

SYSTEM DESCRIPTION
FOR
e-PROCUREMENT SOFTWARE APPLICATION

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e-Gov IMPACT Project

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IMPACT is a project implemented by **Internews Network**

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Introductory remarks

The e-Procurement system to be developed is intended to be used as a pilot project with restricted number of contracting institutions and products to be procured over the system. Following the intention and purpose of the pilot project as such, this system will later provide the necessary platform for a full scale expansion.

The system will be used in the Republic of Macedonia. All references in this document to legal text refer to the relevant legislation in the Republic of Macedonia.

Specific information about the requested interface language is to be found in chapter 4.

A Physical Database Model version 2.0 issued on 23/12/2004 regarding e-procurement has been published on IDABC (Interoperable Delivery of European e-Government Services to public Administrations, Business and Citizens) website of the European Commission:

<http://europa.eu.int/idabc/servlets/Doc?id=19466>

It is recommended that the model is adequately considered when developing software for this pilot project.

Overview

The e-Procurement System shall facilitate the public tendering process, providing the technical environment for vendors to participate in the public tenders in an open and transparent way. The tenders shall be published online and vendors can see that information by browsing the e-Procurement public website. The vendors will be able to list the open tenders and any other notices, download the tender documents and submit their bids. It is expected that the e-Procurement system will provide savings for the contracting authorities and increased business opportunities for the vendors.

1. Present Procurement Process Overview

This chapter contains a description of the present procuring procedure and methods within the City of Skopje that are relevant for the e-procurement as well.

Goods and/or services to be procured

Initially the Construction and Reconstruction of streets, roads and highways will be procured by the City of Skopje over the e-procurement system. Their characteristics make it possible to use a similar module regarding announcement of the tenders and their evaluation. Consequently this description focuses on procurement of such goods and services.

Relevant units within the City of Skopje

The following units within the City of Skopje have a role to play regarding procurement;

- The unit that is going to use the procured goods or services (requests a procurement)
- The Financial Unit (checks available financial resources)
- The Public Procurement Unit (processes the preparation and internal coordination of the planned procurement)
- The Mayor (takes the final decision)

- The Public Procurement Commission (conducts the procurement)
- The Archive (archives the documentation)
- IT Department (IT support)

1.1. Request for Public procurement

The initiating unit, being in this case the Unit for construction, urbanism, traffic and ecology within City of Skopje submits written Request for public procurement to the Financial Unit, where an authorized person verifies the availability of financial funds and its compliance with the Public Procurement plan. The request is thereafter sent to the Public Procurement Unit, Public Procurement Commission and to the Archive of City of Skopje. The Request contains the following information:

- Number and date of the Request. The information is provided by the Unit that submits the Request
- Item to be procured
- Source of funding; appropriate program, item number, sub-item number and position in the Budget of City of Skopje
- Estimated amount of needed funds;
- Type of Public procurement procedure (Open or Restricted Invitation for Bid);
- Criteria for selection of the most favourable bid, which could include parameters such as price, method and terms of payment, delivery period. The procuring unit will specify a number of options regarding methods and terms of payment, each given a specific ranking code. The bidder then chooses out of the list of options.

1.2. Decision for public procurement

The Public Procurement Unit reviews the Request, amends it if necessary, registers it and drafts the Decision for public procurement, which is signed by the Mayor. This Decision has the same structure as the request and is updated in accordance with the decisions by the Public Procurement Unit. The number and date of the decision is added.

This Decision is enforced by the Public Procurement Commission when signed by the Mayor.

1.3. Public announcement/submission of bids

Public Procurement Commission based on the Decision, announces an Open or Restricted call for bids.

In an open call procedure, the bidders provide all the necessary documents for the bidding on the tender including information about the company and the bid as such.

In case of restricted call the procedure is conducted in 2 phases.

Phase 1;

The bidders submit only documentation to proof their financial, economic and technical capability. Based on these documents the Commission selects a short list of bidders.

Phase 2;

A Request for proposals is submitted to the short-listed pre-qualified bidders, containing:

1. Description of the content of the proposal (prices of each position of the tender documentation; total price with separately presented VAT; delivery period; manner and terms of payment);
2. Criteria for the selection of the most favourable bid;
3. Due date for submission of the bids.

