
New technologies in the Social Insurance Institution

The Polish Social Insurance Institution (Zakład Ubezpieczeń Społecznych, ZUS) is one of the largest public institutions in Poland. For nearly nine decades it has been carrying out tasks in the area of social insurance, taking care both of the social security of citizens and the part of public finances it manages. ZUS has solutions which use modern techniques and technologies (so-called e-projects), which are the basic tools for achieving the organisation's objectives. The text outlines the objectives for ZUS development and related IT instruments in the area of IT over the last five years. Special attention has been paid to the solutions employed by ZUS during the COVID-19 pandemic (from spring 2020), which positively verified their legitimacy and application. The main e-projects have been described. Their role has been indicated and their efficiency assessed.

Key words: customer service, e-government, e-services, Electronic Services Platform ZUS (PUE ZUS), new technologies, Social Insurance Institution (ZUS)

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Introduction

The Social Insurance Institution (Zakład Ubezpieczeń Społecznych, ZUS), whose legal status and tasks are laid down by the Act on the Social Insurance System,¹ has been operating in the area of social insurance for nearly nine decades, taking care both of public social security policy implementation and the management of the relevant public finances. ZUS is one of the largest public institutions in Poland. It serves 26 million customers and cooperates with several hundred institutions in Poland and abroad.

ZUS's tasks, objectives and organisational structure define the needs and possibilities of changes in the institution's activity and determine the solutions – including new technologies – to be implemented. The following reflect the orientation and scope of implemented projects:

- quality of customer service,
- efficient task performance and realisation,
- results monitoring and appraisal,
- data security.

The Social Insurance Institution currently implements solutions that use modern techniques and technologies (e-projects), as the fundamental instruments for achieving the above objectives. A distinct evolution of these tools has been visible since 2016, but – paradoxically – it was the appearance of the pandemic and the associated restrictions on social and economic life that have caused a dynamic development in the use of new technologies at ZUS.

The article indicates the objectives of ZUS development and related IT instruments over the last five years. Special attention has been paid to the solutions used by ZUS during the COVID-19 pandemic (from spring 2020), which positively verified their legitimacy and usefulness. The main e-projects have been described – with an indication of their role and an assessment of their effectiveness. The potential has also been highlighted, this being the result of a forward looking assessment of changes in the socio-economic environment, strategic planning and efficient management of the institution in conditions of crisis.

ZUS – the first Polish e-office

The implementation of new technologies instruments to perform the statutory tasks of the Social Insurance Institution took place in the early 2000s, immediately after the announcement of the government's project to construct a system of e-government.² ZUS was one of the first public administration institutions to make information and downloadable forms available to customers on its websites and to enable online customer

¹ Journal of Laws 2021, item 423, as amended, ch. 7.

² D. Grodzka, *E-administracja w Polsce*, Infos – Biuro Analiz Sejmowych, No. 17, 2017.

consultations with ZUS staff using a chatbot. These were pioneering and experimental solutions in the public sector, but they were also implemented in such a way to allow for improvements according to the changing socio-environmental needs.

In subsequent years, new technology solutions introduced in ZUS reflected the implementation of ZUS's strategic development plans, among which the priority given to digitalisation and robotisation.³ A vital solution for development in this direction was the launch in 2012 of the ZUS Electronic Services Platform (Platforma Usług Elektronicznych, PUE ZUS): the first electronic instrument for providing e-services in the public sector, one highly valued for its compliance with society's needs.⁴ Thanks to PUE, ZUS has become a leader in e-government in Poland and the first Polish e-office.

Subsequently (mainly after 2016), ZUS has successively expanded functionality within the IT area. It has also developed and improved the Electronic Services Platform, recognised by Internet users as the most popular e-government website in Poland.⁵

Other e-projects implemented by ZUS, most important for the functioning of the institution, for the quality of its services and efficiency in managing public finances, include: e-Contribution (Polish "e-Składka"), e-ZLA (electronic medical certificates of incapacity for work), e-files (Polish "e-akta"), e-visits (Polish "e-wizyty") and Electronic Exchange of Social Security Information (EESSI).

ZUS's development as an e-office has been prioritised in the institution's subsequent long-term strategic plans, oriented at the implementation of e-services tailored to the needs of all groups of customers. Such an evolution and consistent strategy implementation have proved successful both in ZUS's everyday operations as well as in crisis conditions.

The article characterises in general terms ZUS's main projects utilising modern technologies, shows their potential – ones positively verified in the conditions of restrictions caused by the pandemic, and presents the institution's strategic objectives relating to the use of the latest technologies, and resulting from ZUS's current development plans.

ZUS key e-projects

The use of modern techniques and technologies as well as IT tools in ZUS activities is a priority for the development of this institution. The implemented e-solutions – in particular through the use of the possibilities offered by the Electronic Services

³ See ZUS strategies for the subsequent years, including the current one for 2021–2025: Zakład Ubezpieczeń Społecznych, *Strategia ZUS na lata 2021–2025* [ZUS Strategy for 2021–2025], https://bip.zus.pl/documents/493361/494179/Strategia_ZUS_2021–2025.pdf/50488985-cld1–4cab-317b-420e460a075c?version=1.1 (online access: 11.6.2021).

