Oleksandr Mazur

Dnipropetrovsk Regional Institute of Public Administration of the National Academy of Public Administration under the President of Ukraine (Dnipro, Ukraine)

The Regulatory Authority Information System (RAIS) or the Advanced Regulatory Information System (ARIS): opportunities to provide public services

In accordance with the **aim of the research**, the author reviewed the «Regulatory Authority Information System» (RAIS) and «Advanced Regulatory Information System» (ARIS) information systems designed for radiation safety regulatory authorities to determine the possibilities of providing public services online. The **relevance** lies in the consideration of RAIS and ARIS information systems from the standpoint of the activities of state regulatory authorities in the field of radiation safety under the influence of the newest management concepts. The **research method** is a comparative analysis, which was conducted according to the following criteria: functions, structure (sections), settings (changing or adding fields to the database), access (download for installation), interface translation, use (number of countries). The **results** of the review of the above systems indicate that at this stage of software development attention is paid to the functions of accounting, reporting and document management. Therefore, the need for online public services to be provided by regulatory authorities is not a priority for developers of these systems. The author **concludes** that for regulatory authorities on radiation safety in different countries not a unified specialized software has been created to take full advantage of function the provision of public services online.

Keywords: Radiation Safety, State Regulation, Public Administration, Regulatory Authorities, Administrative Processes, Information System, Public Services

Олександр Мазур

Дніпропетровський регіональний інститут державного управління Національної академії державного управління при Президентові України (Дніпро, Україна)

Інформаційна система контролюючого органу (RAIS) або розширена регуляторна інформаційна система (ARIS): можливості надання публічних послуг

Автором здійснено відповідно до мети дослідження огляд інформаційних систем «Regulatory Authority Information System» (RAIS) та «Advanced Regulatory Information System» (ARIS), що створені для контролюючих органів з радіаційної безпеки, для визначення можливостей надання публічних послуг онлайн. Актуальність полягає в розгляді інформаційних систем RAIS та ARIS з позицій діяльності державних регулюючих органів у сфері радіаційної безпеки під впливом на них новітніх управлінських концепцій.

Методом дослідження є порівняльний аналіз, який проводився за критеріями: функції, структура (розділи), налаштування (зміна або додавання полів у базу даних), доступ (скачування для встановлення), переклад інтерфейсу, використання (кількість країн). Результати огляду вищезазначених систем вказують на те, що на даному етапі розробки програмних версій увагу приділено функціям обліку, звітності та управлінню документацією. Тому потреба в наданні онлайн публічних послуг регулюючими органами не є пріоритетним завданням для розробників цих систем. Автор приходить до висновку, що для регулюючих органів з радіаційної безпеки країн світу не створено єдиного уніфікованого спеціалізованого програмного забезпечення для використання повною мірою всіх потрібних функцій, у тому числі надання публічних послуг онлайн.

Ключові слова: радіаційна безпека, державне регулювання, публічне управління, контролюючі органи, адміністративні процеси, інформаційна система, публічні послуги

Topicality. Modern public administration is influenced by the requirements associated with the newest management concepts «New Public Management», «Good Governance», «FAST Government», «Open Government» (Mazur, & Sokolovska, 2020).

The activities of state regulatory authorities in the field of radiation safety are also influenced by the above-mentioned management concepts and compliance with the five principles of good regulation (independence, openness, efficiency, clarity, reliability).

Formulation of the problem. Today, under the influence of digital transformation of society, the activities of public administration are actively in a state of modernization of administrative processes. During this modernization, the greatest attention is paid to creating the technical possibilities to provide public services online. Not staying away, regulatory activities of radiation safety regulatory authorities also require technical possibilities for remote work with licensees.

Analysis of research and publications. In recent years, the special interest of Ukrainian scholars has focused on public services as one of the main products of public administration in accordance with the newest management concepts. In particular T. Serohina (2020) investigates the classification of public services and T. Mamatova, O. Chykarenko, I. Chykarenko (2020) consider their digitalization in the experience of Dnipropetrovsk region. In turn, S. Kvitka (Kvitka et al., 2020) consider perspective directions of digital transformation of public administration, among which the vectors of development of artificial intelligence in municipal management are investigated (Kvitka, Novichenko, & Bardakh, 2021). Among foreign scholars, we should highlight S. Lazzini, L. Anselmi, L. Lo Schiavo, A. Falanga (2014), who researched the role of information systems to support performance management in public administration on the example of the italian regulatory authority for the energy sector.