1.4. Evaluation and Award Decision

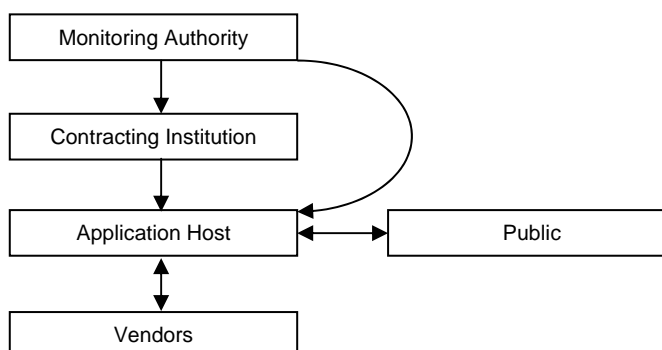
Based on the submitted bids the Public Procurement Commission documents all collected offers and evaluates them by using the pre-defined methodology of evaluation. The methodology is expressed in a set of analytical formulas, where the variables expressed various evaluation criteria, weighted and normalized according to the priorities that reflect a specific procurement process.

After the evaluation is completed the Public Procurement Commission proposes the most favourable bid to the Mayor and prepares the final Decision together with an explanation of the selection made. Once the Decision is signed, the Commission sends a Notification to the vendors about the selection made. After the expiration of the legally defined appeal period the Contract is signed.

A chart illustrating the present procurement process can be found in [annex 1](#)

2. Players

The following players are foreseen within the e-Procurement system:



2.1. Monitoring Authority

According to Article 28 of the Law on Public Procurements the Public Procurement Office, (hereinafter PPO), has the task of monitoring whether public procurements are conducted in accordance with the relevant legislation and has thus a vital role in this pilot project. PPO shall also among several tasks, propose modifications to the legislation.

2.2. Contracting Institution

By Contracting Institution is understood the legal entity that procure the goods or services. The Contracting Institution shall consequently be registered in the system when using the application to conduct procurement.

In this case the Contracting Institution is the City of Skopje. The authority within the City to decide and act with regard to procurement is regulated by specific regulation, to which the system must be adequately adapted.

2.3. Application Host

By Application host is understood the entity that from a technical point of view operates, maintains and manages the system. Several entities could be considered to host the system.

The system now to be developed shall be neutral with regard to the entity finally nominated to be the Application host.

2.4. Vendors

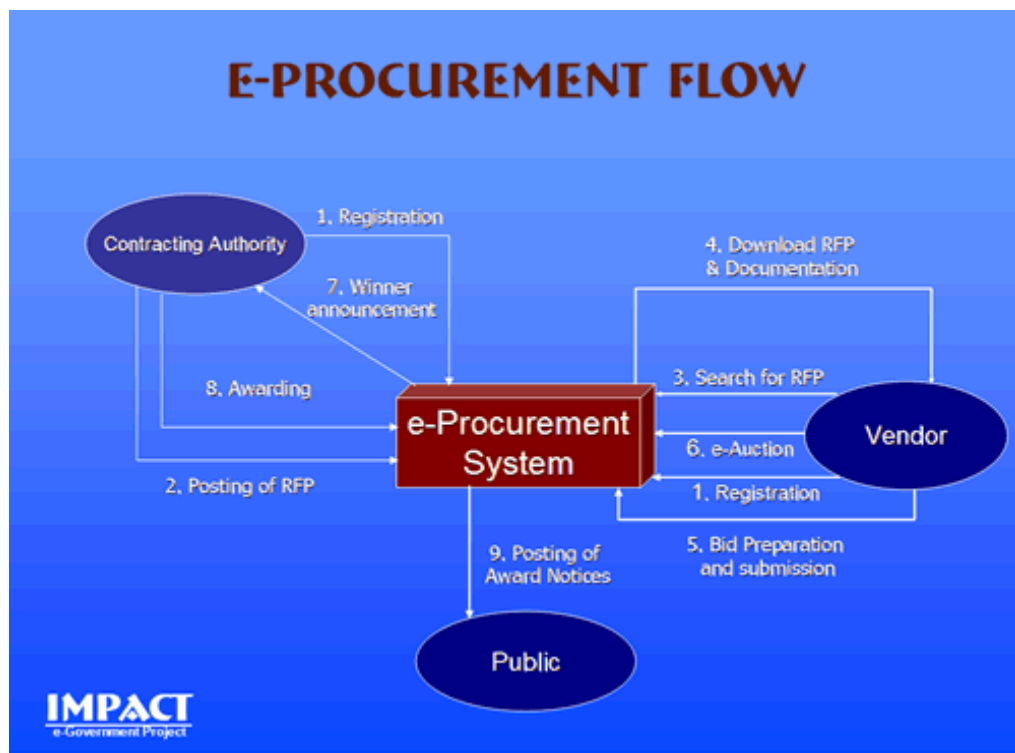
By Vendor is understood the entity that uses the e-procurement application to submit bids within the system.