⁴ This was confirmed by the results of an opinion poll titled "E-government in the eyes of Internet users" conducted for the Ministry of Digitisation by the PBS research company, <https://www.zus.pl/documents/10182/24154/raport+PUE/73b5bce2-db20–445d-b80a-edf58cee2f18> (online access: 12.6.2021). For the implementation of PUE, ZUS was awarded the title of "IT Leader", which is granted by experts in the IT industry. When justifying this award, they emphasised that it was a distinction granted not only for the use of modern technologies, but also for a new way of thinking about management.

⁵ See Social Insurance Institution, *op. cit.*

Platform – are being prepared as prospective constructions, open to modification and change. The three largest of these projects are described in general terms below: PUE ZUS, e-Contribution and e-ZLA.

ZUS Electronic Services Platform – streamlining customer contact

ZUS Electronic Services Platform is a tool facilitating access to services provided by the institution, which currently allows ZUS customers to handle most matters online. To do so, the customer must set up an individual account and confirm his/her identity. PUE ZUS enables account holders to browse data collected at ZUS, submit insurance documents, file applications, ask questions and receive answers, as well as make appointments at ZUS branches. Insured persons may check the data saved on their profile and the status of their insurance account on PUE. They also have access to information about their medical certificates of incapacity for work. Contribution payers may use PUE to register an employee for insurance and to fill in and submit to ZUS settlement documents using data from ZUS database. They may also file specified applications and receive them on PUE, as well as collect the medical certificates of employees' incapacity for work.

Thanks to PUE, ZUS beneficiaries have access to, *inter alia*, benefit-related information necessary for tax settlements. The platform also allows one to make an appointment at a ZUS branch and to request a change in one's data. It also makes available the so-called professional profiles for doctors and bailiffs, providing such professionals with access to data necessary to perform their vocational duties. Sending letters and documents *via* PUE ZUS requires the user to have a trusted Electronic Platform of Public Administration Services (Elektroniczna Platforma Usług Administracji Publicznej, ePUAP) profile or an electronic signature confirmed with a qualified certificate.

ZUS's operational potential as a result of PUE has proven crucial for institution's capacity to act in crisis management conditions during the pandemic.

E-Contribution

Following the implementation of PUE, the Social Insurance Institution continued to introduce modern e-service solutions, using both the capabilities of the Platform and other modern technology-based solutions.

E-Contribution is particularly important among such projects. It was launched in 2018, laying the foundations for a completely new, modern and comprehensive mechanism for insurance contributions collection and settlement. This tool introduced a single individual bank account for the payment of contributions for all types of social insurance. This allowed one to organise the number and balance of insurance accounts. Having accurate and up-to-date records of accounts has made it possible, *inter alia*, to take action to eliminate the debts of contribution payers and to make – using the technological

possibilities of e-Contribution – a reliable balance of the Social Insurance Fund's (Fundusz Ubezpieczeń Społecznych) revenue and expenditure.

The possibility to keep up to date the number of contribution payers' accounts and the number of insured persons has proved to be very useful also outside the area of insurance. This is because it allows, *inter alia*, for a better identification of transformation processes within the economy, including labour market changes, making it possible to identify these changes *e.g.* in the number and dynamics of economic operators (companies) and in the number of employees.

Electronic medical certificates of incapacity for work

Electronic medical certificates of temporary incapacity for work (e-ZLA) are another key solution using IT mechanisms. The project has been piloted, on a voluntary basis, and subsequently reviewed since 2016. It has been in operation on a mandatory basis since 1 December 2018. This solution has allowed for the elimination of paper versions of certificates of temporary incapacity for work issued by doctors and their electronic transmission to employers and ZUS. This has contributed to a significant improvement and acceleration in the transfer of data on sickness absenteeism. Electronic resources of information in this area, at the disposal of ZUS, allow, for example, to monitor the dynamics of changes in this regard, taking into account many variables (including causes of incapacity for work and of morbidity in specific professional or socio-economic groups). The implementation of e-ZLA was the first element of the e-patient project, introduced in conjunction with the Ministry of Health, under which e-prescriptions and an online patient account were subsequently launched, among other innovations.

The above-mentioned three major e-projects at ZUS, based on new technologies, are not the only modern solutions using IT. However, these projects have proved particularly useful in the conditions of the crisis caused by COVID-19, allowing the Social Insurance Institution not only to operate in a stable manner and fulfil its tasks despite the pandemic, but also to support other, including non-insurance, areas of public administration in the implementation of anti-crisis programmes.

Electronic Exchange of Social Security Information

As a European Union (EU) member state, Poland is subject to provisions on the coordination of social security systems. Due to the free movement of persons within the EU, the implementation of these provisions requires the exchange of numerous documents between the social security institutions of the Member States. In order to streamline and accelerate the flow of data in this area, the European Commission has imposed on all Member States of EU and of the European Free Trade Association (EFTA) an obligation to implement an electronic exchange of information in social security, carried out in the application of European Union law in the area covered by the coordination of social

security systems. Thanks to this system, EU social security institutions will be able to exchange standard electronic documents on the basis of jointly agreed procedures.

