Informatization of the Croatian Archival Service – From the Idea to the Realization of ARHiNET Project

Vlatka Lemić
Hrvatski državni arhiv
Marulićev trg 21, 10 000 Zagreb
vlemic@arhiv.hr

Hrvoje Čabrajić
Avicena
Put Supavla 30, 21 00 Split
hrvoje.cabrajic@st.t-com.hr

Summary
Being a central national archival institution, Croatian State Archives (CSA) takes care for planning of archival activities, coordination of archives' professional work and performing information-documentation service about archival records on national level. In the year 2006, CSA started the construction of new archival information-evidence system which should cover all archival functions: keeping, preserving, arranging and using of archival records.
Technical characteristics of new information system include WEB application with MS SQL server as a basis and C# computer language. Advantages of this solution are building of uniform base and uniform system of data protection with minimal costs. Its main characteristics are availability, reliability, flexibility and exstensivity with general and specific defined functionalities. System is created on modular basis which practically means design and implementation of particular modules as separate projects and their continuous connecting in unique system.
ARHiNET system encloses several modules: Arranging of archival material, Archival documentation, Register books, National archival service' central evidences, Service for archival records outside archives and User service. Realization of this development project of archival service will enable establishment of unique national integrated system of data exchange among the institutions that keep archival material as well as standardization and increasing quality of provision and services in archives.

Key words: archival information system, web application, standardization and rationalization of business processes in archives, design and implementation of new services in archives

ARHiNET – the Idea

The tasks of the Croatian State Archives (CSA) as the central archival institution include planning of archival activity, coordination of the professional work of the archives and managing the archival records information-documentation service on national level. The basic information resource is the Register of archival fonds and collections of the Republic of Croatia which contains data on all archival material in the state and of its creators and owners. After many years of working on collecting, processing and presentation of data concerning archival records and records’ creators and owners, the need for standardization of arranging and description of archival material, archival principles and vocabulary, as well as for unifying of archival work, has emerged.

Subsequently, CSA started the construction of new archival information system which should cover all archival functions: keeping, preserving, arranging and using of archival records. Its goal is to, in the unique data base, make possible standardization and control of records, and in the same time rationalization and standardization of business processes in Croatian archives. The project team, consisted of experts from CSA and the Avicena Company from Split, had set the basic guidelines which the information solution would have to support:

1. the use of available and acceptable technologies,
2. creating the technological preconditions for including all of the owners of the archival records into the unique system,
3. modulation, extensivity and simple upgrading,
4. the simplicity of use.

Considering the technologies that were on the work group's disposal and having in mind the guidelines that were defined by the project team, it was decided that the information system must be defined as a web application. This decision is based on following facts: disposability, simplicity of maintaining and financial aspect.

Archives.Net- the Realization

The project team has decided to start the development in small steps, always considering the entirety of the information solution in its own complexity. That, practically, meant that the single solutions were defined in a relatively short period of time, and that they were presented and implemented after the testing phase. After the analysis of all the state archives activity area, complexity and extremely large and functionally different logical business processes, it was decided to approach to the making of the system using the modulation principles. In practice that meant:

a. to define the basic business processes through the separate modules which will, in a specific moment, be able to function as a unique system
b. to ensure that the modules can be realized as an independent separate sub-projects

c. to ensure maximum flexibility of modules in a sense of adding, alterations and supplements of new functionalities
d. to ensure the possibility of mutual integration of different modules

The same business processes are defined and relating to CSA, regional state archives and other owners of archival records. Having in mind specific quality of single users, the project team has divided the functionalities into two segments: common and specific quality functionalities.

Technical characteristics of ARHiNET system include web application with MS SQL 2005 server as a basis, C# computer language and partly JAVA and all on the dot.net technology. The management of digital contents is also one of system functionalities, and it encompass several business processes: digitalization of archival records, processing of digitalized documents, saving master copies for storage, automatically creation of web copies in JPEG format and presentation of digital content within program solution.

