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DIGITAL ARCHIVES FOR LOCAL MUNICIPALITIES

Digital archives for local municipalities in Serbia and Montenegro is a project aimed at removing a major bottleneck in public services originating from ineffective document archiving and management.

Digital archives address several problems: inefficient access to documents leading to long periods of time required for retrieval after requests; ineffective document tracking and management leading to lost or missing documents; inappropriate access control leading to frequent document misuse and unauthorized access; high level of archive decentralization; incompatibility between local archives of different municipalities.

This project will have significant long-term effects on civilians, commercial and non-profit organizations in Serbia and Montenegro. Shortening the document retrieval time from several hours (in some case even measured by days) to nearly instant access will have an enormous impact on the efficiency of local municipal services. Preventing unauthorized access will help implement the rule of law, and reduce the possibility of intentional or unintentional misuse of documents. Finally, by introducing standards and solutions implemented in European Union, the Digital Archives will ensure compatibility and improve cooperation of municipal archives in the region.

This project will also act as a tool for reform of public administration, by producing a long-term digitization strategy for local governmental institutions and providing a good foundation for creating, modifying and updating appropriate local laws.

Center for Digitization has based this project on similar systems implemented in the region. We have already secured the support of federal government, relevant local government institutions, as well as solution providers with extensive experience in similar projects.

Key words: digital archives, local municipality

1. Tasks and goals

The local archiving system of municipalities in Serbia and Montenegro is outdated and extremely inefficient, and represents a major bottleneck for processing requests of citizens, governmental institutions and companies. Based on our research of five municipalities, main causes of this problem are:

1. Inefficient and inappropriate storage, leading to long retrieval periods, sometimes measured in days.
2. Low-trained staff, unaware of document classification issues, leading to lost documents and unauthorized access.
3. High level of archive decentralization. Several related documents, requested to issue permits and certificates, often reside in archives of different municipalities. As there is no efficient system to access documents in one municipality from another, it is required to travel to distant locations in order to gather all prerequisites for common certificates.
4. Staff shortage at the municipal offices. Combined with the current storage and retrieval system, this leads to very inefficient public services. It is common for citizens to wait for several hours in lines in order to get a simple certificate.

Digital Archive is based on several effective solutions implemented in this region. It will address this problems by:

- Creating a digital warehouse for documents which will allow instant retrieval and easy replication of documents.
- Removing the human factor from the access approval process. By implementing digital document classification, the system will ensure that only authorized personnel can access protected and classified documents.
- Connecting local archives into a computer network. This will allow access to all documents from any municipal institution – all required documents to issue a certificate can be viewed or retrieved immediately, and there will be no more need to travel and gather documents from different institutions.
- Allowing access to public documents on the Internet, and providing public access terminals for documents in municipal offices, which will allow citizens to print or retrieve documents by themselves. This will significantly improve the efficiency of public services.

2. Project activities

- ✓ Setting up offices for scanning, indexing and archiving documents in the municipal institutions.
- ✓ Integrating the Digital Archive into existing information systems of the municipalities, installing and implementing basic infrastructure in the municipalities without appropriate systems.
- ✓ Digitization, indexing and digitally archiving documents classified by the level of access.
- ✓ Setting up access terminals for public documents in municipal facilities
- ✓ Setting up an authentication based access system for other types of documents.

- ✓ Enabling access to documents over the Internet.
- ✓ Creating a digitization strategy which will be used to update the system in the future.
- ✓ Creating regional digitization centers (on city or region level)
- ✓ Creating a mobile scanning unit that will be used to archive existing documents on the spot.
- ✓ Educating and training of employees in the digitization centers.
- ✓ Educating and training of employees of municipal institutions.

3. Pilot project

Serbia and Montenegro consist of 190 municipal areas (160 in Serbia, 30 in Montenegro). Based on our research, we have selected the municipalities of Mladenovac and Rozaje to participate in our pilot project, according to their existing IT infrastructure and level of trained personnel.

The pilot project would set the ground for a larger state-level implementation of the Digital Archive, and demonstrate the benefits of digitization, especially faster access, document control. Because Mladenovac is in Serbia, and Rozaje is in Montenegro, the pilot project will demonstrate the effect of the Digital Archive on municipal cooperation and harmonization.

The pilot project will include:

1. Estimation, selection and classification of documents that will be digitized
2. Standardization of records and indexes of documents (according to the standards of European union), leading to creating new standards on the federal level.
3. Implementing a complete digital archive system
4. Digitization and indexing of selected documents from the archives
5. Installing access terminals in municipal facilities
6. Integrating the system with existing IT infrastructure or building such and infrastructure where it does not exist
7. Education and training of municipal staff

4. Background information

Current Status. After interviews and the inspection of the work process at the local municipalities Mladenovac in Serbia and Rozaje in Montenegro, the need for building of one or more functional system that will enable the working course of the documents to be carried out became evident. It is also recognized that there is a need for an intensive communication with the other local offices with authorized and selective approach to the documents, as well as the need for the public access to the documents.