The Polish Social Insurance Institution was the first among all obligated institutions in the European Union to implement the EESSI system, and is actively using it, both by sharing information with, and obtaining it from, other countries and institutions. The electronic exchange of data covers information, documents and declarations (scans) needed to determine eligibility under EU Regulation 883/2004 on the coordination of social security systems. This concerns matters relating to the applicable legislation, the award and payment of benefits (including pensions, sickness and maternity allowances, accident benefits and death grants), as well as the cross-border recovery of unpaid contributions and overpaid benefits.

Since the implementation of EESSI in the area of pensions in June 2020, ZUS has participated in more than 90 thousand electronic international proceedings, carried out electronically through the EESSI system.

On an EU scale, the rate of EESSI use is very high in Poland. Only Germany (220 thousand proceedings) and Austria (over 95 thousand proceedings) carry out more international proceedings in the area of granting benefits. On the other hand, in the area of applicable legislation, Poland participated in more than 270 thousand electronic international proceedings, conducted on electronic forms.

With the implementation of EESSI in other EU/EFTA Member States, the use of this system in the Social Insurance Institution is naturally increasing. For comparison: in the area of applicable legislation, 17 thousand electronic proceedings were initiated in July 2020; currently (*i.e.* 2021), this being already now 25 thousand new proceedings monthly.

New technologies in ZUS under pandemic conditions

The year 2020 and the COVID-19 pandemic put all sectors of the economy to a difficult test. This was also experienced by the public sector, including ZUS. Under the conditions of lockdown, projects earlier implemented proved extremely useful, and in some areas even necessary for task performance. ZUS had at its disposal modern technological solutions which provided opportunities to operate under the constraints caused by the pandemic. Their flexible design, with a high potential for development and adaptation to socio-environmental infrastructure, the availability of extensive databases and human resources allowed the Social Insurance Institution to become one of the three main public entities implementing government aid programmes, without jeopardising the fulfilment of its own statutory obligations.

As a result of the coronavirus pandemic, ZUS undertook tasks beyond the scope of its statutory obligations. Pursuant to the amended Act on special solutions related to preventing, counteracting and combating COVID-19, other infectious diseases and

crisis situations caused by them,⁶ ZUS has additionally started handling applications for government aid filed by economic operators affected by the pandemic and aid for the population as a whole.

In order to perform these tasks, ZUS has adapted its ICT (information and communications technology) systems to provide maximum support to customers in their efforts to obtain the support to which they are entitled. Thanks to PUE, all applications for aid granted under government aid programmes (the so-called Anti-Crisis Shields, pol. Tarcze Antykryzysowe) may be submitted to ZUS in an electronic form, without the need to visit ZUS. PUE, adapted for the occasion, supports applicants by verifying the data entered online. If the required information is available in ZUS databases, the electronic system automatically fills in the form. The rules for the verification of completed applications eliminate errors, thus allowing for a more efficient handling of applications at later stages.

Since the regulations of the Anti-Crisis Shield have come into force, the Social Insurance Institution has accepted nearly 4.5 million applications *via* PUE. Automation in this respect reduces the time of their handling to the necessary minimum, and allows for feedback to be provided to the customer within a few days (often up to 48 hours). This mechanism is an important step in the process of the digitalisation of public administration services. Thanks to PUE, practically all applications for support from the programmes of subsequent Anti-Crisis Shields are handled electronically. At the same time, people who do not use computers, may submit selected applications in paper form, as previously.

Statistics from application processing during the pandemic show that the number of errors on paper applications is 2–3 times higher than on electronic applications. Therefore, submission of documents *via* PUE ZUS is the preferred solution. Through the Platform, employers and employees can also obtain information on referral to quarantine or home isolation. This new functionality is particularly important from the perspective of employers, who can obtain data on all employees in quarantine or home isolation from one source, without having to collect information from the persons concerned. The implementation of this functionality required integration with the IT systems of the Ministry of Health, and is another step towards an increased interoperability between state IT systems.

Under the constraints caused by the COVID-19 pandemic, information from the e-Contribution project has also proved extremely useful, as it allows one to determine the current number of contribution payers (companies, sole traders) and the number of employees, as well as changes in this regard. Among other things, these data were of paramount importance in estimating the scale of aid for entrepreneurs and its effects and the placement of government support.

In the period of the pandemic, the possibility for an electronic flow of information relating to medical certificates of temporary incapacity for work also cannot be overestimated. Data from the database of these certificates proved helpful, *inter alia*,

⁶ The Act of 31 March 2020 amending the Act on special solutions related to prevention, counteraction and combating COVID-19, other infectious diseases and crisis situations caused by them and some other acts, Journal of Laws No. 568, as amended.

in diagnosing the number of cases of coronavirus and identifying their outbreaks. The constantly growing role of the electronic channel of communication with ZUS customers forced changes aimed at minimising the risk of the unavailability of services for accepting electronic medical certificates of an incapacity for work. A redundant, additional channel, the so-called PUE-HA, was created in parallel to PUE. This system minimised periods of service interruption for accepting e-ZLAs from doctors. From the beginning of PUE-HA operation until 30 June 2021, more than 57 thousand e-ZLAs were received.⁷ This is the first stage of revitalising the main e-services provided by ZUS.

