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Technical Parts for Electronic Procurement in the Republic of Kosovo

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Abstract

Electronic procurement in the Republic of Kosovo has begun in 2012, had it not been for the accomplishment goals and development and implementation of electronic procurement in the Republic of Kosovo fully realized. e-Procurement is not only the publication of procurement results, but is a reflection of a defined legal process on procurement. The Internet are presented records of all claims, also via the Internet can be sent to all offers.

Research: Through management system throughout the procurement process electronically will enable the preservation of technical and financial evaluation of bids. Thus, the presentation of this process in a transparent manner increases the reliability and efficiency.

Method: Also through the management system of this process, according to the rights defined by law, each party can see the appeal process and remotely via the Internet. Implementation of e-procurement will enable the removal of barriers that were presented earlier, increasing the confidence of all parties involved. Access will be granted to all interested parties by allowing the approaches to the law, while in the case of restrictions should use electronic identification (e-ID).

Result: The categorization of approaches will be for each separately, including contracting authority, contractors, bidders, complainers, the proxies of budgetary units, auditors and other categories defined under applicable laws. Security of information in e-procurement will be the maximum. As with any other service access to e-procurement will be provided through the state portal.

Key words: Government Electronic Procurement, Internet, electronic identification (ID), management.

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1.0 ENTRY

Government procurement is essential to citizens' trust in government and is a barometer of the quality of public administration, making it the primary focus of empowerment in most governments.

Public procurement is also a key aspect of public administration, which connects the public finance system with the social and economic achievements, and as such is a major determinant of the quality of municipal services and infrastructure, as well as the effectiveness of government. This feature affects almost all areas of planning, program management and budgeting.

OECD has estimated:

- Procurement constitutes 14:48% to 19.96% of gross domestic product;
- public procurement in one form or another constitutes 70% of government spending.

Also, OECD (2007) has proved that "public procurement is government activity most vulnerable to loss, fraud and corruption due to its complexity, size of financial flow that creates and close interaction between citizens and the private sector".

Procurement policy governing public sector interactions with domestic and international markets in ways that directly affect the efficiency and competitiveness of the country. Public procurement is a common tool for business development policies and industry, where most regional and bilateral agreements have important provisions aimed at giving local mutual access to government procurement markets.

Poor management of procurement undoubtedly reduces the developmental aspects and is likely to reduce the foreign direct investment. These effects have already been reported by the International Monetary Fund (IMF) (1998), which identified the consequences at the state level in terms of (i) overspending on capital, (ii) under-spending on maintenance of assets, (iii) the quality infrastructure weak and (iv) reduced government revenues.

IMF has come to the conclusion that procurement poor governance can result in infrastructure that reduces the development of the state - where investment becomes joinvestim.

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Poor quality and low maintenance costs also mean that she existing infrastructure has low economic productivity.

For these reasons, the strengthening of government procurement is described as the only option most significant development in many countries.

2.0 Technical Requirements

Electronic procurement system should be developed in the Internet environment, using open standards and open architecture and facilitate interaction with computer applications at the state, regional and international, with payment systems of orders and procurement processes. Such a solution would also eliminate the problem of odd connection with specific retailer operating technologies, computer applications, computer browsers and other technologies. Systems and procurement standards over the past decade have evolouar and matured. The integration between internal systems and external offices for multilateral exchange of information procurement is the main feature. The system through which collected the data, but has no good option multilateral exchange between government entities and their systems of transactions and information management, and many buyers and suppliers, are not appropriate.

Users of the system should be ready to interact with the flow system, safe and efficient.

Users can be:

- government procurement entities and their employees.
- Suppliers and potential suppliers.
- The community in general.
- Banks.
- Certification Agencies (if used)

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- Auditors.
- multilateral development agencies.

Electronic procurement systems should use protocols for the development of systems and communication are open and common standards in cases where the interaction between platforms, and the interaction or integration with external systems such as communication should support sikron, as well as that asynchronous (exchange of messages) with electronic procurement system and departmental applications.

Technical issues include aspects, such as information security, interoperability and reliability.

Rate and availability are also important aspects to ensure that the procurement system can fulfill large volumes of transactions. In addition to providing reliable systems as possible, requires mechanisms for the management of possible system disorders through plans for business continuity and recovery plans after the fall of systems.

