CLASSIFICATION AND ANALYSIS OF MODERN MEDICAL INFORMATION SYSTEMS: INTERNATIONAL AND UKRAINIAN EXPERIENCE

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Information technologies play a crucial role in enhancing the efficiency of healthcare services. Medical Information Systems (MIS) facilitate the storage, processing, and analysis of medical data, support clinical decision-making, and enable communication between patients and medical personnel. These capabilities significantly improve the quality and timeliness of service delivery and address numerous challenges associated with outdated approaches.

This study explores the application of MIS in the healthcare sector. A classification of MIS has been conducted based on their functional purpose, level of implementation, and technological architecture. Additionally, the paper examines existing examples of information systems in both Ukraine and globally, as well as widely adopted standards and requirements for medical systems.

MIS can be classified according to the following criteria:

- by level of implementation: local (within a single institution), regional, or national systems;
- by user groups: systems for physicians, nurses, patients, and administrative staff;
- by functional purpose: administrative, clinical, laboratory, diagnostic, telemedicine and knowledge-based systems;
- by access platforms: desktop-based, web-based, and mobile applications;
- by system architecture: monolithic, modular, microservice and serverless architectures;
- by infrastructure: on-premises systems and cloud-based solutions.

Among the systems examined in this study were:

- Ukrainian systems: Helsi.me, EMCImed, Doctor Eleks, Health24;
- USA systems: Epic, Cerner, Infor Healthcare.
- Europe: EMIS Health (UK), NHS Spine (UK), CGM CLININET(Germany), ORBIS U (one of Dedalus HealthCare products, Germany)

Among the widely adopted standards, the following are particularly noteworthy:

- HL7 – an international standard for the exchange of medical data between Medical Information Systems;
- DICOM 3.0 – an international standard for the storage, exchange, and transmission of medical images;
- openEHR – a set of specifications for the storage, exchange, and reuse of electronic health records.