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Analysis of Information Security Issues in Electronic Document Circulation Systems

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Annotation: This article examines the issues of information security in electronic document circulation systems, and provides information about the role of digital technologies and the quality of electronic government. It is possible to obtain information about the content of practical work performed by the electronic digital signature and e-document system.

Keywords: Electronic document, EH validity, database management systems, modularity, effective search of documents, E-Document system.

Electronic document (ED) is information recorded in electronic form, confirmed with an electronic digital signature (EDS) and having other requisites that make it possible to identify the EH. EHs can be created, processed, stored and sent through information systems and information communication tools. The requisites of EHs contain information confirming the authenticity of EHs (name, surname, patronymic of the person who issued the ERI, postal and e-mail address of the sender of the document, date of creation of the document).

If we consider EHs in relation to enterprises and organizations, they can be divided into the following types, respectively:

- incoming documents;
- outgoing documents;
- internal documents.

The life cycle of the document is performed in the following sequence:

1. Arrival of the document to the organization;
2. Classification of the document (sorting);
3. Registration;
4. Sending to the head of the organization;
5. Decision of the leader;
6. Dispatch for execution;
7. Performance;
8. Storage time;
9. Sending to the archive.

The electronic document circulation system is used to automate the circulation of these listed EHs.

Requirements for electronic document circulation systems (EHAT).

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It can develop the requirements for the use of EHAT in enterprises, depending on the purpose, mission, departments and number of employees of the enterprise. In general, it is advisable to take into account the following requirements when using EHATs

Flexibility – EHAT can be used by several users, that is, as the number of users increases, so does its capacity. This requirement can be achieved by using Sybase, Oracle, Informix and other Database Management Systems (DMS) servers.

Modularity - the customer may not use all the possibilities of EHAT at once, that is, some parts of the system are temporarily unused and can be used when needed. In such cases, it goes without saying that the system must be composed of interconnected modules.

Efficiency is a balance between the costs of creating the system and the benefits that the system brings. The ability to add additional tools to further improve the efficiency of the system. It is also recommended to look at the work experience of the order fulfillment.

In addition, EHATs should have the following important features:

1. Ensuring reliable storage of documents in EHAT;
2. Ensuring the life cycle of documents in EHAT (creating, storing, printing, blocking the outflow of documents, sending and archiving documents);
3. Support document hierarchy for effective document search;
4. Search documents by information on the card or by full text;
5. Ensuring the right to use documents depending on the level of users, based on the organized hierarchy;
6. Monitoring all events in the system (audit system), users' work relationship and the system itself; also the administrator's process of developing system tools;
7. It should support remote data access.

When creating EHAT in enterprises, it is appropriate to take into account the above and the requirements of enterprises.

Currently, large advanced companies in the world of information technologies are conducting scientific research in the development of electronic document circulation systems (EHAT).

The most common EHATs are: E-document (InSoftServis, Uzbekistan), Hermes (BAIK Technologies, Uzbekistan), DocFlow (Program Solution, Uzbekistan), Evfrat (Cognitive Technologies, Russia), Delo (EOS, Russia), Fido-docflow (Fido Biznes, Uzbekistan), SharePoint server 2007 (MOSS) (Microsoft, USA), Lotus Notes (IBM, USA) and others [Reference 2: 7].

E-Document system: EHAT is designed to improve the existing system of work in the organization. In order to authenticate users, when entering E-Document EHAT, Electronic Digital Signature (ERI) and ERI certificate are used. An electronic document can be created using the private key of ERI. The key length of an ERI private key (*.prk) is 1024 bits or 1 Kb. In verification, ERI is verified using public key (*.spk). The owner of the ERI is issued a certificate (*.cer) by the key registration center. The certificate contains the surname, first name, position, name and address of the organization [1-reference: 15].

The e-document system provides the following:

- EHAT provides creation of any type of electronic documents and work with them;

- It is presented in the form of a registration-control card of electronic documents (EH) in EHAT;
- Types of EHs: incoming, outgoing and internal;
- EH consists of document requisites and the content of the document.

System user category:

- leadership;
- cabinet;
- employee responsible for document execution control;
- secretary (assistant);
- department heads;
- executors.

System functions:

- creation of EH;
- automatic scanning of a paper document;
- EH routing using a task;
- registering the incoming document and putting a resolution on it by the management;
- control the document while holding the control card;
- execution of EH;
- Agreement and signing of EH;
- EH registration;
- drawing up reports;
- search for EH;
- Archiving of EHs;
- Automatic receipt of reminders about non-fulfilment of EH.

System administration functions:

- maintaining system references;
- add (remove) system users, providing access to users;
- ensuring security;
- control of system operation;
- archive data for system recovery.

The structure of the system structure:

- EHAT uses a centralized database that is installed on the server and ensures that all EH are stored;
- the system provides a web interface (thin client) for users to use EHAT;

- users connect to EHAT through the organization's local and corporate network or can use it remotely through the Internet.

Security requirements are provided in EHAT as follows:

- authentication of system users based on ERI;
- check the integrity of the information;
- data encryption algorithms are used to ensure the confidentiality of information.

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