evaluates services rendered by public administration based on E-Government Digital Index and then presents online services provided by the Polish Social Insurance Institution (ZUS). The paper also reviews ZUS development strategy for 2021-2025 which is supposed to lift the burden incumbent on the social security premium payers, to fast forward dealings related to administrative matters and, finally, to seal the public finance.

**Keywords**— e-administration, public administration, E-Government Digital Index, Electronic Services Platform.

## I. INTRODUCTION

E-administration and digitization of public services are indispensable elements of development of information society. The possibility to deal with administrative duties online is a very convenient solution for citizens. Electronic administrative services are well received and widely used when they support the fulfillment of the most vital official needs and duties of citizens and entrepreneurs. Therefore, such services need to be easy to use, cost effective for the state and efficient. They are also supposed to eliminate procedures which are superfluous or can be replaced by other ones. E-administration unlike traditional administration should be a mechanism which is user friendly, flexible and open in meeting individual and collective needs of citizens (Fleszer 2014). The purpose of the paper is to overview the current level of development of e-administration in Poland and to present the contribution to e-administration made by the Social Insurance Institution (ZUS) as the largest institution rendering services related to civil and social security

for more than 26 million Polish citizens.

## II. DIGITIZATION OF PUBLIC ADMINISTRATION SERVICES IN THE WORLD

Electronic administration symbolises a critical change in modernisation of traditionally understood public administration of the 21<sup>st</sup> century. Implementation of ICT technologies into public administration matters enhances efficiency of statutory tasks executed by various state institutions and facilitates contacts of citizens with administration regardless of time and place. Moreover, digitization of tasks and services makes it possible to track down the progress of execution of particular administrative affairs. One of the yardsticks that measure the level of development of e-administration in particular countries is E-Government Development Index (EGDI). The index is a weighted average of normalised results including:

- Telecommunication Infrastructure Index (TII) i.e., development status of telecommunications infrastructure,
- Online Service Index (OSI) i.e., scope and quality of Internet services rendered by administration in quantitative terms,
- Human Capital Index (HCI) i.e., inherent human capital.

To calculate EGDI index all its component indicators must be normalised by Z-score standardisation procedure because only in this way the index is equally impacted by values of its all three components. Otherwise, the value of EGDI index would depend on the element with the biggest dispersion and would impact results for respective countries.

$$EGDI = \frac{1}{3} \cdot (TII_{z-score} + OSI_{z-score} + HCI_{z-score})$$

EGDI index is used to determine the position of a country in the ranking of the level of e-administration development among



all United Nations Member States.

Telecommunication Infrastructure Index (TII) is a weighted average consisting of four components:

$$TII = \frac{1}{4} (\text{internet users per 100 inhabitants} + \text{number of mobile subscribers per 100 inhabitants} + \text{active mobile broadband subscription number of fixed broadband subscriptions per 100 inhabitants})$$

- Estimated number of Internet users per 100 inhabitants – number of users who accessed the Internet from any location within three months before the survey was conducted;
- Number of mobile subscribers per 100 inhabitants – number of subscriptions for mobile phone services within three months before the survey was conducted;
- Active mobile broadband subscriptions – it is a sum of data and signal in a mobile broadband network. It includes subscriptions used to access the Internet with broadband speed of 256kb/s or greater (e.g., WCDMA, HSPA, CDMA2000 1x EV-DO, WiMAX IEEE 802.16e and LTE);
- Number of subscriptions for fixed broadband services per 100 inhabitants – this indicator measures the uptake of fixed broadband technology by the population, expressed as the number of subscriptions per 100 inhabitants to services with an advertised download speed of 256 Kbps or greater. Fixed broadband – provided over DSL, cable, fibre, satellite, terrestrial fixed wireless or other fixed-wired technologies.

As of 2020, the category ‘number of subscriptions for landline phones’ was abandoned.

Online Service Index (OSI) – the study consists of a questionnaire related to online services. There are 140 questions on the questionnaire and each question requires a binary answer, each positive answer generates next, more detailed questions related to the original question. In this way it is possible to arrive at extended quantitative results with wide distribution of points reflecting differences in development of e-administration between various Member States. Total sum of points is normalized within the scope from 0 to 1. In the evaluation process the researchers study national websites of each country in its vernacular, including national portals, e-services and e-participation portals as well as websites of respective ministries (departments of education, labour, social services, health, finance, and environment). The questionnaire is divided into three main sections presented in the tables below:

Human Capital Index (HCI) consists of four basic elements:

$$HCI = \frac{3}{9} \cdot \text{adult literacy rate} + \frac{2}{9} \cdot \text{the combined primary, secondary and tertiary gross enrolment ratio} + \frac{2}{9} \cdot \text{expected years of schooling} + \frac{2}{9} \cdot \text{average years of schooling}$$

Adult literacy - the percentage of population aged 15 and older having reading comprehension skills and writing skills of producing simple written forms related to everyday life.