2.5. Public

By Public is understood any legal or physical person that is not necessarily a vendor as well. The system description determines which parts and / or modules of the e-procurement should be opened to the public.

3. e-Procurement Software Modules

This chapter describes how the e-procurement system shall operate.



The design of the electronic procurement system is modular and it is composed of separate software modules. The following software modules are foreseen for the specific e-Procurement system:

3.1 Module 1: Registration

The e-Procurement system should allow registration of two types of users of the system: Contracting Institutions and Vendors

Contracting Institutions

For the pilot project City of Skopje is the only contracting institution to be registered but the system should be ready to accept registration of other Contracting Institutions as well.

The registration of the Contracting Institutions means registration of the user group. The users within the Contracting Institution have different roles and thus normally different access rights but they are all related to the same user group named by the real name of the Contracting Institutions. The roles of users within the Contracting Institution are:

- **purchasing unit:** with rights to send request for procurement and to monitor the status of the procurement;
- **financial unit:** checks whether the request for procurement is in accordance with the annual procurement plan and approves or denies the request;
- **public procurement unit:** monitors and provides logistical support to the procurement process;
- **evaluator:** prepares the tender documentation, uploads the document
- **authorised individual within the contracting institution,** in case of the City of Skopje the Mayor: approves the request for procurement and announces the winner.

Vendors

The present Law on Public Procurements requests that specific documentation of the vendor is submitted in original paper documents. Consequently the registration of the vendor should be a combination of the electronic and the paper based procedure.

Electronic procedure: The vendor applies for registration using the registration menu of the public website. The main fields that should be available in the registration screen are company name, tax identification number, street address, telephone, fax, contact person details, valid e-mail address. Once the required fields are completed and the data is sent to the system, the vendor is informed about the next step in the process of registration.

Paper based procedure: The vendor shall also provide and deliver the following documents as proof of its financial and economic capability:

- proof of solvency from the Central Registry;
- confirmation from the Public Revenue Office for paid taxes, contributions and other public fees;
- document from the competent court for registered activity (for legal entities);
- license from competent body for operations (for physical persons);
- certificate that no bankruptcy or liquidation procedure has been initiated and
- certificate that it is not subject to effective court decision for interdiction of its business activities as a preventive measure.

Documents shall not be older than six months, and shall be submitted in original or copy verified by the vendor.

After checking the documents the authorized person within the contracting institution approves/rejects the registration of the vendor. Within the later expanded system, comprising a number of contracting institutions, the application host should be responsible for the registration of vendors.

The registration of the vendor should be based on his tax identification number and the e-Procurement system:

- creates a unique username for the vendor;
- creates a password which must be longer than 8 letters and/or digits in order to ensure possibly higher level of security;
- associates the digital certificate (issued outside the e-procurement system using CA tools) with the username of the vendor.

The e-procurement system should print the information about the username and the password and along with the digital certificate and this will be sent to the vendor by regular mail.

Initially the username expires automatically after six months from the date the registration was accepted. The software should be able to change this period in accordance with possible changes of the Law on Public Procurements. The Software should remind the registered vendors about the procedure for renewal of the registration 20 days before expiration.

Renewal: The process of renewing the registration is the same as the first registration of the vendor. Pending legal changes, the renewal should be done on-line. For security reasons a new username/password and digital certificate must be issued and sent to the vendors.

3.2 Module 2: e-Request for public procurement

The procuring Unit for construction, urbanism, traffic and ecology within the City of Skopje logs on to the system and creates e-request for public procurement which is consisted of:

- Number and date of the Request
- Item to be procured;
- Source of funding (Budget of City of Skopje - appropriate program, item number, sub-item number and position)
- Estimated amount of needed funds;
- Type of Public procurement procedure (Open or Restricted Invitation for Bid);
- Some of the criteria for selection of the most favourable bid:
 1. price;
 2. method and terms of payment (the procuring unit will specify number of options each given a specific ranking code);
 3. delivery period (the procuring unit will specify number of options each given a specific ranking code);
- Attachment: The previous plans developed within the City of Skopje for the relevant constructions will serve as a guidance for the construction work to be procured and should thus be made available to the vendors.

