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FUNCTIONAL REQUIREMENTS FOR INFORMATION SYSTEMS ELECTRONIC DOCUMENT CIRCULATION

The article deals with the emergence and improvement of functional requirements for information systems of electronic document management. The authors analyze the current requirements of international communities to the electronic document management systems. The content and requirements of ISO 15489 are disclosed. The efficiency and wide acceptance of the European specification MoReq MoReq is determined. The need for independent testing of systems will be justified. Legal documents in the Russian Federation on requirements of information systems of electronic document circulation and its practice are stated. The complex of requirements and its position to the electronic document management is shown.

Key words: electronic document, information systems, program, software, requirement, standard, management, position, method, experience.

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Электронды құжат айналымының ақпараттық жүйесіне қойылатын функционалды талаптар

Мақалада электронды құжат айналымының ақпараттық жүйесіне қойылатын функционалды талаптардың пайда болуы және жетілдірілуі қарастырылады. Авторлар халықаралық қауымдастықтардың электронды құжат айналымын басқаруға қойылатын заманауи талаптарын талдайды. ИСО 15489 стандартының мазмұны және талаптары ашылады. MoReq еуропалық спецификациясының ұтымдылығы және кең танымалдығы анықталады. Тәуелсіз тестілеу жүйесінің қажеттілігі негізделеді. Электронды құжат айналымы ақпараттық жүйесінің талаптары бойынша Ресей Федерациясындағы нормативті-құқықтық құжаттар және оның тәжірибесі баяндалады. Электронды құжат айналымын басқаруға қойылатын талаптар кешені және оның ережелері көрсетіледі.

Түйін сөздер: электронды құжат, ақпараттар жүйесі, бағдарлама, қамтамасыз ету, талап, стандарт, басқару, ереже, метомәлімет, тәжірибе.

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Функциональные требования к информационным системам электронного документооборота

В статье рассматривается появление и совершенствование функциональных требований к информационным системам электронного документооборота. Авторы анализируют современные требования международных сообществ к системам управления электронного документооборота.

Раскрывается содержание и требования стандарта ИСО 15489. Определяется эффективность и широкое признание европейской спецификации MoReq MoReq. Обоснуется необходимость независимое тестирование систем. Излагаются нормативно-правовые документы в Российской Федерации по требованиям информационных систем электронного документооборота и ее практика. Показывается комплекс требований и его положения к управлению электронного документооборота.

Ключевые слова: электронный документ, информационные системы, программа, обеспечение, требование, стандарт, управление, положение, метданные, опыт.

Introduction

In the 1990s, there was a significant change in the situation in the automation of document management software. If in Soviet times, the state to a certain extent regulated these processes with the help of the appropriate bodies (the State Committee on Science and Technology, the State Standard, the Ministry of Pribor, archival bodies, etc.), creating national programs for the development and implementation of automated control systems supported by intradepartmental developments, In the post-Soviet period, new global factors have arisen that affect the processes of automation of work with documents in management.

The existing market of information technology and equipment, software, office supplies and office equipment made it possible to acquire any modern information systems and technologies. In connection with this, there was a saturation of state and other organizations with computer and copying equipment, modern means of communication, including electronic networks, e-mail, etc.

In government bodies, and especially in commercial organizations, there has been a demand for modern document management systems. The market aims managers for effective management, and real competition makes us realize the need to build information systems that provide better than a competitor's use of information for decision-making.

Requirements for electronic document systems

The development of requirements for electronic document management information systems abroad began in the 1990s. At present, internationally recognized documents that establish requirements for electronic document management systems include:

– ISO 15489-1: 2016 «Information and documentation – Records management – General» (ISO 15489-1: 2016 «Information and documentation. Document management. General provisions»)

– ISO 23081-1: 2006 «Information and documentation – Records management processes – Metadata for records – Part 1. Principles» (ISO 23081-1: 2006 «Information and documentation. Document management processes. Metadata for documents.Part 1. Principles»); The national standard identical to ISO 23081-1: 2006 is GOST R ISO 23081-1-2008 «SIBID. Document management. Document management processes. Metadata for documents «;

– Requirements for Management of Electronic Records (Standard Requirements for Electronic Document Management Systems) – a regional European standard (specification) developed for the European Commission by the British consulting firm Cornwell (www.cornwell.co.uk)

The provisions of GOST R ISO 15489-1-2007 apply to the management of documents (of all formats and on all media) created or received by a state, commercial or public organization in the course of its activities. This GOST establishes the requirements for documents created in the course of business activities: authenticity (authenticity); reliability, integrity (immutability), suitability for use. Documents must objectively reflect the content of the business to meet management needs and be accountable.