Gross enrolment ratio - the total number of students enrolled in schools at elementary, middle and high levels regardless of age, expressed as a percentage of the population in school age.

Expected years of schooling - expected years of schooling are the number of years a child of school entrance age can expect to receive if the current age-specific enrolment rates persist throughout the child's years of schooling.

Mean years of schooling - average number of completed years of education of a country's population aged 25 years and older, excluding years spent repeating individual grades (UN 2009).

The arrived value of human capital is standardised by taking the accumulated value for a given country, subtracting the lowest accumulated value obtained in the study and finally, dividing by the scope of accumulated values for all countries in the study.

E-Government Development Index and its individual elements for individual regions of the world are presented in Table 4.

Table 4 presents the level of development of e-Government globally. The highest value can be observed in Europe in 2018

and 2020 (0,7241 in 2018 and 0,8170 in 2020 respectively) and this value considerably exceeds the world average (0,4922 in 2018 and 0,5988 in 2020 respectively). A positive phenomenon is that EGDI index is on the systematic rise for all regions of the world. The highest increase expressed in percent could be observed in the regions of Africa (from 0,2882 in 2018 to 0,3914) which is up by 35,81%, while the smallest increase of EGDI index was noted in European countries (from 0,7241 in 2018 to 0,8170 in 2020) which is 12,83%. Global growth average for this period amounted to 21,66%.

The level of development of e-administration among EU Member States is presented in Table 5.

Among European Union countries the highest EGDI index could be observed in Denmark (0,9858 in 2020). Denmark also occupied the first place in the global EGDI ranking. In 2020 Poland took the 13th place in the ranking with the index on the level of 0,8531. Speaking of Poland it should be emphasized that within the decade of 2010-2020, the country climbed from place 26 in 2010 to place 13 in 2020 in the EU ranking, and from place 45 to place 24 in the global EGDI ranking in the same period.

TABLE 4. INFORMATION ABOUT: LAWS, POLICIES, LEGISLATION OR EXPENDITURES.

Information about ...	<ul style="list-style-type: none"> <li>• Information about accessible public transportation;</li> <li>• Information about affordable public housing;</li> <li>• Information about citizen’s rights to access government information;</li> <li>• Information about citizenship application;</li> <li>• Information about diseases affecting older persons;</li> <li>• Information about early childhood development, care and pre-primary education;</li> <li>• Information about education policy or budget;</li> <li>• Information about electricity or power outage;</li> <li>• Information about employment/labor policy or budget;</li> <li>• Information about environment-related policy or budget;</li> <li>• Information about equal access to education for children in vulnerable situations;</li> <li>• Information about equal access to education for persons with disabilities;</li> <li>• Information about gender equality (policy/legislation);</li> <li>• Information about government scholarship programs or education funding;</li> <li>• Information about government-wide Chief Information Officer (CIO) or equivalent online;</li> <li>• Information about health policy or budget;</li> <li>• Information about health-emergency preparedness;</li> <li>• Information about housing support for older persons;</li> <li>• Information about justice policy or budget;</li> <li>• Information about labor laws and regulation;</li> <li>• Information about laws and regulations against discrimination;</li> <li>• Information about local/regional government agencies;</li> <li>• Information about national budget or budget policy;</li> <li>• Information about organizational structure of the government;</li> <li>• Information about payments for government services through different channels;</li> <li>• Information about personal data protection;</li> <li>• Information about pollution and precautionary measures;</li> <li>• Information about primary government expenditures;</li> <li>• Information about privacy statement;</li> <li>• Information about programs/initiatives benefiting the poor or vulnerable groups;</li> <li>• Information about public sector workforce distribution by sex;</li> <li>• Information about reduction, recycling and reuse of waste;</li> <li>• Information about reproductive healthcare services;</li> <li>• Information about results of any government procurement/bidding process;</li> <li>• Information about road safety;</li> <li>• Information about road traffic accidents statistics;</li> <li>• Information about schools with accessible facilities;</li> <li>• Information about services in partnership with 3rd parties;</li> <li>• Information about social protection policy or budget;</li> <li>• Information about technical and vocational skills training for youth;</li> <li>• Information about upcoming e-participation activities;</li> <li>• Information about upcoming procurements;</li> <li>• Information about using open data sets;</li> <li>• Information about web statistics on usage of national portal(s);</li> <li>• Information about women’s right to access to sexual/reproductive healthcare; information and education (policy/legislation).</li> </ul>
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Source: (NATIONS, UNITED 2020).

TABLE 5. EXISTENCE OF A FEATURE SUCH AS SOCIAL NETWORKING TOOLS.