3.3 Module 3: e-Decision for public procurement

Public Procurement Unit downloads the attachment, if necessary makes changes to the request for procurement and finalises the e-Decision.

Each e-Decision should have a unique reference number associated with the unique number of the Public Procurement Unit.

The authorised individual within the contracting institution, in case of the City of Skopje the Mayor, can review the e-Decision for public procurement and can sign it electronically using its own digital certificate. Another option would be to print the e-Decision and sign the document with hand signature for further reference or as a backup hardcopy of the decision for the public procurement.

3.4 Module 4: e-RFP (e-Request for proposals)

Public Procurement Commission based on the e-Decision for Public Procurement prepares Request for Proposal as well as Tender Documentation, which can be scanned and prepared as PDF file.

The e-RFP is posted on the PP Web Site and at the same time is sent electronically to the Official Gazette to be published.

3.5 Module 5: Objection filing

All vendors should be able to file an objection regarding the tendering procedure through an on-line form. Such objections will be accessed by the Public Procurement Commission. The Commission later decides on which of the resolved objections will be published on the Web site.

The right of filing objections stops after the Decision for selection of the most favourable bid is made.

3.6 Module 6: On-line Q&A

Q&A module should be available online for the bidders to ask questions and to get answers to clarify matters regarding open tenders. The forum should have sub-items listed according to the reference number of the open RFP's. The Contracting Institutions determine for each new RFP the time period the forum should be open with regard to that RFP. Only registered vendors can submit questions. Answers given by the Public Procurement Unit are published on the Forum and are available for all vendors. The identification of the vendor who asked a question is not disclosed. When the forum is closed with regard to a specific RFP, the information on the forum should be archived.

3.7 Module 7: e-Bidding (Bid Preparation and submission)

Interested vendor prepares the bid by filling in the required criteria designated by the Public Procurement Division. The vendor should also upload all necessary documents required.

The bid cannot be submitted before all necessary fields are filled and all documents are uploaded and the bid is digitally signed with the digital certificate designated to the vendor during the registration process.

The system should ensure secure transmission of the bid to the public procurement site using SSL encryption.

3.8 Module 8: Reception and encryption

The system sends a receipt to the vendor that has submitted a bid specifying the date and time the bid has been received.

After reception the bids should be encrypted and no one should have access to the information until the bid should be opened.

3.9 Module 9: e-Auction

The system shall provide the necessary software for a “**Negative**” or (reverse) **auction**. The contracting institution specifies the initial maximal price of the product that shall be procured. The bidders can submit unlimited number of offers within the period of time open for the bidding. The latest submitted bid is published but no information is given regarding whom submitted that bid. Each new bid must be lower than the latest bid.

This form of auction is usually practiced when the only criterion for the selection is the price. The system now to be developed must incorporate also other potential criteria, such as terms of delivery, terms of payment etc. The contracting institution shall provide the ranking taking into account all criteria to be used. For each bid submitted, the system should calculate the result of the ranking and thus be able to evaluate whether or not a new bid is more favourable than the previously submitted bid. If the bid submitted is not more favourable than the latest submitted bid, the bidder shall be notified accordingly.

Until the moment of closing the auction, the name of the bidders remains a secret for the rest of the bidders.

3.10 Module 10: e-Bid opening

When the pre-specified period for reception of offers is closed and the system of evaluation is activated; all the criteria and parameters for evaluation are loaded to the system.

3.11 Module 11: e-Awarding

The system announces the winner and reports the conducted selection process to the Evaluation committee.

Evaluation committee checks if the system of selection performed properly. When confirmed, the authorized person at the contracting institution digitally signs the decision.

The decision is then sent to all the bidders and announcement of the winner is posted on the public procurement website.

The system sends data for the awarded contract to the registry for public procurement in XML format.

3.12 Module 12: Complaints posting and their resolution

If a bidder files a complaint against the decision, the procedure is checked by a predefined group of competent persons within the contracting institution. The group must be able to access all the relevant information received and processed during the bidding. The decision and the considerations leading thereto will be posted on the web page.

4. Language

The language that should be displayed on the public e-procurement website should be provided in all of the following three languages, listed in alphabetical order: Albanian, English and Macedonian. For the Macedonian language the Cyrillic alphabet must be used in Macedonian code-page standard.

For the interfaces used by the contracting institution Albanian and Macedonian language should be used, as described above.