ARHiNET –Project Overview

Diagram 1: Initiation phase

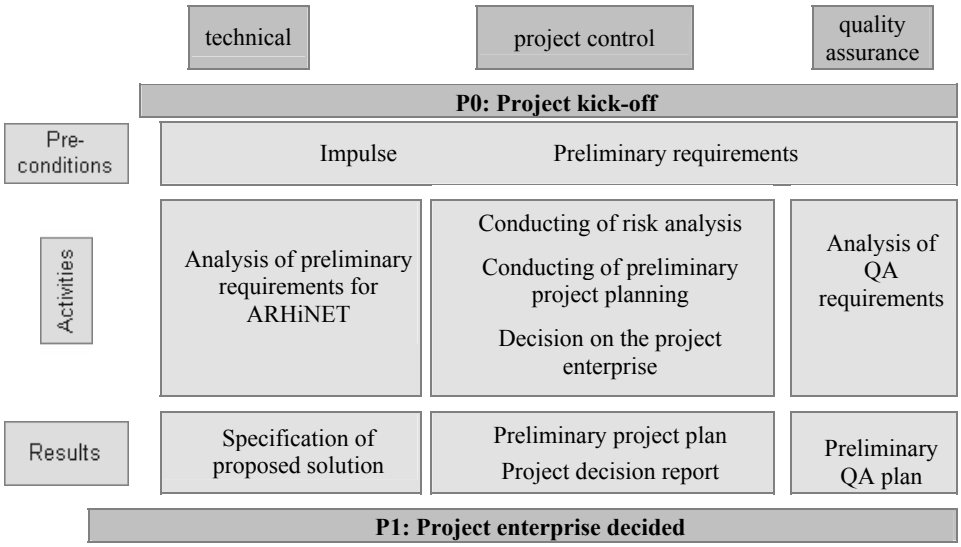

Diagram 2: Definition phase

	technical	project control	quality assurance
Pre-conditions	Preliminary requirements Specification of proposed solution	Project decision report Preliminary project plan Project order	Preliminary QA plan
Activities	**Subphase “Definition of requirements”** Goal: Requirements defined with adequate clarity Definition of the goal Analysis of the domain Acquisition and elaboration of requirements Ordering of the requirements Checking of the requirements Building a domain model Producing a user requirements specification **T21: Requirements defined and checked** **Subphase “Definition of the product”** Goal: Product defined with adequate clarity Checking of the requirements Elaboration of product features Building an OOA model Planning of RR Definition of external interfaces Definition of all project processing conditions Making feasibility studies Creating prototype(s) Producing a software requirements specification **T22: Product defined and checked** **Subphase “Drawing up a tender”** Goal: Tender submitted	Kick-off activities Risk evaluation Coordinating of user requirements specification with client Drawing up the project agreement Planning the project Planning the CM Setting up the basis CM system Setting up the project infrastructure Coordinating the software requirements specification with the client	Review of user requirements specification Review of the OOA model Review of the software requirements specification Review of project plan Planning the QA measures Review of the QA plan Review of the feasibility studies

Activities	Checking of the requirements Selecting and defining the contractual framework Defining the services Estimating the effort Coordinating price/performance Producing the tender document	Submitting the tender Project checks and control	Review of the tender
	T23: Tender defined, checked and submitted	**P2: Project plan drawn up and checked**	**Q2: QA plan drawn up and checked**
Results	User req. spec. Domain model SW req. spec. Feasibility studies Tender Prototype(s) RR plan OOA model	Project agreement Project plan CM plan Basis CM system Estimation report Open Source SW decision report	QA plan Review reports

Diagram 3: Prototyping phase

	technical	project control	quality assurance
Pre-conditions	SW req. spec. Feasibility studies Tender Prototype(s) RR plan OOA model Domain model Open Source SW decision report	Project order Project plan CM plan Basis CM system	QA plan
Activities	Subphase "Design" Designing the architecture Selecting/defining a prototyping development environment Elaborating/defining design principles and style guides Deciding on reuse of patterns/sample solutions/component ware Evaluation of Open Source components Phased adoption of patterns/component ware Phased creation of an OOD model	Project checks and control Setting up the complete CM system	Revision of the QA plan Drawing up the test plan
Activities	Subphase "Implementation" Phased implementation of a user interface Phased implementation of functions and sequences Phased adoption of design patterns/sample solutions/componentware	Saving checked states of the product in the CM system Defining the preparatory measures for deployment Setting up the test	Design of test cases Review of the test plan Review of solution documentation Ongoing validation of development

	Producing documentation of solution Producing product documentation Performing the system test	infrastructure Providing for acceptance	states Producing the test reports
	T43: System test completed	P4: Product ready for acceptance	
Activities	Subphase “Preparation of operations” Goal: System ready for use Finalizing the product documentation Drawing up the introduction plan Elaborating and conducting user training courses Performing process integration	Performing the acceptance procedure	Review of product documentation Producing the acceptance report
	T44: Preparation of operations completed	P5: Product accepted	Q4: Product checked
Results	Approved product of ARHiNET Documentation of solution for ARHiNET Product documentation for ARHiNET Introduction plan for ARHiNET GUI Styleguide Evaluation report	Project plan CM plan Complete CM system Release note	QA plan Test plan Review reports Test reports Acceptance report

Diagram 4: Design phase

	technical	project control	quality assurance
Pre-conditions	SW req.spec Feasibility studies Tender Prototype(s) RR plan OOA model Domain model Open Source SW decision report	Project order Project plan CM plan Basis CM system	QA plan
Activities	**Subphase “Architectural design”** Goal: Architecture defined Checking (and complementing) the external interfaces Designing the architecture Defining the architecture and product components Building the preliminary OOD model Building the data model Creating prototype(s) Producing the architectural design specification	Project checks and control Planning and commissioning external services Augmenting the CM planning Setting up the complete CM system Defining the HW/SW development tools and programming languages	Definition of design rules and processes Planning and organizing the test procedure Review of the architectural design specification