Existence of...	<ul style="list-style-type: none"> <li>• Existence of a data dictionary or metadata repository in the portal;</li> <li>• Existence of a mobile app to provide e-government services;</li> <li>• Existence of a national e-government/digital government strategy online;</li> <li>• Existence of a national portal, an open data portal;</li> <li>• Existence of a sitemap;</li> <li>• Existence of an e-participation policy/mission statement;</li> <li>• Existence of an e-procurement platform;</li> <li>• Existence of an open government data policy online;</li> <li>• Existence of an outcome of an e-consultation resulted in new policy decisions;</li> <li>• Existence of cross-browser compatibility of website including in mobile/smartphones;</li> <li>• Existence of digital security or cybersecurity act/legislation online;</li> <li>• Existence of features relates accessibility;</li> <li>• Existence of features to configure font size, type, color and background color;</li> <li>• Existence of free access to government services through kiosks, community centers, post offices, libraries, public spaces of free Wi-Fi;</li> <li>• Existence of GIS or other geospatial data or related online services;</li> <li>• Existence of help links and references for youth employment;</li> <li>• Existence of help, FAQ, contact us features;</li> <li>• Existence of linkage between national portal and sectoral/ministerial services of education, employment/labor, environment, health, social protection and justice;</li> <li>• Existence of linkage/reference to technical, vocational and tertiary education;</li> <li>• Existence of live support functionality;</li> <li>• Existence of mobile services in education, employment, environment, health, social protection and justice;</li> <li>• Existence of online participation in public issues related to education, employment, environment, health, social protection and justice;</li> <li>• Existence of online service for female-headed households, immigrants, migrant workers, refugees and/or internally displaced persons, older persons, persons with disabilities, the poor (below poverty line), women, youth;</li> <li>• Existence of online skills training for youths and/or adults;</li> <li>• Existence of online tools helping children with disabilities to participate at all levels of education;</li> <li>• Existence of open data competitions;</li> <li>• Existence of open government data on education, employment, environment, health, social protection and justice;</li> <li>• Existence of search and advanced search features;</li> <li>• Existence of search engine effectiveness;</li> <li>• Existence of security features on the portal;</li> <li>• Existence of social networking features;</li> <li>• Existence of support for all official languages;</li> <li>• Existence of support for authentication or digital ID;</li> <li>• Existence of tools to obtain inputs for policy deliberation;</li> <li>• Existence of tutorials and/or guidance for using the portal Existence of up-to-date information on the portal Existence of user satisfaction of online or mobile services.</li> </ul>
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Source: (NATIONS, UNITED 2020).

TABLE 6. REGIONAL FOR E-GOVERNMENT DEVELOPMENT INDEX IN 2018 AND 2020.

Region	EGDI		OSI		TII		HCI	
	2018	2020	2018	2020	2018	2020	2018	2020
Africa	0.2882	0.3914	0.2567	0.3704	0.1724	0.3165	0.4355	0.4874
Americas	0.5245	0.6341	0.4959	0.5808	0.3844	0.5763	0.6933	0.7453
Asia	0.5132	0.6373	0.5120	0.6249	0.3730	0.5893	0.6545	0.6977
Europe	0.7241	0.8170	0.6926	0.7655	0.6438	0.8162	0.8360	0.8691
Oceania	0.4154	0.5106	0.2966	0.4172	0.2599	0.3851	0.6897	0.7295
WORLD	0.4922	0.5988	0.4623	0.5620	0.3711	0.5464	0.6433	0.6880

Source: (NATIONS, UNITED 2020).

TABLE 7. ABILITY TO DO SOMETHING ON THE WEBSITE.

Ability to ...	<ul style="list-style-type: none"> <li>• Ability to access/modify own data;</li> <li>• Ability to apply for any visa to enter or transit through this country;</li> <li>• Ability to apply for birth certificates online;</li> <li>• Ability to apply for building permits online;</li> <li>• Ability to apply for business licenses or patents online;</li> <li>• Ability to apply for death certificates online;</li> <li>• Ability to apply for driver's license online;</li> <li>• Ability to apply for environment-related permits online;</li> <li>• Ability to apply for government jobs online;</li> <li>• Ability to apply for land title registration online;</li> <li>• Ability to apply for marriage certificates online;</li> <li>• Ability to apply for personal ID cards online;</li> <li>• Ability to apply online for criminal record/background clearance;</li> <li>• Ability to apply online for government scholarships/fellowships;</li> <li>• Ability to apply online for social protection;</li> <li>• Ability to customize the national portal(s) to bookmark favorite services;</li> <li>• Ability to enroll online for primary or secondary education;</li> <li>• Ability to file complaint for public services;</li> <li>• Ability to make a police declaration online;</li> <li>• Ability to make address change online;</li> <li>• Ability to monitor and evaluate existing government procurement contracts;</li> <li>• Ability to pay for any government related fees;</li> <li>• Ability to pay for water, energy bills online;</li> <li>• Ability to receive updates or alerts on environment-related issues;</li> <li>• Ability to receive updates or alerts on issues related to education, employment, health, social protection, justice, weather conditions or agricultural technology;</li> <li>• Ability to register online for a new business;</li> <li>• Ability to register online for vehicle.</li> </ul>
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Source: (NATIONS, UNITED 2020).