ISO 15489 states that for document management organizations use document management systems that must meet the following requirements:

– reliability; Any system used for document management must be capable of long and efficiently performing the following functions:

a) include all documents within the scope of its business activities in accordance with the established procedure;

b) organize the documents in such a way that they reflect the business processes of the creator (executor) of the documents;

c) protect documents from unauthorized alteration, removal or destruction;

d) to act as the main source of information about actions recorded in documents;

e) provide access to all relevant documents and related metadata;

– integrity; To prevent unauthorized access to documents, their destruction, alteration or movement, document control measures such as access monitoring and user verification should be used in the document management system. The destruction of documents and their classification must be authorized. With regard to electronic documents, an organization should be able to prove that any system failures, software updates or regular operation of a document management system do not affect the quality of document preservation:

– Compliance with the requirements of the regulatory environment, business activities, public expectations; the compliance of the document management system with such requirements should be regularly checked, and the documents of these checks should be kept for evidence;

– complexity; document management systems should manage documents that are the result of all types of business activities of the organization or its business unit;

- consistency; documents should be created and saved systemically; the document management system should be based on the policy adopted by the organization, provide for the distribution of responsibilities between employees and the methodology for managing documents (Metodicheskiyerecomendazii. 2013.)

The standard also establishes requirements for the design of document management systems, according to which the system must have functional characteristics that allow to perform and maintain document management processes such as documenting operations, distributed management, conversion and migration, access, search and use of documents, storage and destruction documents, etc.

EDs created in the organization and included in the system should be associated with metadata – the data necessary for managing them.

The requirements for document metadata in the document management system are established by GOST R ISO 23081-1-2008 «SIBID. Document management. Document management processes. Metadata for documents. The standard defines and describes the metadata necessary for the creation and management of documents, and also explains the principles underlying their management and establishes the structure for managing these metadata (www.peweek.ru).

Some requirements for EDS can be gleaned from ISO 22310: 2006 «Information and documentation. A guide for developers of standards setting document management requirements». This standard establishes the requirements for the creation and storage of documents, access to documents, the preservation of documents, document management systems and document management tools and procedures.

European specification MoReq

The functional requirements for the ERMS are described in great detail in the MoReq specification, which describes the functionality of document management systems. The first version of the European MoReq specification was developed in 2001, the document received wide recognition from the user community and developers of EDS in many countries in Europe and beyond as the basis for using EDMS and as a guide for the development of document management software (MoReg2 Specification, 2008) MoReq is translated into more than ten languages, including Russian.

State and commercial organizations in their activities do not always pay due attention to the functional completeness and degree of methodical study of the EDMS. In this situation, following the recommendations of MoReq can significantly reduce the risks associated with non-compliance with the retention periods of documents, ensuring legal significance and information security.

MoReq describes in detail the functional requirements that must be met by the IP in order to ensure the legal significance of the ED obtained and created in the course of the organizations' activities. Are MoReq requirements stated in this way? That they are equally and unambiguously clear to documentists and IT professionals, and therefore MoReq gained popularity as a kind of «exchange protocol» between users and developers.

In order to support and promote new effective approaches and practices, a second version of MoReq, MoReq2, was developed. The MoReq2 specification has the following features:

– it uses the terminology in the field of management of ED, unified with the ISO 15489 standard;

– it is compiled taking into account a number of national standards: UKTNA 2002, DOMEACONCEPT (Germany), NOARK (Norway), Swedishtransfer Method (Sweden), REMANO (Holland), Sahke-project (Finland), US Departmento Defense 5015.2 (USA), ISAAR (CPF);

– it includes a test system for evaluating and certifying software products, the results of their implementation and services;

– it is divided into two parts – the basic and optional modules; Testing and certification of systems are possible for each module separately.

MoReq has the following optional modules:

– Management of physical and hybrid documents;

– Information materials management and teamwork;

– Integration with business process management systems;

– Work with precedents (Casework), i.e. work on the «issue»;

– Integration with content management systems (content);

– Electronic signature, encryption and electronic watermarks;

– Distributed systems (all requirements for distributed systems will be brought together with this module)

– Work offline offline;

– Definition and description of office processes;

– Integration with fax systems;

– Security categories (or managed access).

One of the most significant innovations of MoReq2 is the system of certification of software products for compliance with the requirements of the specification.

The provisions of MoReq2 are set forth in such a way that they allow independent testing of the IC for compliance with the requirements of the specification.

Independent Testing Systems

To do this, each requirement is accompanied by a special pointer «Test». This means that this system function can be tested to meet the requirements of the specification. The text also provides possible assessments of this «testability», accompanied by examples:

Y (yes) – formally the requirement can be tested. For example, «the ERMS must contain at least three hierarchical levels in the classification scheme»;

N (no) – formally the requirement cannot be tested. For example, «the ERMS must support the organization's business classification scheme.» There is no way to test this as usual;

B (possibly) – the requirement can be tested, but the test coverage will be partial and / or it is possible that the result will show a lack of compliance. For example, «the ERMS should not limit the number of hierarchy levels.» Formally impossible to test for the absence of a limit. However, the requirement is considered to be tested with partial coverage. For example, if you test for a large number of levels, it is possible that during the test the level limitation will be noticed, and this will show the non-compliance of the ERMS with the requirement (Knyazeva T.V., 2011).

