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**PROCESSES OF INFORMATISATION OF THE ELECTRONIC ENVIRONMENT OF HIGHER EDUCATION INSTITUTIONS**

Internet address of the article on web-site: [http://www.konferenciaonline.org.ua/ua/article/id- /](http://www.konferenciaonline.org.ua/ua/article/id-%20%20%20%20%20%20%20%20%20/)

The digital transformation of administrative and educational processes within higher education institutions (HEIs) has been significantly advanced by the implementation of the Unified State Electronic Database on Education (USEDE). This centralised system enables universities to systematically collect, process, and analyse data concerning participants in the educational process. Such data-driven capabilities enhance institutional decision-making by revealing trends, facilitating performance assessments, and informing strategic choices in personnel policy and academic planning. Furthermore, the availability of comprehensive datasets allows higher education institutions to better understand the evolving needs of their student populations and to tailor services and academic offerings accordingly.

A fully developed electronic environment within an higher education institution provides the structural basis for optimising information flows. This is achieved through the distributed organisation of multiple information systems, each responsible for supporting a distinct stream or group of data flows, while ensuring necessary interoperability with other systems. This modular approach makes it possible to retain and upgrade existing systems while seamlessly integrating new functional components or updating individual modules that reflect the changing requirements of educational processes. The flexibility of such an architecture allows HEIs to adapt progressively without the need for total system overhauls.

Nevertheless, this decentralised yet interconnected structure presents several critical challenges. Chief among these is the need for consistent coordination of data formats, definitions, and structures across different subsystems. Ensuring data integrity, timeliness, and synchronisation across platforms becomes increasingly complex as more actors interact with the system. Additionally, mechanisms for correcting errors or editing records often require redundant verification steps, and the time required for aggregation and meaningful analysis of the data may be prolonged in the absence of optimised integration protocols.

In this context, continuous monitoring of USEDE functionality is essential. Higher education institutions rely on specialised information technologies not only to manage internal data but also to interface efficiently with USEDE. Rapid data processing and intuitive visualisation of system outputs are critical for administrators, particularly during operationally intensive periods such as the admission campaign. During such campaigns, the limitations of the current USEDE functionality become especially apparent.

Given these challenges, many higher education institutions have developed proprietary admission systems to complement USEDE. These systems typically include filtering, sorting, and search functions across multiple parameters and data modules. In addition to processing standard applicant data, they are capable of handling more granular records such as applicants’ registered addresses, dormitory requirements, and foreign language proficiency. These enhanced functionalities are particularly useful for institutions aiming to provide a more personalised and efficient admissions process.

Reliable and high-speed internet connectivity is a prerequisite for effective interaction with the USEDE system, which is accessed through its web-based interface. Data synchronisation between USEDE and the institution’s internal systems is generally managed by a local system administrator. At the institutional level, local databases—often hosted on Microsoft SQL Server—are linked to USEDE. To safeguard data confidentiality and integrity, especially when data is transmitted from different university buildings or external campuses, firewall systems are implemented to prevent unauthorised access or leakage of sensitive information.

Despite these protective measures, current data integration practices reveal a fundamental vulnerability: users can modify data directly within the USEDE interface without synchronising corresponding updates in the internal institutional databases. This results in inconsistencies and potential duplication of information. As such, there is a growing need to implement centralised control mechanisms that restrict direct edits in the external system and ensure two-way consistency across platforms. Furthermore, standardisation of data exchange protocols with USEDE is essential to maintain reliability and accuracy in institutional reporting and compliance.

In terms of technical integration, many higher education institutions employ a layered approach. Data import from USEDE to the institutional system is typically managed through a PHP-based application hosted on an Apache server. Requests to USEDE are made via methods specified in the official "Documentation for the application server interface of the Unified State Electronic Database on Education", which relies on ASP.NET Web API 2.0. Data exchange is facilitated through the REST architecture, using JSON as the formatting standard. RESTful API interaction significantly simplifies the interoperability between institutional systems and USEDE, enabling secure, real-time data transactions. For robust data protection during transmission, encryption protocols such as SSL/TLS are recommended and widely adopted.

To fully integrate with the USEDE framework, higher education institutions must procure or develop appropriate application programming interfaces (APIs) and establish secure connections via the REST gateway. This process includes acquiring a unique cryptographic key for the software product and registering institutional system users with the connection type "user (connection via REST)". Such users are authenticated within the USEDE system using assigned credentials and are restricted from accessing the web interface directly. This ensures that all interaction with the central database occurs through secure, verified, and auditable means.

In conclusion, while the Unified State Electronic Database on Education provides a foundational infrastructure for managing national educational data, its current limitations necessitate parallel developments at the institutional level. By combining robust internal systems with secure and standardised integration protocols, higher education institutions can enhance operational efficiency, strengthen data governance, and contribute to the broader digitalisation of the educational landscape.

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