TABLE 8. EGDI FOR THE EUROPEAN UNION COUNTRIES IN 2010, 2018, 2020.

European Union Countries	EGDI					
	2010	EGDI Rank	2018	EGDI Rank	2020	EGDI Rank
Denmark	0,7872	3	0,9758	1	0,9858	1
Estonia	0,6965	10	0,8486	9	0,9473	2
Finland	0,6967	9	0,8815	4	0,9452	3
Sweden	0,7474	6	0,8882	3	0,9365	4
United Kingdom of Great Britain and Northern Ireland	0,8147	1	0,8999	2	0,9358	5
Netherlands	0,8098	2	0,8757	7	0,9228	6
Austria	0,6679	12	0,8301	11	0,8907	7
Spain	0,7516	4	0,8415	10	0,8801	8
Cyprus	0,5705	23	0,7736	23	0,8731	9
France	0,751	5	0,879	5	0,8718	10
Lithuania	0,6295	15	0,7534	26	0,8665	11
Slovenia	0,5243	28	0,7714	24	0,8546	12
Poland	0,5582	26	0,7926	18	0,8531	13
Germany	0,7309	7	0,8765	6	0,8524	14
Ireland	0,6866	11	0,8287	12	0,8433	15
Luxembourg	0,6672	13	0,8272	13	0,8334	16
Italy	0,58	20	0,8231	15	0,8209	17
Czech Republic	0,606	17	0,7084	28	0,8135	18
Belgium	0,7225	8	0,808	16	0,8047	19
Portugal	0,5787	21	0,8255	14	0,8031	20
Malta	0,6129	16	0,8547	8	0,8011	21
Bulgaria	0,559	25	0,7177	27	0,798	22
Greece	0,5708	22	0,8021	17	0,7833	23
Hungary	0,6315	14	0,7745	21	0,7265	24
Slovakia	0,5639	24	0,7817	19	0,7155	25
Croatia	0,5858	18	0,7745	22	0,7018	26
Latvia	0,5826	19	0,7798	20	0,6996	27
Romania	0,5479	27	0,7605	25	0,6671	28

Source: (NATIONS, UNITED 2018) (NATIONS, UNITED 2020) (UNITED NATIONS 2010).

### III. THE SOCIAL INSURANCE INSTITUTION (ZUS) - CURRENT TASKS AND SCHEMES

The Social Insurance Institution (ZUS) is a state organisation with legal personality collecting contributions for social and health insurance and responsible for distribution of benefits (e.g., pensions, annuities, incapacity benefits, sickness benefits, maternity allowances) in volumes based on the principles established upon universally binding regulations.

ZUS from its early days has been a cutting-edge institution, standing out from other similar institutions in the world when it comes to the level of organisation. Currently, ZUS provides services to more than 20 million citizens. Resources of the Social Insurance Fund which are under operation of ZUS constitute about a half of Poland's total financial supply. ZUS also supervises the Demographic Reserve which, thanks to accurate predictions of the management, achieves spectacular results comparable with results of commercial investment funds in Poland. The activities undertaken by the Social Insurance Institution are written down in the Act of 13 October 1998 on the Social Insurance System (Journal of laws of 2007, No 11, item 74 as amended) and can be divided into:

1. Normative activities which include tasks resulting directly from the provisions of law:
  - a) establishing the social insurance obligation, assessment and collection of social insurance contributions;
  - b) establishing the entitlement to social benefits, payments of the benefits unless pursuant to separate provision, the obligation to pay rests upon the contribution payers,
  - c) collecting and accounting for the social and health insurance contribution; collecting contributions to the Labour Fund and the Labour and Social Policy; collecting contributions to the Fund of Guaranteed Employee Benefits;
  - d) conducting the calculation of contributions held in contribution payer's accounts and keeping contributions on insured persons' individual accounts;
  - e) certification by certifying doctors and medical boards for the purposes of determination of entitlement for social benefits;
  - f) implementation of international conventions and agreements in the field of social insurance, and handling benefits provided in accordance with these conventions and agreements;
  - g) administering of the financial resources of the Social Insurance Fund and the Maintenance Fund.
2. Audit activities:
  - a) check of the correctness of certificates of temporary incapacity for work;
  - b) check of whether the contribution payers pay the compulsory contributions and properly

perform the tasks imposed on them by law (such as the payment of various allowances);

3. Organisational activities:
  - a) administering of the financial resources of the Social Insurance Fund and the Maintenance Fund;
  - b) collecting personal data of contribution payers and insured persons for the National Health Fund (NFZ);
  - c) identification of contributions sent into individual accounts in open pension funds.
4. Creative activities:
  - a) issuing proposals and opinions regarding legal acts pertaining to social insurance;
  - b) issuing actuarial analyses and forecasts pertaining to social insurance;
  - c) issuing information bulletins;
  - d) dissemination of knowledge on social insurance.