E-services in ZUS

The year 2020 and the pandemic alert, with all its restrictions, brought – paradoxically – developments in the use of new technologies. ZUS implemented further e-services (*e.g.* e-visits, e-appointments) and developed the potential of already functioning solutions. They allowed ZUS to operate despite sanitary restrictions and to perform tasks imposed on this institution in relation to the mitigating the effects of COVID-19 (adjustment of PUE, *inter alia*, to pay additional care benefits, exchange information on quarantine with the country's sanitary services, handle the solidarity allowance and the Polish Tourist Voucher [Polski Bon Turystyczny]), and with remote cooperation with other public institutions (labour exchanges, tax offices, sanitary inspection, *etc.*).

The number of PUE users also increased significantly during the pandemic: the number of new profiles on PUE in 2020 increased by *ca.* 2.6 million, and in the first quarter of 2021 by another 700 thousand. Currently, there are 8.5 million profiles on PUE.

The period of the COVID-19 pandemic is subject to many analyses. On the basis of their results, various solutions used at that time are evaluated and with action plans for the future being developed. Referring to the pandemic impact assessment as regards the use of new technologies, ZUS has identified three main lines of action:

- 1) implementations to improve contact with customers,
- 2) providing ZUS with the ability to perform its tasks in the new, post-COVID reality,
- 3) introduction of further changes to ZUS IT systems to make the solutions used within the institution more flexible.

Implementations to improve contact with customers

The use of new technologies in ZUS in order to improve customer service, raise its standards, promote modern service instruments and build a system of compatible solutions in this area mainly concerns:

- 1) development and dissemination of PUE ZUS,

⁷ Data from ZUS Customers Service Department.

- 2) implementation of e-visits, e-appointments,
- 3) introduction of a mechanism of servicing the Polish Tourist Voucher (a non-insurance solution commissioned to ZUS), and
- 4) development of information protection services.

Development of PUE ZUS and its use in pandemic conditions

In order to meet the challenges posed by the pandemic and the tasks commissioned to ZUS, the institution has adapted its ICT systems to provide maximum support to customers in handling applications for aid from government programmes (their acceptance, verification, processing, decision taking and the disbursement of funds) and at the same time to totally fulfil all of its earlier tasks. Applications for support from nine consecutive Anti-Crisis Shields can be submitted electronically *via* the Internet, without the need to visit ZUS.

As has already been mentioned, practically all applications relating to the implementation of tasks under the so-called Anti-Crisis Shields are handled in an electronic form, although for digitally excluded persons the possibility to submit applications in a paper form has been retained for certain applications.

E-visits

In order to meet customers' requirements and constantly develop electronic channels of communication with them, last year the Social Insurance Institution introduced a new functionality: e-visits.

An e-visit is a video interview with a ZUS expert; providing an opportunity to settle one's matter at ZUS without the need to leave home. This solution has proved extremely useful, *inter alia*, in conditions of limited interpersonal contacts. All one needs is a computer, laptop, tablet or phone with a camera and microphone and an Internet connection. During the e-visit, experts answer questions on pensions, allowances, insurance and contributions. In cases relating to allowances and pensions, customers may also make an appointment for a consultation in Polish Sign Language (Polski Język Migowy, PJM). A video interview with a ZUS employee is also available for blind and visually impaired persons. Such an approach minimises the problem of the digital exclusion of citizens and allows as many customers as possible to settle their matters at ZUS on their own.

During a video interview, one can, *inter alia*: obtain general information on the applicable legislation, receive information on the principles of filling in, completing and submitting applications/documents, use the services of a retirement counsellor who can calculate the expected amount of any future old-age pension using a special pension calculator, use the services of a relief and remission counsellor, submit certain applications for certificates and receive support in setting up a PUE profile.

An e-visit allows one to quickly and comfortably settle the matter at ZUS, saves time spent on travelling to a ZUS branch and waiting in a queue, and allows one to maintain

safety measures in pandemic conditions. In the first half of 2021, ZUS employees handled over 69 thousand e-visits. The most popular were e-visits in the area of pensions (almost 19 thousand) and incomes (for contribution payers and persons insured – over 17 thousand). These data confirm the high popularity of this instrument among customers and indicate the legitimacy of this project and its usefulness.

E-appointments

The e-appointments project enables ZUS customers to make a remote (*via* the Internet) booking of an appointment with a ZUS facility for a specific day and time and to select the specific subject matter that is to be dealt with. This solution is fully integrated with the ticketing system used in the institution. This means that upon arriving at the service room in a ZUS branch or inspectorate, the customer takes a number and is directed to the appropriate desk.

This improvement allows one to plan customer visits and increases security both for them and for the staff, by maintaining the sanitary regime in the wake of the pandemic. Making appointments for a specific day and time minimises the time needed to deal with a case and allows for the appropriate scheduling of the workload for employees at ZUS facilities. People who do not have a profile on PUE can also make an appointment for a visit.

Remote visit appointments are integrated with the domain systems of the Complex Information System (Kompleksowy System Informatyczny, KSI) and are in line with the global trend of service organisation.