These issues should be considered regardless of platform or service provider. These aspects also dealing with the conditions and specifications for the key components of e-procurement system, such as content management, access control management, workflow management and integration

external system interface. All these aspects should be subject to the risk management plan. Commercial principles certificates, authorizations, confidentiality, integrity and mosrefuzimi also addressed within the framework of risk management, along with protection from viruses and other security threats.

The following issues are at the center of management systems through the Internet:

2.1 Accessibility

Conditions that do not relate to the functions derived from the properties of the system, such as environmental constraints or the application (eg, must be accessible by far, the software should function in different operating systems).

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2.2 Application Graphic User interface (IGP)

Procurement officers in the department only use such systems when drafting the notice of invitation to tender or in the case of managing their existing offers. Depending on the size and type of the department and the frequency of purchases, the use of the system can be infrequent and may be used only several times a year, while suppliers use these systems only when participating in certain bidding, which is can also be very rare. The user interface of the system should be intuitive and operational in all popular web browsers, and technical prerequisites for accessibility should not have major limitations for users. Aspects of functionality that was made available to users, should be self-explanatory and cookware should always be available, helping in understanding the steps that must be respected and simultaneously utilizing all the functionalities offered by the system.

3.0 Interoperability of graphical user interface

The technology used to implement the IGP regarding procurement needs to be selected primarily based on a criterion, which is the level of accessibility. Now there are some sophisticated techniques IGP's implementation, thus enabling system developers to implement IGP's more simple and efficient. However, not all technologies have established standards or may not support the same from web browsers, operating systems, etc. This course is an undesirable effect, which significantly reduces the level of accessibility.

Therefore, it is recommended that IGP electronic procurement shall be based on widely accepted technology. For example, all web browsers support the commonly used standard HTML 4:01. Consequently, IGP electronic procurement has built in HTML 4:01reduces accessibility considerations compared with other issues that have nothing to do with the functions.

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3.1 Search tool

Advanced search tools should be available to all users e-procurement. These instruments should enable all users (including anonymous ones and unregistered) use of instrument search for all available bidding and bidding invitations, as well as identify the OC that may have potential interest to them. Research and reports should also have interaction with the technology of mobile phones. In search criteria can be made available a number of data more important in bidding invitations (including name, CPV's codes, key word and country).

Here one can predict the end users the option to combine these criteria. Also can offer the Advanced Boolean logic operations (AND, OR and their precedents), which would allow users realize more refined searches. The system is able to punish users to define areas used for presenting the results of research and selection parameters used. Furthermore, users can be given the opportunity to choose certain bidding invitation from the search results, and to see its details. Depending on the details and status of the invitation of the nominees, suppliers can be given appropriate activities that they must perform.

The system can use an external search tool to take advantage of the features offered by specific instrument for research, such as support for encoding UTF-8 characters, content-based search, search support content stored within some types Popular documents (doc, xls, pdf, plain text, etc.).

3.2 Terms lingual / multilingual

Users can have the option of choosing their preferred language for graphical user interface (IGP) of the languages installed on the system, and have the possibility to switch from one language to another. As far as the user interface and the language used, all the best descriptions should be in a format that fits and easy parametrizohet (eg file or table characteristics database), so that it can be translated if in the future the need for exporting user interface to another

language. In addition, the fonts used in the application should use all graphic symbols for all the official languages of the state.

In principle, the two parts of the localization of e-procurement to be taken into account are:

Language: The user interface should be able to present the data in any of the languages supported by the system (if offered more than one language) enabling users to set their preferred language.

Character encoding system: character coding system is a method of encoding text entered in any field. Character encoding UTF-8 (Unicode) characters can be supported with mixed script. Database also may need to configure in order to UTF-8 function.

For example, older versions of MySQL did not support Unicode-in, but it has been possible configuration of JDBC drivers to use Unicode-in the case of processing of texts. Most databases and interface components user inputted information today-in Unicode support.

4.0 Contributions through WEB

Contributions may be made available via the internet at any time users to perform activities in the system. Assisting in the context, manuals, wizards (Wizards), transitions (walkthroughs), and demonstrators online can help many users to understand the functionality of the services offered by the system. Supporting documents online, glossaries and questions most often provide quick access and easy to clear definitions for all areas used (which represent, what measure, etc.). Guidelines for user may explain in detail the procurement GUI, for example using screen-shots and textual descriptions. Questions most often to answer the questions most frequently submitted by users.

A successful process of e-procurement much depends on the accuracy of the data that users have entered into the system. The validity of all data entered by users through forms completed online can be controlled in order to promote self-help.