Currently the Social Insurance Institution in Poland undergoes critical organisational changes and transformations aimed at implementation of new solutions which will enhance efficiency of customer service. Advances in development of information society have created a demand for complex and round the clock public services. It is therefore necessary for state institutions to reach for state of the art technologies and IT tools which could increase the scope of services conducted through electronic contact with the client. Additionally, greater social awareness calls for undertaking steps towards cost cutting without compromising high standards and efficiency of the services rendered which is impossible without efforts of highly qualified human resources.

When the Polish government announced the e-administration project, the Social Insurance Institution was one of the first institutions in Poland to respond and build the e-office strategy (Grodzka 2007). In the early stages it was possible for customers to access information and to download forms. The next step was the introduction of online chatbot consultations. With constant advancement in new technologies and increased demand for online services, ZUS followed suit and implemented more and more modern high tech solutions. As digitization and automation are absolute priorities, in 2012 ZUS launched the Electronic Services Platform which was the first instance of e-office in the Polish public sector. The range of electronic services is continually enriched and now most administrative matters related to social insurance can be made online. The Electronic Services Platform (PUE ZUS) allows for the following (Instytut 2022):

- review of data gathered in ZUS;
- transfer of documents of the insured;
- filing applications and receiving online replies;
- asking questions and receiving replies;
- making appointments with ZUS clerks;
- filing applications for selected social benefits;
- access to tax settlements of benefits recipients;
- access to sick notes related to incapacity to work;
- access to personal profiles of doctor and bailiff;
- downloading certificates of solvency;

- creating confirmations with ZUS data.

In order to send documents via PUE ZUS the users need to obtain trusted electronic signature (ePUAP), qualified signature or ZUS qualified signature. The table below presents the number of served customers in the period 2020–2021:

TABLE 9. ZUS CUSTOMER SERVICE IN 2020-2021.

Type of service	2020	2021
Appointments in customer service centres	11 823 236	11 201 241
E-appointments	16 578	114 690
Reserved appointments	44 420	154 667
Phone calls	4 027 781	3 874 611
E-mails	1 327 257	1 042 943

Source: Own work based on ZUS data.

Within PUE ZUS there is a number of e-schemes such as: electronic sick notes e-ZLA (as of 1 January 2016). Issuance of notes on a paper form was discontinued in November 2018. From 1 December 2018 doctors can only issue electronic sick notes e-ZLA which they must sign using a special ZUS certificate or qualified signature or trusted electronic signature (PZ ePUAP) and then send electronically to ZUS. The sick note is then transferred to the PUE ZUS profile of the contribution payer (e.g., the employer) without the statistical number of the condition and the whole operation is completed in less than a day after the e-ZLA is received. The information is also passed to the insured person (the employee) should he/she possess the PUE ZUS profile of the insured/beneficiary (ZUS, <https://www.zus.pl/ezla> 2018).

The electronic system of sick notes helps to monitor the dynamics of changes with respect to number of sick notes and regions in which certain conditions occur with the highest frequency. The obligation of issuance only electronic sick certificates was the first and the most fundamental pillar of a wide scheme called E-patient implemented in cooperation with the Ministry of Health. The next milestones in the E-patient scheme were:

- Internet patient account (IKP);
- e-referrals;
- e-prescriptions.

Number of electronic sick notes for 2020-2021, which were automatically saved into accounts of the insured persons and transferred to the contribution payers through automated path is presented in Table 7.

TABLE 10. NUMBER OF ELECTRONIC SICK NOTES (E-ZLA) FOR 2020-2021 IN POLAND (EXPRESSED IN MILLIONS).

Type of certificate	2020	2021
Incapacity to work due to own illness	221,8 m	270,1 m
Incapacity to work due to care for sick child	8,1 m	9,9 m
Incapacity to work due to care for a family member	2,3 m	2,3 m

Source: (ZUS, *Raport - absencja chorobowa w 2021 r.* 2022) (ZUS, *Absencja chorobowa w 2020 roku* 2021).

E-contribution scheme launched by ZUS in 2018 was a foundation for a modern and complex mechanism of collecting and settling contributions. In the scheme each contribution

payer has his/her unique account number for payments of social insurance obligations or other public levies. From these unique accounts proceeds are distributed towards appropriate recipients (health insurance, the Labour Fund, the Labour and Social Policy; the Fund of Guaranteed Employee Benefits and the Solidarity Fund). Implementation of the scheme helped to arrange the balance on customer accounts and facilitated development of a reliable balance of the Social Insurance Fund from which pensions and annuities are paid. Moreover, e-contribution scheme allows for both global and detailed transformation process because it produces reliable data for analysis of dynamics of changes in business entities and the workforce employed by them.