During the first six months of 2021, more than 26 thousand appointments were made for all customers with profiles on PUE and more than one thousand appointments for customers with so-called untrusted profiles. These figures confirm the interest of customers in the new form of service organisation, although this is only the first period of operation of the e-appointments system with it not yet being widespread in use.

Polish Tourist Voucher

The handling of the Polish Tourist Voucher by ZUS is an example of the flexible adaptation of modern ZUS IT systems to new tasks commissioned to this institution, ones which go beyond its statutory duties. The Polish Tourist Voucher was introduced as a solution under the government's policy of supporting the tourism industry, which was significantly affected by the lockdown caused by the pandemic. In handling this solution, ZUS is cooperating with the Polish Tourism Organisation and the Ministry of Development, Labour and Technology.

The Polish Tourist Voucher is a form of payment for tourist services which is available as a one-off voucher to every child under 18. Almost 6.5 million children in Poland can use the voucher. Its surface value is PLN 500 for each child, and in the case of a disabled child, an additional benefit of PLN 500 is available (the total value being PLN 1000). To receive this additional benefit, it is necessary to provide data on the child's disability certificate.

The Voucher can be used from July 2020 until the end of September 2022. The registration of tourism operators and public benefit organisations wishing to accept voucher payments started on 25 July 2020. In implementing this project, ZUS used a new technology that provided 24/7 access to this service without maintenance shutdowns. Upon receiving the voucher a number is generated in the system, the beneficiary of the programme (a family with a child under 18) may use the voucher to make payments at previously registered tourist organisations. ZUS keeps two registers: of the programme beneficiaries (*i.e.* persons authorised to receive the voucher and their children) and of the tourism operators to whom payments can be made using this method.

The payment operation itself takes place by communicating the voucher number to the tourism operator in order to verify the balance. Two codes are used to confirm the purchase at the time of service payment. The voucher can be used repeatedly until the prior established fund limits are exhausted, but no later than 30 September 2022.

Payments with the voucher may be accepted by legally established tourism operators or public benefit organisations providing hotel services or organising tourist events within the territory of Poland. Currently, more than 27 thousand eligible entities have joined the programme.

To secure the necessary availability and efficiency of Polish Tourist Voucher services and payment security, new elements of the solution were developed in the microservices architecture (open source) and launched in the container environment of ZUS's private cloud, which ensured their dynamic scalability (the ability to operate with changing requirements for resources). Additionally, the existing elements of architecture (including PUE ZUS) were adjusted architecturally to the expected increase in the workload.

Development of information protection services

In view of the ever-growing importance of information processed, changing environments and, in particular, the constantly emerging new threats related to information security, the Social Insurance Institution continuously improves the protection measures used in this area. Last year, particular attention was paid to ensuring the security of the software used, because in connection with the coronavirus pandemic ZUS had to create many new means of functionality and collect new data. To ensure the adequate level of security for information sent and processed in this part of the system, and in particular to ensure the integrity and inviolability of transactions made, *inter alia*, through the Polish Tourist Voucher, rigorous safeguards were introduced for the acceptance of the developed software – security tests were conducted by two independent teams not related to the teams designing and developing the software. The software was released for production implementation only after the tests had been successfully completed by both teams.

In 2022, it is planned to define and describe the internal critical infrastructure which, due to the sensitivity of the information processed, will be covered by detailed and

relevant protection plans strengthening its security level. These actions will be preceded by an audit of the current state. On the basis of information collected during the audit, maps of the connections and correlations between individual resources, the criticality and sensitivity of information processed on individual resources – plans for the protection of critical infrastructure will be drawn up, to be implemented, maintained and improved at subsequent stages.

It should be noted that this process will not focus solely on the technological aspects. It is assumed that the protection plans will also cover the organisational and formal area, so that the required protection measures are channelled in a comprehensive manner.

Continuous improvement of the level of information security in ZUS is a customer guarantee that the data entrusted by them are properly protected; it also minimises the risk of sensitive data leakage.

Performance of statutory tasks in a new reality

Remote working

In order to ensure the highest possible sanitary standard in the conditions of the pandemic, ZUS had to apply to a certain extent a new work model, *i.e.* remote working. This was a new organisational solution for the institution. Remote working had to take place outside the ZUS facility (usually at the employee's home), in particular in the event of infections among facility employees and the resulting quarantine. To ensure the efficient functioning of such a method of work, ZUS had to provide employees with: remote access to domain IT systems, security and an appropriate level of efficiency in the performance of tasks by IT system users, access to source data by digitising documents and securing an appropriate level of services provided to customers (Service Level Agreement, SLA). The scale of this project depended on the number of ZUS employees (over 42 thousand people).

In addition, the number of tasks performed during the pandemic period increased dramatically. In addition to the significantly increased volume of standard cases handled, there were also new applications under the tasks commissioned on the basis of the pandemic legislation. Such tasks included the handling of the additional care allowance or the solidarity allowance.

In a short time (about 2–3 months), ZUS reorganised itself and was able to carry out all the attributed tasks. The implementation of tools for remote access to IT systems, equipping employees with mobile equipment, launching tools guaranteeing the security of communication, introducing remote meeting methods and launching the digitisation of resources had the expected effect, permanently changing the forms of work in ZUS.