The aim of the research – review of RAIS and ARIS information systems designed for radiation safety regulatory authorities to determine the possibilities of providing public services online.

Presenting main material. The activities of the International Atomic Energy Agency (IAEA) are aimed at improving nuclear and radiation safety worldwide. The IAEA is interested in member states compliance with such security guarantees in accordance with national law and international commitments. Therefore, with the support of the IAEA, information systems have been developed to assist member states:
- Regulatory Authority Information System (RAIS);
- Advanced Reactors Information System (ARIS) – an online database of nuclear power plant designs and concepts with advanced reactors (Software, 2021).

In 2012, the United States Nuclear Regulatory Commission initiated an international program to assist other countries «Radiation Sources Regulatory Partnership». As part of this cooperation, the Armenian Nuclear Regulatory Authority has developed the «Advanced Regulatory Information System» (ARIS), which is designed as a modular software and has an abbreviated name similar to the previous information system (Regulatory Information Systems, 2021).

We have selected the following information systems for review «Regulatory Authority Information System» (RAIS) and «Advanced Regulatory Information System» (ARIS), because they are designed for regulatory control of radiation sources. The review was carried out according to the criteria: functions, structure (sections), settings (changing or adding fields to the database), access (download for installation), interface translation, use (number of countries).

The functions of RAIS are to maintain data registers, maintain documentation and manage information. RAIS has basic interface controls (menus, data filters, verification of data for consistency, data protection, etc.) (Software, 2021).

The RAIS information system contains sections: national legislation (normative legal acts); information on national regulatory infrastructure (objects, departments); radioactive sources and related equipment;

obtaining permits (licenses); inspections; ensuring implementation; staff; radiation accidents and maintenance. In RAIS it is possible to add fields and queries to the database (Software, 2021). This requires in-depth knowledge of Microsoft SQL from the RAIS user or administrator.

RAIS is installed only on Microsoft Windows software with certain versions of SQL Server. The first version of RAIS was implemented using MS Access database technology. The latest version of RAIS 3.4 Web is available for download on the IAEA website (Software, 2021).

With the stated number of translations of the interface into the languages of the IAEA member states, there is still a need for a complete translation of certain sections, for example into Ukrainian.

Currently, 80 countries use RAIS. At the same time, three quarters of them adapted RAIS to the needs of national legislation in the field of regulation and management of regulatory activities for radiation safety (Software, 2021). However, statistics on the use of RAIS (Countries Using, 2018) indicate that the implementation of this information system has slowed down. This may indicate that other IAEA member states use other information systems.

The functions of ARIS are accounting and supervision of radiation sources, maintaining databases on radiation safety objects, management of documentation on licensees and inspections performed, reporting on nuclear materials.

The ARIS information system consists of five modules, namely «Rasod» (register of sealed, unsealed sources, associated devices and X-ray equipment), «Authorization» (register for radioactive and nuclear materials facilities and X-ray installations), «Inspection» (register of documentation of inspections of the regulatory authority with report generating system), «Licensee» (register of licensees' contacts) and «Nucmat» (register of accounting and reporting on nuclear material) (Regulatory Information Systems, 2021).

ARIS modules allow you to generate reports with different number of parameters. It is also planned to develop the sixth module "Occudose" for dosimetry of staff (register of occupational exposure of workers in radiation objects) (Regulatory Information Systems, 2021). Also, has also been developed the «arisPT» software, which is a tool for migrating data to ARIS from other databases (Advanced Regulatory, 2021). In our opinion, the developers aimed to create the ability to migrate data from RAIS to ARIS.

The ARIS is developed on the software code Microsoft Visual Studio 2010 and Microsoft SQL Server Express (Regulatory Information Systems, 2021). It should be noted that on the sites https://rsrp-online.org and http://aris.am the files of the full version of the ARIS modules are not available for free download and installation. Also, there is no information on the possibility of changing or adding fields to the database of ARIS modules.