The Polish Social Insurance Institution was one of the first in Europe to launch the *Electronic Exchange of Social Security Information (EESSI)*. The obligation of construction of such a system results from Regulation (EC) No 883/2004 of the European Parliament and of the Council of 29 April 2004 on the coordination of social security systems. *EESSI* helps institutions across Europe to exchange information needed for the social security coordination more rapidly and securely. The exchanged information covers all branches of EU rules on social security coordination, such as sickness benefits, accidents at work and occupational disease benefits, family benefits, old-age pensions, pre-retirement, invalidity benefits, unemployment benefits, benefits of employees who exercised their right of migration and worked or still work abroad. *EESSI* circulates data and documents necessary to deal with matters of the insured e.g., to determine entitlement to a benefit, pension, annuity of persons who had a period of working abroad in the EU or EFTA. Electronic communication between EU/EFTA institutions also pertains to confirming the governance of Polish legislation i.e. issuance of certificates that confirm the social insurance contributions of an employee working outside Poland must be paid into Polish Social Insurance Fund. The employee receives A1 document, and the institution of the country which needs the confirmation receives a relevant electronic document via *EESSI*. The utilisation rate of *EESSI* is impressive, between 2019 and the end of 2020 European Union countries exchanged 4,2 m documents. Poland is currently in the top three countries (along Germany and Austria) which quarterly exchange the highest number of electronic documents in EU/EFTA zone. Poland, Germany and Austria are responsible for more than 50% of communication within *EESSI* system. (ZUS, <https://www.zus.pl/-/zaklad-ubezpieczen-spolecznych-jako-jedna-z-pierwszych-instytucji-w-europie-wdrozyl-europejski-system-elektronicznej-wymiany-danych-eesi> 2021).

Covid19 pandemics triggered a dramatic increase in the demand for electronic communication channels. It was then when e-appointments i.e. video calls with ZUS experts were introduced. E-appointments made it possible to deal with many official ZUS matters without the need to leave home. E-appointment can take place on any electronic device with access to the Internet and equipped with camera and microphone (PC, laptop, tablet or a smartphone). It is also possible to make an e-appointment in the Polish Silent Language, or make a special appointment for visually impaired or blind persons. The e-

appointment service is constantly improved and is gaining popularity among customers. As shown in Table 6, the number of persons who used the service went up from 16 578 appointments in 2020 to 114 690 in 2021.

Thanks to the ability of fast adaptation and the ability to

capitalize on advanced information technologies, the Social Insurance Institution could execute a number of tasks which do not directly result from the statute of the organisation itself but which are vital from the perspective of the whole state. Table 8 presents the list and characteristics of recent social benefits:

TABLE 11. BENEFITS FOR FAMILIES OPERATED BY THE SOCIAL INSURANCE INSTITUTION.

Type of benefit	Characteristics	Numbers
Polish Tourist Voucher	A single use tourist voucher worth PLN 500 per each child as well as additional PLN 500 for each child with disability - assistance for families with children as well as for the tourist industry – can be used as payment for tourist services in the territory of Poland	About 6,5 m of entitled children
'Family 500+' Child Benefit Programme	The 'Family 500+' Programme is a systemic support for Polish families. Parents and guardians of children up to the age of 18 can receive benefit for bringing up a child support benefit 500 + regardless of income. The entitlement to the benefit is determined for each consecutive year as of 1 June to 31 May of the following year.	About 6,1 m of filed applications
Good Start	The 'Good Start' Programme provides for an annual support of PLN 300 for children starting their school year until they reach the age 20 or 24 in the case of a disabled child. The allowance is granted once a year regardless of the family's income to help cover the back-to-school costs.	About 4,4 m of entitled students
Family Care Capital (RKO)	Family Care Capital is a new benefit for parents of children aged from 12 months to the last day of the month in which the child turns 35 months of age. It is 12,000 PLN in total for the second and each next child. It is also for persons who adopted a child into custody and applied to the guardianship court for initiating the adoption procedure.	About 615,000 of entitled people
Co-financing for the stay of a child in a nursery or children's club	The co-financing will amount up to PLN 400 per month for a child in a nursery, children's club or daily care provider (not more than the fee paid by the parents). There is no income criterion here either.	About 65,000 of entitled people

Source: (MRIPS 2022), (MRiPS 2022), (MIR 2021).