MoReq2 allows for the existence of national variants that take into account different national languages, legislation, requirements and traditions of record keeping. The MoReq2 specification makes it possible to include a so-called null chapter to allow DLMForum member states to add their unique national requirements. MoReq2 focuses on the functional requirements for managing electronic documents using automated EDS.

The specification can be applied in the public and commercial sectors of the economy, in organizations that intend to implement the EDMS or wish to evaluate the capabilities of the systems used by them.

When developing the specification, it was assumed that the number of EDMS users includes not only administrators, clerks and archivists, but also employees of structural and general administrative and functional departments that use EDMS in their daily activities to create electronic documents and to access them.

Since this specification contains typical requirements, we could assume that it is of a general nature. Issues specific to platforms or sectors of the economy are not considered. Due to the modularity of the construction, it is possible to add functional blocks reflecting one or another specific requirements.

The MoReq2 specification is intended for use:

– potential users of EDS;

– users of the EDMS (as the basis for auditing and checking existing EDMS);

– training centers – as a reference document for the preparation of training courses on electronic document circulation and as educational material;

– to academic institutions – as an educational resource;

– suppliers and developers of EDS – as a guide for product development and improvement of its functional characteristics;

– organizations providing electronic document management services, – as guidelines for developing the services they provide;

– potential users of electronic document management services, as guidelines for developing the services they provide;

– potential users of electronic document management services (on the terms of outsourcing) –

as a manual on quality control of purchased services (Bobyleva MP, 2016).

Experience of the Russian Federation

In the Russian Federation, the requirements for information systems for electronic document management of federal executive bodies (hereinafter referred to as Requirements) are established by order of the Ministry of Communications and Mass Media of Russia of 02.09.2011, No. 221. These requirements establish the rules for the organization and functioning of the EDMS, which provide for the internal electronic document management capabilities of federal executive bodies. The document defines the minimum set of functions that the ERMS must perform, as well as the conditions for managing documents, including restricted distribution service information.

Requirements are applied to the authorities when implementing the EDMS or to assess the capabilities of an already functioning EDMS. The requirements contained in the document are presented in the form of three groups:

– technical requirements;

– requirements for documentation support processes implemented in the EDMS;

– requirements for the protection of information in the EDMS;

1. The first set of requirements – the requirements for the recommended level of performance, reliability and protection of the ERMS – set the temporary parameters of access to the system, to the registration card of the document, the idle time of the electronic document management system in case of failures, the recovery time of the electronic document from the backup, etc. data for the storage of electronic documents should ensure the storage of all electronic documents processed by the authority for a period of at least five years (Knyazeva T.V. 2001).

Requirements for the documentation support processes implemented in the EDS are two groups of requirements:

A) to the structure of the system and its interaction with other systems;

B) to the functional part of the system.

It has been established that the EDMS of the federal government must ensure the management of all documents of the authority, including draft documents (except documents containing information constituting a state secret).

The EDMS should be able to interact with the system of interdepartmental electronic document management (IEDM), a unified system of interdepartmental electronic interaction (IDEI), as well as with other information systems.

2. The requirements stipulate that the processes of documentation support of management in the EDMS should include:

– a set of actions to preserve the document or information about the document in the EDS of the federal executive body, determining the place of the document in the EDS and allowing to manage it (hereinafter – document entry);

– bringing the document to the user of the EDMS;

– approval of the document;

– signing of the document;

– fixation of keeping records of actions (control information) performed in the ERMS and including both actions of users and administrators of the EDMS, as well as actions automatically initiated by the EDMS due to certain system settings and settings stored in a volume sufficient to reconstruct the control information actions performed in the EDMS; document transfer (sending); storing and recording documents in accordance with the instruction for clerical work with the federal executive body, as well as monitoring performance discipline, preparing reference materials and writing off documents to the archive.

At the same time, the ERMS must provide management of:

– incoming and outgoing documents on paper, created or received and included in the EDS by registering, scanning and creating an electronic image of documents (including documents received through postal communication);

– processing of ED, received or transmitted through the system of IEDM;

– treatment of ED, received or transmitted using IDEI;

– processing of ED, received or transmitted by e-mail;

– processing of internal documents of authorities.

The document establishes requirements for individual processes carried out with documents, such as the creation of documents, registration of documents, storage of documents, access to documents.

The requirement to manage ED

Requirements emphasize that the document in the EDMS should be created in accordance with the instruction on office work in the authority, and in general, the ERMS should support all the processes of creating and processing documents,

established by the Rules of office work in the executive branch.