	T31: Architecture specified and checked		
	Subphase "Detailed design" Goal: Components defined		
Activities	Defining global methods and components Refining the OOD model Designing the individual components Producing the detailed design specification(s)	Planning the product integration Defining the preparatory measures for use	Design of test cases Review of the OOD model Review of the detailed design specification(s) Review of the test plan
	T32: Internal structure specified and checked		
	Subphase "Design when using existing software" Goal: Adaptations specified	Setting up the test infrastructure	Revision of the QA plan
Activities	Evaluation/testing of existing SW Evaluation of Open Source SW components Determining the need for adaptations Producing the adaptations specification(s)	Decision on the use of existing software	Drawing up the evaluation plan Review of the adaptations specification(s)
	T33: Use of existing software specified	**P3: Complete CM system set up and checked**	**Q3: Test plan drawn up and checked**
Results	Architectural design specification Detailed design specification(s) OOD model RR plan Prototype(s) Evaluation report Adaptations specification(s)	Project plan CM plan Complete CM system	QA plan Test plan Review reports Evaluation plan

Diagram 5: Implementation phase

	technical	project control	quality assurance
Pre-conditions	Software requirements specification Architectural design specification Detailed design specification(s) Adaptations specification(s) RR plan Feasibility study (studies) Prototype(s)	Project order Project plan CM plan Complete CM system	QA plan Test plan

	OOD model Open Source SW decision report		
	Subphase “Producing the code” Goal: Developed components implemented		Revising the QA plan
Activities	Coding the software Performing stand-alone tests Producing the product documentation	Project checks and control Detailed planning and organization of integration	Conducting code reviews Finalizing test planning
	T41: Code produced and checked		
	Subphase “Adapting existing SW” Goal: Purchased/RR components adapted		
Activities	Adaptation of SW and interfaces Stand-alone test of adaptations Adaptation of product documentation	Management of components in the CM system	
	T42: Code adapted and checked		
	Subphase “Integration and test” Goal: System tested		
Activities	Creating tools for integration, testing and installation Phased integration and testing of the system Performing the system test	Providing for acceptance	Producing the test reports
	T43: System test completed	**P4: Product ready for acceptance**	
	Subphase “Preparation of operations” Goal: System ready for operations		
Activities	Completing the product documentation Drawing up the introduction plan Elaborating and conducting user training courses Performing process integration	Performing the acceptance procedure	Review of product documentation Producing the acceptance report
	T44: Preparation of operations completed	**P5: Product accepted**	**Q4: Product checked**

Results	Approved product Product documentation Introduction plan	Project plan CM plan Release note RfA note	QA plan Test plan Review reports Test reports Acceptance report

Diagram 6: Operations phase

	technical	project control	quality assurance
Pre-conditions	Software requirements specification Released product Preparation for performing the operations	Project order Project plan Deployed CM system	QA plan Test plan
	Subphase "Pilot operation" Goal: Ready for productive operations		
Activities	Preparation of pilot operation Installation of the product	Project checks and control Performing the acceptance procedure	Planning of phase-specific QA measures Recording of metrics data
	T51: Start of pilot operations		Producing the acceptance report
	Support of pilot users		
	Subphase "Productive operations" Goal: Stable productive operation		
Activities	Installing and commissioning the product	Releasing maintenance releases	Revising the test plan/ complementing the test data
	T52: Start of productive operations		
Activities	Support of product deployment Analyzing problem reports and change requests Eliminating errors Making approved changes	Deciding on problem reports and change requests	Performing of regression tests
		P5: Product accepted	

Results	Deployed product	Release note Project plan	QA plan Quality-related evaluations, metrics data Acceptance report Test plan & Test reports

Diagram 7: Termination phase

	technical	project control	quality assurance
Pre-conditions	Order terminated, completed or negative project decision		
Activities	Archiving of relevant documents and data	Producing a final report	Holding a review of the project Collecting reusable project results Consideration of deviations
Results	Archived documents and data Reusable project results	Project file Final report	Project experience report
P6: Project terminated			

List of abbreviations: CM = Configuration management, HW = Hardware; GUI = General User Interface; SW = Software; OOA = Object-oriented Analysis; OOD = Object-oriented Design; QA = Quality Assurance; Rfa = Ready for acceptance; RR = Round Robin (back up procedure)

Conclusion

The information system of state archives is a dynamic structure which is in a phase of a continued growth and development. The defining of new functionalities and making meaningful the additional modules make this project interesting, dynamic and challenging. ARHiNET enables inclusion of all owners of archival records in Croatia into a unique system which represents a great turning point in the work of state archives and owners of archival records, as well as a long-term developing interest of archival service.

New archival information system contains several modules: Arranging of archival material, Archival documentation, Register books, National archival service’ central evidences, Service for archival records outside archives and User service. Realization of this development project of archival service will enable establishment of unique national integrated system of data exchange among the institutions that keep archival material as well as standardization and increasing quality of provision and services in archives.