TABLE 9. SELECTED SCHEMES RELATED TO TRANSFORMATION OF POLISH SOCIAL SECURITY AND ZUS:

Programme	Aims	Benefits
Automation of settlements with contribution payers.	<ul style="list-style-type: none"> <li>ZUS will assume the tasks previously conducted by contribution payers with respect to determination of the basis for the social insurance contribution;</li> <li>Facilitation of conducting business activity and taking the burden off contribution payers who previously had to calculate the contributions themselves and determine the sums to pay;</li> <li>Reduction of reporting and red tape in business;</li> <li>Improvement of the quality of data gathered into contribution payers' accounts and the accounts of the insured, and as a consequence, speeding up the process of granting benefits;</li> <li>Construction of data exchange interface between ZUS IT systems and systems of contribution payers.</li> </ul>	<ul style="list-style-type: none"> <li>ZUS will make application and billing documents and will determine the volume of contributions to be paid by contribution payers in an electronic way;</li> <li>Contribution payers will be assured of the stability of settlements of their contributions– ZUS will assume the obligation and responsibility for assessing the amount of the contribution;</li> <li>Reduction of investigation procedures with contribution payers– high quality of data gathered in ZUS systems;</li> <li>Reduction of unnecessary reporting and red tape in business.</li> </ul>
Consolidation and automation in payments of benefits	<ul style="list-style-type: none"> <li>Simplification of rules for granting and calculating benefits;</li> <li>ZUS will assume the obligation to pay benefits previously resting on contribution payers;</li> <li>Reduction in the number of extortions of sickness benefits, rationalisation of expenditures from the sickness fund;</li> <li>Automation of processes of granting and paying benefits form the Social Insurance Fund (FUS), centralization of tasks and optimum solutions for the benefits area.</li> </ul>	<ul style="list-style-type: none"> <li>ZUS will pay all social insurance benefits due to the insured instead of entrepreneurs;</li> <li>Simplification of regulations of granting benefits;</li> <li>Reduction in the number of document necessary for the payment of benefits;</li> <li>Automation of the payment process;</li> <li>Simplification of communication with ZUS through its digitization;</li> <li>Increased FUS capacity will allow to reduce the subsidy from the state budget.</li> </ul>
Automation of pension benefits	<ul style="list-style-type: none"> <li>Automation of processes related to granting pension benefits (domestic and international);</li> <li>Reduction of errors in official decisions for beneficiaries;</li> <li>Raising the efficiency of the process of checking benefit entitlement in case of death of a beneficiary, avoiding overpayments in the form of undue benefits paid after the death of a beneficiary.</li> </ul>	<ul style="list-style-type: none"> <li>Efficient system of payments without the risk of overpayments from FUS;</li> <li>Beneficiaries get decisions of benefits and payments faster.</li> <li>Reduction of errors in officials decisions due to limited participation of ZUS employees in the process (repetitive tasks will be automated);</li> </ul>