Employees are directly included in the work processes of the local municipalities. They are divided in 7 **working sections** (departments). Each group has its own manager (administrator) and creates in advance definite number and format of documents. The educational level of the employees is high enough for the effective use of new technologies. The existing infrastructure and the hardware equipment offer solid base for building a system, which

- Ⓜ would support good governance and institution building in the context of public administration reform
- Ⓜ would serve the needs of the employees in the municipality in carrying out the services toward the citizens without any hindrances
- Ⓜ would protect the legal procedures from the work of unauthorized manipulations
- Ⓜ would manage authenticated and selective access to documents from faraway.
- Ⓜ would serve as a service and informant of the citizens, institutions and the companies.
- Ⓜ would present the work of the local municipalities.
- Ⓜ would serve as a basis for digitization of documents on the state level.

Disadvantages of the current working procedures

- ✓ Documents are not protected from misuse
- ✓ Long retrieval time
- ✓ Remote access is not possible
- ✓ Complex procedure for manipulation with the documents
- ✓ The existing infrastructure does not consist of one integrated system, where
 - The communication between the departments has been obstructed
 - Receiving of integrated reports has been obstructed.
 - Publishing the documents is impossible

5. Nature of the project

The functioning of the institutions in great extent contains work with documents on paper. They are irreplaceable in the relations with the clients, associates as well as inside the institution and the working groups.

Usually there are several main groups of documents that are used in the everyday work:

- Official documents, for ex. legal documents, different rules and regulations.
- Working documents, technical documentation, mail, sketches and drafts. They are characterized with great heterogeneity in the content and the format.
- Public documents intended for the clients. They should have same appearance and form and without mistakes as well.
- Internal documents. These documents are intended for the associates and they should be consistent and concise.

Of the greatest significance is the protection of these documents from misuse, loss or destruction; that could be done in two ways:

- Protecting the documents in paper form (special paper...)
- Protecting the documents in electronic form

The *advantages* of the second way are multilateral and they are as follows:

- Control of the data access
- Concisely defined roles of the users of the system

- In advance defined performance of the legal procedures for effecting the working obligations of the institution
- On time and simply publishing of the documents for public and authorized access to the same
- Integration and shortening the life cycle of >> creating >> arranging >> processing >> producing of the documents
- Possibility for fast and cheap communication with documents in electronic format
- Wide multiplicity of internal reports as well as those toward the public and institutions.

In contrast to the first that is characterized with:

- Long time required to retrieve the information
- Impossibility in the access of the information from faraway
- Complex procedure for manipulation with the documents
- High costs for protecting documents from misuse in paper form

Discussion:

1. Average Duration of the working process of producing final documents is 1 to 4 months at most of the cases. All of the processes are identified to last over a month. This process duration will be lowered to maximum of 2 weeks within a six months of the implementation with expectation to come down to 5 days within an year of the implementation.
2. Significant loss of documents and complicated process for their reproduction is the current case. Cases which documents have been lost take up to one month to be resolved if documents found or much longer if documents not found.
3. Time for the reproduction of the lost documents will be lowered from minimum of 2 weeks down to several minutes for their locating and reprinting.
4. Due to the databases, analytical setup, web oriented integration, enhanced communication procedure, average time for standard data analysis needed for production of working and final documents lowered from 1 day to 1 hour in the first six months of the implementation.
5. Currently if working document needs to be produced historic data needs to be found, analysis of the case data needs to be made very often including sharing data among departments which can take up to 5 days in average.
6. Eliminating mistakes that result from reproductions of documents.
7. Lowering costs for producing documents, printing supplies, paper and printing equipment. Expectation is that the largest portion of the working documents would not be printed out as well as that largest number of the documents among departments that now flow in the printed format would be shared by the system or published on the Web. Therefore we expect lowering of those costs by at least 30% in the first six months of the implementation and up to at least 50% in the second six months after the implementation.

Electronic signature law that should be voted in the near future will allow for near paperless work process and for higher savings than stated.

8. No standard real time reports available now. If report is needed it can take up from weeks to months to create it. All reports needed will be available in real time in the first 3 months of the implementation of each segment of system. Minimum of 4 reports are required per department.
9. Miscommunications within the departments, among the departments, and among the departments and clients due to the flow of working documents eliminated in the first three months of the implementation.

Some of the benefits which also need to be emphasized are:

1. Increased capabilities for resolving cases which are suspected for crime due to the documentation available and due to the system's analytical capabilities.
2. Decreased chances for document misuse since all the versions would be kept in electronic form and all the access is controlled and recorded.
3. Large portion of employees time is wasted on Non Value Adding activities such as solving miscommunications, lost documents, searching for data, and etc. Large HR capacity will be freed and effectively focused on Value Adding activities. Also which efficiency of work will be significantly increased and cost decreased.
4. Significant effects to the quality of the decision-making due to the real time access to current and historic data as well as due to large multidimensional analytical capability of the system.
5. Enhanced capabilities for effective continuous improvement efforts due to the accurate information on its working processes available in the system.
6. Increased responsiveness to the problems connected to documents both inside and with the third parties due to the capability for monitoring the flow of documents and documents manipulation.
7. Statistical system analysis, and efficiency improvements on global legislative scale.