Currently, 32 countries use ARIS. The ARIS module interface needs to be translated for all countries participating in the «Radiation Sources Regulatory Partnership» (Regulatory Information Systems, 2021).

It should be noted that at the initiative of representatives of the program Radiation Sources Regulatory Partnership, meetings of developers (Regulatory Information Systems, 2021) of the above information systems are held in order to better adapt ARIS to RAIS capabilities and further interoperability of systems.

Conclusions. The RAIS and ARIS information systems have been developed to assist Regulatory Authorities in controlling the use of ionizing radiation sources (including X-ray generators). Both systems are implemented in web form, which in our opinion is positive, but not in the form of applications for the App Store and Google Play.

The RAIS is a system of integrated databases with the possibility of adjusting them (through additional programming) under the national legislation on radiation safety of any IAEA member state. Each section of RAIS is significantly structured and detailed, which makes the system quite cumbersome, which in our opinion is an advantage and a disadvantage. The developers of RAIS have provided the possibility of online interaction with licensees through the web form.

In contrast to the above, ARIS is implemented in a modular view, which allows for the operation of each module separately, as well as autonomously. This approach gives users mobility of use. However, the disadvantage is that ARIS modules cannot be changed (adjusted) by the user through additional programming. The developers of ARIS did not provide for the possibility of online interaction with licensees through the web form.

The results of the review of the above systems indicate that at this stage of development of versions of these systems attention is paid to the functions of accounting, reporting and document management. Therefore, the need for online public services to be provided by regulatory authorities is not a priority for developers of these systems. Although the growing market for medical devices with generating sources of ionizing radiation for hospitals in many countries around the world (Health Care Resources, 2021) and quarantine restrictions related to the COVID-19 pandemic require regulatory authorities conducting online activities using information and communication technologies.

In conclusion, it should be noted that for regulatory authorities on radiation safety in different countries not a unified specialized software has been created to take full advantage of function the provision of public services online.

REFERENCES

Advanced Regulatory Information System. (2021). Retrieved from http://aris.am.

Countries Using RAIS. (2018). Global Nuclear Safety and Security Network. Retrieved from https://gnssn.iaea.org/CSN/RAIS/Useful%20RAIS%20Library/ Forms/AllItems.aspx.

Health Care Resources: Medical technology. (2021). Organisation for Economic Co-operation and Development. Retrieved from https://stats.oecd.org/Index.aspx?ThemeTreeId=9.

Kvitka, S., Novichenko, N., & Bardakh O. (2021). Artificial Intelligence in Municipal Administration: Vectors of Development. Public Administration Aspects, 9(4), 85-94. https://doi.org/10.15421/152140.

Kvitka, S., Novichenko, N., Husarevych, N., Piskokha, N., Bardakh, O., & Demoshenko, G. (2020). Prospective directions of digital transformation of public governance. Public Administration Aspects, 8(4), 129-146. https://doi.org/10.15421/152087.

Lazzini, S., Anselmi, L., Lo Schiavo, L. & Falanga, A. (2014). The Role of Information Systems to Support Performance Management in Public Administration: The Case of the Italian Regulatory Authority for the Energy Sector. Information Systems, Management, Organization and Control, 47-64. https://doi.org/10.1007/978-3-319-07905-9_4.

Mamatova, T., Chykarenko, O., & Chykarenko, I. (2020). Digitization of public services: the experience of Dnipropetrovsk region. Public Administration Aspects, 8(1 SI), 98-102. https://doi.org/10.15421/152051.

Mazur, O., & Sokolovska, O. (2020). Features of implementation of the newest management concepts: regional model of modernization of administrative processes in public authorities in conditions of digital transformation of society. Public administration aspects, 8(5), 107–116. https://doi.org/10.15421/152099.

Regulatory Information Systems. (2021). Radiation Sources Regulatory Partnership. Retrieved from https://rsrp-online.org/program/regulatory-information-systems.

Serohina, T. (2020). Public services: modern approaches to classification. Public administration aspects, 8(3), 5-15. https://doi.org/10.15421/152065.

Software. (2021). International Atomic Energy Agency. Retrieved from https://www.iaea.org/resources/software/

Mazur Oleksandr
Ph.D., https://orcid.org/0000-0002-7569-214X, ukraine.mazur@gmail.com