The use of remote working allowed ZUS to increase the flexibility of its working methods and to provide services even when local ZUS facilities were closed. The introduced solutions also resulted in labour productivity growth.

Under the remote working conditions, ZUS accepted and processed about 10 million additional cases, of which more than 80 percent were handled automatically; with more than 90 percent of cases relating to tasks commissioned to ZUS under government aid programmes being handled within 24 hours of the receipt of the application.

In connection with the digitalisation and computerisation of the work process, over 300 thousand folders with customer documents were digitised.

Automation

The automation of business processes in ZUS started in the benefits area, covering pensions and the sub-areas of allowances. Automation of processes in the allowances area includes:

- establishment of allowance cases on the basis of applications submitted through the PUE channel *via* the EPWD system (electronic data exchange platform),
- processing cases in the BC application (application for handling short-term benefits) ultimately for all types of allowances.

The automation process includes handling allowance applications submitted through the PUE or EPWD channels from the moment of their registration to their transfer to the payment list. For applications which meet the criteria for automatic handling, the automation process is started. It includes: establishment of a case, full examination of entitlements, determination of the basis for benefit assessment, determination of data for payment, classification of the case in terms of automatic approval, as well as making a decision and sending it for approval.

If decisions are negative or the documentation incomplete which prevents automatic processing, the cases concerned are referred to employees for handling. Initially, cases were processed by an IT tool and left to employees for review and approval. However, from mid-June 2020, selected ZUS branches started to refer cases for automatic payment, and from July 2020 this was already being done by most branches.

In order to automate the allowances-granting process even more efficiently, it was decided to expand functionality in the application for supporting the handling of social insurance allowances and to develop new technologies. The acceleration of this process was due to a significant increase in the number of applications for allowances (in particular sickness and care allowances – by about 500 thousand cases per month), which resulted in a very high workload for employees from departments dealing with these cases.

At the end of February 2021, a double automation was implemented in the allowances area. It consisted in the optimisation of functions of interactive applications supporting employees in the execution of processes. This allowed for full uniform handling of allowance documents submitted *via* PUE.

As part of the pilot, a new case processing tool was also introduced in selected ZUS branches connected with the creation of a common inflow channel for documents from PUE and the downloading of basic data, as well as ensuring their security.

On 20 April 2021, the PUE inflow channel was also launched, which allowed for the automatic payment of allowances. This was an extremely important event, because

for the first time the entire process – from the application registration on PUE, through case establishment, processing and concluding with the allowance payment itself – was performed without human intervention. Additional improvements are also being introduced on an ongoing basis, which will allow ZUS to increase the volume of automatically processed cases in the allowances area and their security.

Currently, two types of allowances are processed automatically: sickness and care allowances.⁸ The implementation of the automatic establishment and processing of maternity and rehabilitation allowances is scheduled for the end of August 2021.

Automation of processes in the area of pensions was already used in 2016 in connection with changes in the retirement age, when a robot was used in a pilot project, which initially processed several hundred thousand cases. Currently, the scope of automation in this area is being gradually extended and concerns:

- processing of applications for benefits, consisting in the activation of an automatic system which took over operations that had been earlier performed by an employee (from the institution of the proceedings to the establishment of entitlements, calculation of benefit amount on the basis of data on contributions [after indexation] and initial capital from the insured person's account and calculation of the payment) – over 94 thousand proceedings;
- handling applications for establishing initial capital, consisting in an automatic system for a selected case or group of cases, which establishes or renews cases for establishing initial capital. After establishing the initial capital, the application continues the automatic process of handling benefit application – 44 thousand proceedings;
- handling the registration and settlement of pensions of deceased beneficiaries on the basis of the PESEL register (Universal Electronic System for Registration of the Population) consisting in the activation of an automatic system, which stops the active payment of benefits to deceased persons and handles the settlement of post-death entitlements (in some cases it is necessary for users to complete the proceedings) – over 112 thousand proceedings.

The functionality of automated processes is supported by the Process Console (a possibility to review the process status) and a list of user tasks (tasks related to the need to react in automated proceedings).

The automation of the pension and disability benefits area speeds up the stage of registering data and performing basic calculations, supports ZUS employees in determining the rights of the insured person and the balance of his/her account with regard to data necessary for calculating the benefit, speeds up the suspension of payment after the beneficiary's death (reduction in the number of overpayments and unduly paid benefits) and facilitates the performance of tasks related to the granting of benefits.

⁸ In the period from March to June 2021, there were 1.6 million allowance cases, including a total of 273 thousand cases of the sickness and care type, handled by the automation algorithm (17.3% for the first half of the year).

Implementation of business continuity plans

Ensuring ZUS's business continuity is one of the key statutory obligations of the institution. The main objective in building business continuity plans is to ensure that operations are maintained at an acceptable level during crisis situations and to take a proactive approach to reducing the negative impact on ZUS in such situations.