6. Architectural description of the system

The project should develop a system consisted of:

- ⊗ Subsystem for digitalization and distribution of documents
- ⊗ Subsystem for storing the documents
- ⊗ Subsystem for Managing the Documents
- ⊗ Subsystem for Publishing - Extranet solution

The need for integration and customization of the system is obvious due to the different approaches of those subsystems and the objective for their mutual/cooperative contribution to the function of the system providing their unique aspects of the function in the same time. That will enable the working course of the documents to be carried out in the same way safe from the manipulations with the same, i.e. authorized access to the integrated surrounding where the documents have concise definite roles and routes and

authorities of the users. It will provide improvement of the information sharing, as well as simply arranging the new information and increasing the productivity.

Subsystem for digitalization and distribution of documents

1. System for digitalization and capturing the documents from all sources and formats.
2. Scanning, with intention to digitalize the paper documents that came from out or are stored in the archive.
3. Software solutions that enable collecting the documents from different sources, to the main system.
4. To afford scening and distribution of materials directly on e-mail address or on previous programmed list for distribution by e-mail;
5. To afford scening directly in the Document Management System, Microsoft Exchange, Lotus Notes, ...
6. Independent net fax system, fax broadcasting,
7. Network laser printer/copier with big capacity

Subsystem for document storage. The recommendation is using of servers based on Intel platform, open systems, where could be use all biggest server operative systems, network and standard applications that are presented in this moment on the market.

1. The openness for wide rank of standard solutions is one of the main criterions that leads with the enterprise-wide usage of the server platforms.
2. It is also important to be mentioned that these systems should be highly secure, with possibility to be over constructed and with secure future.
3. Very important element is the fact that the server should have trustful server management, network integration, most progressive technologies as well as functions for supporting that are expected from enterprise-wide solution platform.
4. Over constructing and high security. Beside the notable simplicity in the maintenance the main concept of the house should afford to settle the server in tower house or part of standard 19" rack arrangement.
5. Also is afforded highest degree of protection from manipulation on data based on few levels starting from the standard software – hardware protections, and through the most progressive security systems for protection ex. with help of ID magnetic cards and other technologies.
6. The standard usage of the RAID and the cluster technologies to made the servers very promising.
7. The powerful systems for cooling providing secure continuous work of the systems without any problems, and the hardware and the software solutions regress the expenses of maintenance.
8. The strategy for usage of SAN (Storage Area Network) is to keep the disks resources separated from the servers with very fast peripheral net based on SCSI or fibber – optic components. The information or the data become virtual resources that can easy regroup (predefine, consolidate) that influence

- as factor on the selection (it regresses the investigation on long-lasting plan – TCO) and it is also open system to accept the new technologies and solutions.
9. Backup Unit (Installation for protection of the data on magnetic track)
 10. Features like Error Correction Code (ECC) and Error Detection and Correction (EDC), Memory Scrubbing, 2-way interleave, Chipkill, Prefailure Detection and Analysing (PDA), Automatic Server Reconfiguration & Restart (ASR&R), Hot-Plug in RAID environment.

Subsystem for Document Management. Document centric solution for electronic managing the documents and the working procedures.

1. Enables managing the electronic documents by the use of the web technology.
2. Managing and sharing all the types of the files in their basic format..
3. Check-in, check-out functionality.
4. Versioning and version control.
5. Collaboration and creating the rules for notification based on reach set of events (document added, new version created, document checked out,...) and combinations of this events.
6. Full text search and indexing according to the attributes or key words.
7. Control and following the access to the documents.
8. Creating the document routes and assigning tasks to the users.
9. Integration with the most popular word and document processing applications (MSWord, Excel, Powerpoint, Acrobat PDF, Auto Cad ...)
10. Automated integration with other subsystems (subsystem for digitalization, RDBMS based subsystem, subsystem for publishing,..).
11. Clients for the most popular file and mail exploring applications (Internet Explorer, Windows Explorer, MS Outlook,...).
12. intuitive, easy to use and with the minimal requirements for training,
13. Access through different platforms and global network.
14. Viewing the documents in different formats without need of document processing application on the client side (creating HTML on the fly).
15. Easy integration with intra and internet infrastructure.
16. Supporting the standards WebDAV, SSL, XML, ODMA.

Subsystem for Publishing - Extranet solution. Deals with publishing data and documents wich were previously created by the other systems. As main advantages that enable the extranet in the communication of the internal, structures of the municipalities we would list the following:

1. Powerful, cheap communication, availability of the information anywhere in the world and anytime (only Internet access in needed)
2. Continuously speeding up the published pages i.e. information (pages that the users can access to and to view them), data for the employees, description of different regulations and procedures, training material, forms etc.
3. Increased productivity by using internal transactions through extranet: searching database, publishing the working directives, information, news, internal e-mail, collaboration...

Different types of applications where the interaction with the users is through Web.

DIGITALNE ARHIVE ZA LOKALNU SAMOUPRAVU

Pokreće se projekat »Digitalne arhive za lokalnu samoupravu«. U tekstu su opisani razlozi i ciljevi projekta.

Ključne reči: digitalna arhiva, lokalna samouprava.