Programme	Aims	Benefits
		<ul style="list-style-type: none"> <li>• ZUS will lower the costs of customer service as the process of awarding pensions will be fully automated, discontinuation of payments of benefits after the death of beneficiaries, exchange of information with other countries and with beneficiaries in order to verify future entitlement to a benefit;</li> <li>• Thanks to elimination of paper applications, electronic communication will be more frequent and more extensive.</li> </ul>
State of the art electronic portal	<ul style="list-style-type: none"> <li>• Modernisation of the portal thanks to intuitive navigation layout, innovative interface and functionalities dedicated to particular groups of customers, the latest functions (form creators, self- service, easy to use electronic signature), fulfilled standards of digital availability for persons with disabilities, higher efficiency and fast customer service;</li> <li>• Development of mobile applications for contribution payers and doctors;</li> <li>• Launch of electronic payments in the new portal and mobile application for payers;</li> <li>• Lowering of customer service costs through increased usage of the electronic portal in the ZUS customers communication channel</li> <li>• Transition from face-to-face contact and paper correspondence to on line communication.</li> </ul>	<ul style="list-style-type: none"> <li>• New tech electronic portal and all ZUS products and services available on line</li> <li>• Streamlined communication between ZUS and customers.</li> <li>• Wider scope of administrative matters that can be settled online without the need to pay a visit to the customer service hall or to make a phone call;</li> <li>• Mobile application for contribution payers and doctors;</li> <li>• Launch of e-payment scheme for settlements between payers and ZUS;</li> <li>• Increased cost efficiency through digitisation of applications and forms, reduction of costs of archiving paper files, reduction of time spent on dealing with documents and applications and lowering the number of customer visits.</li> </ul>
Central Register of ZUS Customers	<ul style="list-style-type: none"> <li>• Development of the Central Register of Customers in order to better manage customer relations (roles, relations, contact with ZUS);</li> <li>• Access to all information about a case in one place – full evidence of the proceedings from the moment an application is filed to ZUS till the completion of the case, tracking of each phase of the case realization thanks to two-sided integration of the application and exchange of information, access to the information for ZUS employees and the customer;</li> <li>• Access to all information about clients for the purposes of the customer and stakeholders in and out of ZUS (other institutions);</li> <li>• Automation of exchange of information about customers and their cases between ZUS domain systems (without participation of ZUS employees).</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Complex knowledge about the customer and their case;</li> <li>• Easy and fast access to the status of the case form any place and around the clock through PUE ZUS, without the need to visit the customer service hall in person;</li> <li>• No need to provide the same set of data because they will be gathered in the Central Register and registers of other institutions;</li> <li>• Reduction of irregularities and extortions in the social insurance system through provision of detailed knowledge about customers (Customer 360°) and conducting ongoing supervision and reporting on the status of customer cases;</li> <li>• Improvement in cost efficiency through automation of processes in customer service due to integration of domain applications and the Electronic Platform of Data Exchange.</li> </ul>
Digitisation of data and documents – de-paperisation of contacts with customers and de-paperisation of internal circulation of documents.	<ul style="list-style-type: none"> <li>• De-paperisation in contacts with customers and in internal circulation;</li> <li>• Electronic exchange of data about customers between public institutions and gaining access to databases and registers of other institutions;</li> <li>• Shortening the time of dealing with cases through facilitated contact with ZUS and electronic communication channels;</li> <li>• Easy contact between ZUS and customers, relieving customers from the necessity to obtain data from other institutions or administration organs;</li> <li>• Considerable savings related to transition to electronic correspondence – implementation of mass dispatch of electronic correspondence, ultimately obligatory PUE ZUS profile for all ZUS customers.</li> </ul>	<ul style="list-style-type: none"> <li>• Change of the mode of communication with customers from paper to virtual.</li> <li>• Simplification of procedures, automation and de-bureaucratisation through lifting the obligation of providing documents, certificates from other institutions for the purposes of granting a ZUS benefit.</li> <li>• Streamlining through digitisation of the mode of communication with external entities including doctors with respect to gathering medical documentation needed for issuing of medical certificates.</li> <li>• Digitisation of internal circulation and elimination of paper correspondence to the minimum, digitisation of customer documentation;</li> <li>• The citizen will contact ZUS electronically in a wider scope than now. It will be possible to settle any matter from any place at any time from any electronic device i.e. smartphone, tablet, laptop or computer.</li> <li>• Digitization will improve cost effectiveness– electronic applications from customers and external, automatic exchange of data and with external entities, reduction of dispatch costs of paper correspondence as well as transport and archiving costs.</li> </ul>
Platform integrating and unifying the ZUS domain specific systems	<ul style="list-style-type: none"> <li>• Integration of main IT systems for a better data management;</li> <li>• Construction of data exchange bus with selected state</li> </ul>	<ul style="list-style-type: none"> <li>• Integration of data between main IT systems which at the moment are in logical and physical separation;</li> <li>• ZUS IT infrastructure will undergo technological</li> </ul>

Programme	Aims	Benefits
	institutions; <ul style="list-style-type: none"> <li>Business, technological and security analyses with respect to construction of a private cloud, usage of government cloud or commercial cloud processing data in the territory of Poland.</li> </ul>	unification; <ul style="list-style-type: none"> <li>ZUS will enable access to data together with selected state institutions in order to increase efficiency of implementation of public tasks and customer service;</li> <li>The scope of informative duties from customers towards ZUS will be reduced;</li> <li>Selected state institutions will gain access to ZUS database for the purposes of building a joint analytical platform of the state (big data) without compromising cybersecurity of data;</li> <li>efficiency of public administration operations will be enhanced</li> </ul>

Source: (ZUS, Strategia Zakładu Ubezpieczeń Społecznych na lata 2021-2025 2020).

#### IV. FUTURE DEVELOPMENTS OF SERVICES RENDERED BY THE SOCIAL INSURANCE INSTITUTION

The Social Insurance Institution is the biggest institution of social security in Poland. For many years it has been implementing schemes related to the development of e-services, contributing to the government policy of E-State. In the near future daily operations of ZUS will be subject to drastic transformation as the result of the implementation of the 2021-2025 ZUS Strategy. There are four fundamental pillars of development:

- Modern e-office;
- Automation and perfection of processes and state of the art IT architecture;
- Digitisation of processes, communication and documentation;
- Exchange and integration of data within e-administration.

#### V. CONCLUSION

Implementation of electronic services in public administration is essential for each developed and developing country. According to E-Government Digital Index, Poland currently occupies 13th place in the European Union when it comes to development of e-administration which is a considerable improvement (by 13 positions) since 2010. The Social Insurance Institution (ZUS) since the year 2000 has been on the leading edge offering a wide range of electronic services to the general public. Nowadays, according to the modernisation strategy adopted by ZUS, most processes related to execution of administrative tasks is automated what guarantees fast and timely realisation of matters such as for example payments of social benefits. Transformation of the Polish Social Insurance Institution, which caters for about 26 million citizens, is vital in the climate of social and economic changes occurring throughout the world.

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