The crisis caused by the coronavirus pandemic has contributed to an increase in awareness of the importance of the institution's business continuity plans. It is planned to update these plans for critical ZUS business processes in the nearest future. As a first step, an audit of the current state of affairs will be carried out, while tasks related to conducting business impact assessments (BIA), building survival strategies and business continuity plans with disaster recovery plans are envisaged for subsequent ones.

Flexibility in operations and the implementation of new changes in ZUS IT systems – experience from the pandemic period

Faster implementation of business changes

In March 2020, when there was a freeze in the economy due to the pandemic alert, new obligations were imposed on ZUS related to the implementation of the Anti-Crisis Shields. Subsequent laws imposed further tasks on ZUS, almost overnight upon their enactment.⁹ Since it was not possible to assign additional employees to handle the new duties and it was difficult to estimate the volume and dynamics of applications inflow, there was a necessity to automate all the new processes as much as possible.

The extremely short deadlines for launching the successive phases did not allow the software to be prepared in the traditional way, *i.e.* in a one target increment. Instead, it was necessary to implement the requirements sequentially and launch the subsequent increments also sequentially. In the first instance, implemented and launched were processes relating to the receipt of applications. At the time when applications were already being received by ZUS and placed in case files for electronic handling, intensive work was carried out to design and implement the processes of applications processing. When these, in turn, had been launched, all collected applications were sent for processing.

Importantly, errors and omissions identified in the processed applications were analysed on an ongoing basis, so that the rules for verifying applications could be adjusted and the software for registering them improved. The system analysed the incoming data,

⁹ Out of the five laws introducing successive aid benefits, two had a one-day *vacatio legis*, and the remaining three were effective from the date of promulgation.

thanks to which subsequent contribution payers received information about irregularities already at the stage of filling in the application.

These specific conditions resulted in an above-average increase in the number of software releases and the possibility of a re-verification of already processed (and rejected) applications on the basis of updated rules, without the need to inform the contribution payers.

As a result of the adopted solutions, simpler applications were fully processed by the 20th day after the law had come into force, and more complex ones by the 31st day. The maximum automation of processing allowed one to perform the new tasks without having to increase recruitment. From March to mid-September 2020 alone, almost 3 million applications were accepted under the government aid programmes, 85 percent of which were processed fully automatically, without any human intervention whatsoever. From March to mid-September 2020, the processing of applications involved 334 software releases, an average of 2 releases per day.

Use of new technologies

The new obligations imposed on ZUS became one of the factors initiating the introduction of technologies to the institution, which allowed it to provide the innovative digital services to facilitate customer service, speed up the processes carried out by ZUS and reduce overall costs.

One of the important ZUS objectives is to eliminate paper documents. Switching from paper to digital solutions means not only a significant reduction in costs, but above all a reduction in errors, a speeding up of processes and the possibility to guide customers (*e.g. via* interactive forms) in such a way that they can settle their matters in a straightforward way. The use of electronic signatures allows ZUS to issue decisions also in an electronic way and to deliver them immediately to the addressee.

An important issue in the computerisation process of public institutions is the use of data already stored in electronic form, thanks to which the customer is not burdened with the need to provide the same information once again. Data integration allows one to streamline service processes, create new value in the form of products or services, and accelerate administrative decision-making processes.¹⁰

New technologies were used in a more complex way in the Polish Tourist Voucher project. A unique digital service was created – an equivalent of a payment card with an assigned due amount, thanks to which payments could be made for selected tourist services. Thanks to the use of a confirmation mechanism in the form of e-mails and text messages, despite the huge scale of the operation (over 1.1 million text messages were sent), the system is secure, but also convenient to use. This method of payment can be effectively used in further digital services for citizens. In addition, it enables

¹⁰ An example of such integration can be the servicing of the Polish Development Fund (Polski Fundusz Rozwoju, PFR) shield. Thanks to practically unattended exchange of data stored in various public institutions, the PFR made decisions on funding in time counted in individual days from the date of submitting the application by an economic operator.

ZUS to reduce the costs of current operations, accelerate the implementation of business processes and provide customers not only with new, but also modern digital services, previously unavailable.

Accelerating the decision-making process in the office

The difficult period of the pandemic required non-standard measures. The result is the streamlining of ZUS operations, whose effect is measured by the SLA level of services provided by the institution. It is now important to maintain this level and even increase it. ZUS swift actions have contributed to saving jobs and strengthening the sense of social security in society, so an intensive effort has been made to accelerate the decision-making process, despite the significant increase in the inflow of cases, and thus provide designated social groups with specified aid measures.

This has been served by the automation of ZUS business processes and data digitisation. Supervision over the work of system users has been increased. Priority was given to optimisation in the processes of creation and the implementation of new functionalities and the related increased flexibility in customer contacts. As a result, decisions in individual cases (80–90 percent of cases) were made within 24–48 hours. As in other areas, a great deal of this experience will also be utilised in current ZUS undertakings.

Performance of new tasks indicated by government administration

During the pandemic, ZUS was obliged to perform many activities beyond its strictly chartered role. One of these was the full handling of the solidarity allowance for people made redundant as a result of the lockdown. ZUS fully serviced this application in its IT systems – from the moment of its acceptance in PUE (this being the only application accepted purely in electronic form) through processing in domain systems to the moment of payment to beneficiaries' accounts. In the period of solidarity allowance legislation validity, applications were quickly considered and benefits were paid out to 235 thousand beneficiaries to the amount of over PLN 313 million.