It was also established that the EDS of an authority should provide the display of the following file formats: PDF, RTF, DOC, TIFF, and may also allow displaying other file formats if they are used in the activities of government bodies (Larin M.V., 2002).

The set of requirements for the management of ED includes the following provisions:

– When entering ED, consisting of several components – separate parts, which independently or together with other parts of the ED form a separate ED, the EDMS must ensure the introduction of all its components;

– When entering ED, consisting of several components, the EDS of the federal government should ensure the ability to manage these ED as a single entity, while maintaining the ability to manage these ED as a single entity, preserving the relationship between the components and maintaining the structural integrity of the ED;

– EDMS should provide users with the ability to enter ED in the absence of the software application used to create it;

– The ERMS must collect and store metadata about documents;

– The ERMS must automatically extract the value from the fields designated by an official of the authority authorized to perform administrative functions when working with the federal agency of the executive branch for certain groups of documents received from the IEDMsystem, the IDEIand other information systems, using these values to automatically enter the corresponding metadata;

– The ERMS must support filling in all the metadata elements specified during its configuration, and ensure their permanent preservation and communication with documents;

– The ERMS must record the date and time of entry of the document both in the metadata and in the control information;

– The ERMS must ensure that the metadata of each entered document is displayed on the screen;

– The ERMS must ensure that users can enter input of the required metadata of each entered document;

– The ERMS must inform users when entering a document of unfilled metadata;

Certain provisions of the requirements are aimed at ensuring the coordination and signing of documents in the EDS, ensuring the legal significance of documents through the use of electronic signature technologies, monitoring the actions of EDS users, including the composition of actions subject to control by the EDS, and the composition of information generated during the monitoring.

The document sets forth a set of requirements for the EDS to ensure the storage and accounting of documents in accordance with the nomenclature of cases. The EDS should provide for the ability to maintain and save, in a protected from changes, the history of changes in the retention period, including the date of such a change, information about the EDS user who made the change or destroyed the document (Knyazeva T.V., 2010).

At the end of the storage period of documents, the EDMS should automatically notify the user about the expiration of the storage of the document and allocate documents for destruction in the manner prescribed by the legislation in the field of active business, as well as ensure the preservation of documents with a «Permanent» expiration date and highlight documents to be transferred storage in the archive of the organization (Larin M.V., Riskov., 2008).

3. The document also establishes requirements for information security of the EDS, including in the processing of official information of limited distribution. It has been established that for the protection of proprietary information of a limited distribution, the SED should use technical and (or) software information protection tools certified in accordance with the information safety requirements. The EDMS must comply with the requirements of the national standard of the Russian Federation GOST R 51275-2006 «Information Security. The object of informatization. Factors affecting information. General position «and the requirements for the technical protection of confidential information.

Special attention is paid to the requirements of access control to the EDS and documents. The SED should provide access control to documents, for which it is necessary to log information and keep in the control information information on the provision of the access message and on other operations with documents and metadata.

In order to ensure information security, the EDMS of a federal executive body should not have a direct (unprotected) connection to the information and telecommunication Internet in accordance with Presidential Decree No. 351 of March 17, 2008 «On Measures to Ensure Information Security of the Russian Federation telecommunication networks of international information exchange «.

This section of the Requirements also establishes the main provisions on the management of access

rules provided to users of the EDS, and on the definition of user roles and their management. In particular, the Requirements states that:

– management by users of the EDMS authority should be centralized;

assigning access rights to users of the EDMS (rights management) to the resources of the EDMS is entirely implemented by the software of the EDMS authority itself;

– execution of operations on the assignment of access rights is allowed only to the administrators of the EDS, the powers of which should be recorded in the job regulations;

– access to the system functions of the ERMS should be presented only to the administrators of the ERMS by the authority.

To ensure the security of electronic documents, the EDMS authority must provide for the possibility of regular backup of electronic documents (electronic document images), metadata, recovery of electronic documents (electronic document images), and metadata from backup copies. The ERMS must have automated backup and recovery procedures that allow for regular full and selective backups of electronic documents (electronic

document images), metadata, administration parameters and control information, as well as, if necessary, their restoration. The ability to restore information from backups should be provided only to the administrator of the EDMS authority. When restoring electronic documents (electronic images of documents) from backups, its integrity (including methodical, control information) should be fully ensured upon completion of the recovery process.

Conclusion

Thus, the considered legislative and other regulatory acts as a whole constitute the promotional framework in the field of electronic document management and work with electronic documents in management.

For the production of electronic document management in the company, it is necessary to carry out a number of significant measures to guarantee the proper organization of implementation, and to ensure maximum consideration of requirements, as well as minimization of risks and negative consequences during project implementation.

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