This can be done by the server, as well as that of the client:

The server, once verified the validity of the data provided by the user on the server side and the users can be encouraged to approach the same again Forming, custom descriptive warning near the field (s), which are completed incorrectly.

Client side, where the validity of the data provided by the user to be verified by the client, the browser using the logic of work to find and to explain user errors. In Internet-based technologies, this kind of application can create interoperability problems, as java script or other languages based encryption from the client will be enabled.

Electronic procurement systems may also inform users which perform "significant" (which is the creation of the call, the presentation of the offer, etc.) Through the use of informative websites / confirmatory and automated notification mechanisms. All aid opportunities through the Internet can be made available in all languages who knows the system.

4.1 User Safety & administration

Managing user profile includes management of user profiles that encompasses safe storage of personal data of users, while authorization identifies the different roles that the user can take within the electronic procurement system. Authorization levels are defined at the system level and at the level of a specific process based on workflow. All workflow activities should be stored in an audit log. Workflow activities will be based on a registry authority as part of the buyer's registry, which stores user permissions for conducting procurement activities authorized. Saving the credentials and user profiles in order to encrypt and secure, which could not dekriptohen by administrators database, should be mandatory.

Electronic procurement system should provide the ability for simultaneous recording Single Sign-On (SSO) so that users register once and have the possibility to access all appropriate

services based on authorizations established procurement to the user in the system. Electronic procurement system should enable access to content and services based on the type and use of content made available through the system based on user roles.

Electronic procurement system should support industry methods and standards for the registration and verification of users.

Two options for user registration and verification are as follows:

Option # 1:

Identify and password of the user

Registration of users based on the identification and password is the main approach in most countries, such as UK, Australia, Canada, USA, Singapore and the majority of commercial applications, including the banking sector. This approach is acceptable under the Law model for digital signatures UNCITRAL (2006). For the procurement field, the user ID and password can be wide and reliable, as can be any other method, including PKI. In terms of procurement the only difference is that the access codes is proved that relate to the entity or individual. In case of registration of users through the Internet, this verification is usually not at this stage, but can be done in special care phase, which also just happens to be mostly the case of government contracting. However, in some commercially sensitive systems, also made the verification of the identity of the user registration. Digital certificates within the PKI's have the same vulnerability (theft, etc.), as has the identification and registration of users for electronic procurement.

There may be concerns that the certification before bidding entity may submit more bids, which of them will be elected best. However this can be easily managed through a system of registration of well designed, and PCI did not prevent this.

The process of creating identification, including submission of other information for the purpose of recording reliability and authentication should be implemented through a secure SSL connection. Conditions for safe transport and storage, and data integrity is also addressed.

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Certificates for digital signatures

In some countries allowed only verification for electronic procurement through digital certificates and PKI. This approach is based on the Law of the earlier UNCITRAL model for digital signatures (1996). This approach is applied in some parts of the EU and in most of Asia. Digital certificates tend to be costly, and their inclusion as a condition for participation in electronic procurement discourages small businesses, and is likely to be more bureaucratic and weak capacities verification compared with those of governments.

In cases where countries wish to implement the first option, but have the burden of old legislation, the entity that manages the electronic procurement system is the entity that issues digital certificates, which can be done via the Internet at time of registration.

User account management and verification

Managing user profile includes management of user profiles, including safe storage of personal data of users, whereas the authorization defines different roles that can be user within an electronic procurement system.

User profiles stored in the respective data base that identifies all system users and roles that are related to system users. It is important to maintain reliable information and user profiles so encrypted and secure, which can not be decoded by the administrators of the database.

Communication of information, interface and storage

Use the "server certificates" for purposes advised secure communication over SSL encrypted session between users of electronic procurement (Internet browser used by procuring entities and suppliers) and web server for electronic procurement.

Saving

Once the e-procurement deals with sensitive information (eg response to offers, commercial information etc.), encryption of data stored in different modules is essential (database, LDAP or O file system) through coding algorithm known. This feature increases the security of the system and protects data even when the authorized person has physical access to the server or hosting servers.

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Security systems applied to electronic procurement should ensure safe custody of documents; offers introduced into the system and should not be accessible for any user to the achievement or fulfillment of certain conditions, as defined for the processing of the bid process, where such content should not be stored or transferred in clear text If at any time within the procurement system or abroad. Coding should be done according to the principle of end-user to end user, when received documents on the web server and stored electronic procurement system.