The experience resulting from the implementation of these projects allowed ZUS to be entrusted with another large-scale project related to the handling of a non-insurance benefit: the 300+ benefit (the so-called “Good Start”, pol. “Dobry Start”) for children in education. The programme provides servicing for around 4 million beneficiaries. Its implementation being from 1 July to 30 November 2021. So far, this support has been provided by local governments. From 2021 onwards, applications for the benefit have been received (in electronic form) and processed by ZUS, with the funds granted on their basis transferred to beneficiaries' accounts. This organisational change has accelerated application processing, which translates into faster payment to beneficiaries and a minimisation of programme operation costs.

This is another project outside the social insurance area (beside the Polish Tourist Voucher and the solidarity allowance), which is serviced by ZUS IT systems and its team of experienced employees. These projects are implemented in a centralised,

fully electronic manner. In selecting ZUS as the project contractor, it was not without significance that ZUS – as an organisational unit – is responsible for handling many other benefits paid in Poland. Its experience and technological resources allow for better management of public money.

Further campaigns using the solution currently under construction will allow further synergy effects to be achieved and ultimately reduce the costs of tasks performance. For example, analyses carried out at ZUS (audit) show that the automatic handling of the solidarity allowance results in savings in employment (about 500 jobs).

Conclusion – plans for the future: ZUS as an e-office in the strategic documents of the Social Insurance Institution

ZUS Strategy for 2021–2025¹¹ sets out four main directions of activity, based on the use of new technologies:

- 1) development of e-office,
- 2) digitalisation and automation of processes in ZUS, which will minimise the tasks and responsibilities of the insured, beneficiaries and businesses by transferring many of these burdens to ZUS,
- 3) increasing the electronic circulation of documents in contacts with ZUS customers, administrative bodies and within ZUS,
- 4) development of data exchange and integration within e-government so that facilities and improvements for citizens and businesses could be implemented.

The main role in the implementation of this transformation plan will be played by 14 strategic programmes. The most important of which are the automation of settlements of contribution payers and the consolidation and automation of allowances payments.

ZUS is also preparing solutions to facilitate business activities, *i.e.* by taking over from contribution payers the responsibility for tasks related to calculating contributions and determining amounts to be paid, as well as tasks relating to the payment of sickness insurance allowances. ZUS will thus take over allowances payment, which will reduce the workload on the entrepreneurs, as well as simplify and shorten the time of receiving the allowance, without the need for any additional contact.

The programme of banking ZUS benefits is another important project. It will support the state's efforts to increase cashless transactions in the economy, will increase the security of benefits and reduce the costs of ZUS operations.

The IT area will play a major role in the implementation of the automation programmes. Therefore, the programmes include those related to the modernisation,

¹¹ See Zakład Ubezpieczeń Społecznych, *op. cit.*

unification and interoperability of IT systems and ZUS records. They are complemented by the Cyber Security Management Platform (Platforma Zarządzania Cyberbezpieczeństwem), thanks to which the security of ZUS customers' data will be further strengthened.

ZUS is also planning a major reconstruction of its Electronic Services Platform. This will provide all customers with access to ZUS advanced e-services. This programme will be supported by the digitisation of documentation, and here also in contacts with external entities.

The above plans are connected with the development of modern and open communication within the institution. ZUS will effectively disseminate information about its services and products as well as educational activities about the social security system, using, among others.

The new strategy will introduce many improvements for citizens and businesses and will allow for the further development of e-government. The transformation programmes set out therein will ensure the quality and timeliness of ZUS services, which will allow for a higher quality of customer service.

Professor Gertruda Uścińska, Ph.D.

Centre for Social Security Studies

Faculty of Political Sciences and International Studies

University of Warsaw

ORCID: 0000-0001-7379-5156

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Nowe technologie w Zakładzie Ubezpieczeń Społecznych

Zakład Ubezpieczeń Społecznych (ZUS) jest jedną z największych instytucji publicznych w Polsce. Od blisko dziewięciu dekad realizuje zadania z obszaru ubezpieczeń społecznych, dbając zarówno o bezpieczeństwo socjalne obywateli, jak i o część finansów publicznych, którymi zarządza. W ZUS funkcjonują rozwiązania wykorzystujące nowoczesne techniki i technologie (tzw. e-projekty), które stanowią podstawowe narzędzia realizacji celów organizacji. W tekście wskazano cele rozwoju ZUS i powiązane z nimi instrumenty z obszaru IT w ostatnim pięcioleciu. Zwrócono szczególną uwagę na rozwiązania wykorzystywane przez ZUS w okresie pandemii COVID-19 (od wiosny 2020 r.), który zweryfikował pozytywnie ich zasadność i użyteczność. Scharakteryzowano główne e-projekty. Wskazano ich rolę i oceniono efektywność.

Słowa kluczowe: obsługa klientów, e-administracja, e-usługi, Platforma Usług Elektronicznych ZUS (PUE ZUS), nowe technologie, Zakład Ubezpieczeń Społecznych (ZUS)