Electronic procurement system should have antivirus to check all documents / communication incoming from users and should limit communication of any unauthorized content and harmful. No documents / communication (eg e-mail) should not be accepted and stored if not checked for the presence of viruses.

4.2 Marking Time

A mechanism for safe and reliable for the verification of time should be put in place to address the issues, such as whether the offer is submitted prior to the deadline for submission, etc. Electronic procurement system must record the exact date and time for all activities undertaken, and it takes time from the source specified for the system.

Time can be obtained through the use of protocol marking the time and Time Note Authority (ACA), which yields a time marked with the date and time of each action unique to electronic procurement. Note digital time can be used to prove that the electronic document is transmitted to the server procurement at the time indicated. Electronic procurement system can continuously synchronized with ARA by receiving time signals transmitted.

Through this mechanism, audit tracking implemented electronic procurement can use precise indication of the time to record all activities performed. Immediately after completion of the transfer of documents from the client site, all those documents can take time from the server.

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Documents with electronic signatures can be linked to accurately record time, whether the documents sent to the ARA, which seals on documents and legal time.

5.0 Reporting, recording and monitoring

Audit tracking mechanisms should be applied to any electronic procurement and management activities conducted through the system (eg tracing of loading / unloading of supply, various versions, approvals). Inspection of audit records can provide information for effective investigation of impermissible interference efforts, for example falsification of bidding documents by authorized users after the deadline for submission.

The mechanism for archiving data that applies to electronic procurement should also provide archiving of audit records in order to provide support in the event of a security incident investigations or disputes (thus ensuring mosrefuzim). Access to audit data must be limited to counterfeiters / changes / cancellations unauthorized.

5.1 Interoperability

The importance of technical interoperability of electronic procurement environment means that procurement should have appropriate liaison and open to support interoperability between different operating systems as well as systems and applications that are under development. E-procurement can be accomplished in a manner that enables interoperability with existing legacy systems, which enable the reuse of existing systems and minimizing costs. For treatment of conditions of interoperability, procurement should implement the following strategies:

Service-Oriented Architecture (AOSH): AOSH-has to do with independent building services, which can be combined into meaningful processes highest level of work within the context of an application system, such as procurement e.

AOSH describes various aspects of the application:

- Details ("particles") and the types of services (fragmentation means the size and degree of functionality in a particular interaction);
- The way the service building;
- How to combine the service;
- method of communication service at the technical level;
- Manner of service interaction semantic level.

With AOSH application in the design of basic components, implementers procurement system can provide significant improvement to the flexibility of the system, the reuse of business components simultaneously. This aspect should be part of the design phase of an electronic procurement system.

International open protocols based on XML (SOAP and XML-RPC), communication protocols based on XML should be used in cases of need for interoperability between platforms. Moreover SOAP and XML-RPC are standard components of almost any environment and make up two protocols that enable remote communication between platforms in standardized and appropriate.

Integration capabilities depend on the specific development framework which is used, depending on the development framework used, the electronic procurement system should be designed in a way that future interoperability capabilities improved through the adoption of appropriate standards.

One of the popular options is the use of J2EE. Liaison J2EE architecture (JCA) for J2EE framework, for example, can help create safe environment for system interaction.

JCA defines and enables the standard way to connect J2EE applications with heterogeneous information systems of enterprises (EIS). EIS consists of systems of enterprise resource planning

(ERP) systems, databases and applications existing different. Furthermore, JCA provides a number of mechanisms scalable, secure and transactions to enable connection to the EIS, which have significant market përshtatësve quite JCA to simplify the integration of enterprise applications.

5.2 Risk Management and Safety

Risk management and security are more than technical issues. Systems and procurement management should be administered within an appropriate framework of governance in order to create security.

This process not only requires the existence of security instruments (shields / firewalls, encryption / encryption, lock time / my locks), but also safety management system.

In this case apply international standards and methodologies IS audit risk, such as those published by the Association for audit and control information systems (ISACA) which relate to the concepts and approaches of the organization's overall risk management, as COSO ERM are, ARMS and ISO 31000.

The system should be regularly audited under these international standards. In cases where the systems available from any external source (for example Cloud service), then raised issues of transparency of controls - conditions in the Service Level Agreement (Malteser), which are essential for managing risks from external providers and should comply with international standards for risk management.

Other issues related to support, reliability and suitability of software and hardware.

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5.3 Reliability

The level of reliability of a system can be assessed in relation to the reliability of its components, enabling reliability requirements expressed at the component / unit, rather than to express the whole system level.

Perhaps the most critical event during the closing stages of submission of bids for bidders (e-bidding phase). In the case of electronic reverse auctions, most of the offers may come during the last minutes.

Before completing the electronic bidding, the supplier is required to access the system for the submission of bids.

However, it usually happens that the vendors to submit their bids near the end of the deadline for submission of bids. In addition, depending on a specific notice, the offer may consist of several files. This can result in data capacity of megabiteve which must be transferred from the IT environment of the supplier to electronic procurement, and stored on secure servers and convenient.

The combination of these parameters means that the closing of the bidding period for each notice can cause failures due to problems with voluminous capacity. Also, e-procurement can be damaged by obstructive events, including internet connection failures, malicious attacks, blackouts, disruption of software / hardware, etc.

Implementing the system must ensure that their systems can cope with these issues, and the need to prepare plans for the treatment of critical failures in the form of plans for continued work and disaster recovery plans.

Reliability requirements relating to the quality of the system and are usually defined quantitatively.

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6.0 Scalability

Electronic procurement systems should be designed to withstand enormous loads of transactions compared with the initial requirements. The efficiency with which this can be achieved in terms of cost, time, quality, etc. determines the scalability of the system. Good scalability of the system can be achieved through effective architecture of the software and / or hardware components needed.

6.1 Performance Evaluation

A system through which can be treated and to respond quickly to any request of the user, not only can accelerate procurement activities, but also can help users better understanding of different functionalities offered by system.

Usually may have activity that inevitably may require more time (eg zhbartja of documents). In such cases, system implementers should ensure that users are informed about the status of their claims, thus avoiding the cancellation of the activities of users or uncertainties ee status of their actions. So the performance requirements for electronic procurement depend on the expected number of users and offers. System implementers should plan shkallëshmërinë of software / hardware, and to establish systems through which they can achieve the stated objectives of performance.

Reaction time for testing the performance of electronic procurement should be measured in a data base which has significant amounts of data through simulation performance in real conditions. In addition, the real use of the system must be simulated including transfers and data zhbartjet support.

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6.0 Hardware

Required hardware includes a set of servers, the center for disaster recovery and safe center of data that will have the possibility of delivery reliability, service and risk management, as shown above. These requirements depend in part on existing infrastructure, the need to assess and operating environment.

6.1 Data Center

Data Center must have a dedicated network, application servers and database, as well as other supporting servers (such as record storage server, domain controllers and server to mark the time). For high availability requirements of the system used to couple servers and configured to support in case of failure. Availability of internet connection is highly desirable for continuous availability of electronic procurement system.

Recovery's required Jeopardy (FRRr), which should include uninterrupted internet connection and additional supply of electricity.

Disaster recovery in response to a disaster is declared. This means restoring or recovering an application or entire system. Recovering from disasters is becoming a very important aspect of enterprise. As devices, systems and networks become more complex, simply become even more things that can be disrupted. As a consequence, recovery plans should be adopted for the continuation of the work**.**

Electronic procurement platform can stand on its own or assists in the receiving environment of a data center with existing hardware, software, adequate frequency generation Internet connections, process management and additional managerial skills.

The system should have plenty of opportunities to provide protection / additional support at all times. Creating a support center for electronic procurement would be desirable**.**

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6.2 Internet connection

Frekuncor generation Internet should be adequate and accessible 24 hours a day and 7 days a week to provide users access to electronic procurement system. When using the system, there will be demand for the loading and unloading of files scanned great size. In general, businesses and government have good access to internet services.

6.3 Safety

Electronic procurement system and data centers should be designed as a complete solution of network security including verification, authorization, data privacy and security perimeter.

Physical access information processing IT, storage areas, and storage devices as well as supporting infrastructure (communication, energy and environmental issues) should be controlled through prevention, detection and minimizing unauthorized access or unintentional in these area.

Above is recommended the use of electronic signatures instead of digital signatures. This latter approach would be consistent with the work practice is less complicated and expensive and is common in many other countries.

Electronic payment arrangements

In electronic procurement system may be required electronic payments:

i) The payment for the tender documentation

ii) Tender Security.

iii)Safety performance.

iv)The payment of the contractor.

v) subscription to value added service of electronic procurement-mobile notifications,network services, additional space for storage of documents, etc.

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Electronic procurement system should include methods of payment via the Internet. In the absence of ports for payment via the Internet, can be applied to other possible options to secure payment system. The preferred option is the mechanism Automated Clearing House / automated clearing.

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