5. Database organization

The e-Procurement database consists of the physical tables, grouped together in logical modules:

5.1 Users Module

This logical module handles all data relevant to users registered with the system. The user can be a vendor or a person within the Contracting Institution. The users could be members of a group. Contracting Institution is defined as a group of users. The access rights of users are defined in the context of each group, and users may be members of at least one group.

5.2 Resources Module

This logical module stores resources – i.e. directories, files – of the application. In essence, the database keeps the meta-data of each stored resource, which is essential in ensuring that it is secure, not tampered with and not corrupted when it is retrieved.

5.3 Access Module

The task of this logical module is to keep track of the access rights each principal – i.e. user or role assigned to users – has on each of the resources of the system. A principal, as mentioned above, may be a user – individual – or a role – a concept that encloses any number of users and delegates to them its access rights. Consequently, access rights may be assigned to users as distinct entities or as members of a group's role.

5.4 RFP Module

This module holds all the tables relevant to creating, updating, manipulating and following the progress of a call for tenders. In essence, it carries most of the business logic specific to this application.

5.5 Bids Module

This module concentrates all information relevant to the tenders submitted for a call for tenders.

5.6 Criteria Module

This logical module encapsulates the criteria that are set for a call for tenders, for guiding the tender evaluation processes. The criteria are classified into two categories, one for participation and one for awarding, a fact reflected from the existence of two sets of criteria-tables, one for each category.

5.7 e-Auction Module

The e-Action model captures the state of any active/finished e-Auction. This logical module should be consisted of tables that will define the status of the e-auction, e-auction awarding criteria (usually the lowest price) and the lowest price bid.

5.8. Q&A Module

This logical module should be consisted of tables which capture all the questions and answers specific to any of the RFP's issued by the system.

All modules should have proper back-up and recovery procedures.

6. ICT Infrastructure of the application host

From a technological perspective, the Information System - City of Skopje (ISCS) is supported by a local area network, which is an aggregation of significant number of powerful workstations and servers (PCs), and communication devices. The concept is based on the client /server paradigm, where Windows environment is mostly used for the former, and combined with Linux for the later.

The need to provide both Internet and Intranet services and applications makes TCP/IP the principal protocol suite both for internal and external communications and networking. The underlined structured cabling allows up to Gigabit transmission capacity.

The security and the reliability of the IOCS is endorsed by firewalls and antivirus software, the appropriate back-up mechanisms, as well as with a number of UPSs.

The development and the management of the IS databases is based on three different DBMSs such as MS SQL, MySQL, and Lotus Domino. Lotus/Notes Domino platform is also dominant in the provision of Internet services, both externally and internally.

A leased-line with the capacity of 128 Kbps gives a link to the Internet, both for the employees of the City of Skopje, as well as for the general public to access the open information services provided by the ISCS.

In summary, the computing and communication infrastructure of the ISCS, as shown in annex 2, is an adequate and easily extensible (when needed) platform for the provision of the current and moreover the future e-services by the City of Skopje.

7. Security requirements

The e-Procurement system works with highly sensitive data that must be secured. Since MKD legislative framework still does not specify a simple uniform solution for the use of any particular user authentication method, it is recommended to support a variety of authentication mechanisms such as username/password or electronic signatures. This will significantly enhance the interoperability of e-Procurement system.

7.1. Authentication mechanisms

- **User names/Password:** One has to set up a minimal length for each password (typically 8 to 12 characters, and a blend of alphanumeric and special characters, quite different then the user name and for instance a mixture of six letters – three capital and three small, three digits and three special characters, and to be changed every couple of

months in general or to last for the duration of one e-Procurement process or the registration period).

- **Digital Certificates:** The software package should be PKI enabled for all the modules of the system. The invocation of the digital certificate by the user generates a request that is routed to the CA via the application. On successful authentication, the login request is accepted and the user is allowed to access designated software modules and to make a transaction.

7.2. Identification and Authorization

- **Authenticate identity:** Digital certificates used must allow individual users, organizations, and web site operators to confidently validate the identity of each party in an Internet transaction.
- **Authorize access:** The modules of the system should allow restricted access for different users of the system.

7.3. Data transfer protection (transaction protection)

- **Authorize transactions:** Digital certificates the software application is using should control access privileges for specified online transactions.
- **Verify integrity:** The digital certificate must ensure that the message or document the certificate "signs" has not been changed or corrupted in transit online.
- **Ensure privacy:** Digital certificates used must protect information from interception during Internet transmission.

7.4. Security and audit trail

All electronic procurement actions and system events should be logged and monitored continuously in order to keep track of changes, in terms of security and in order to provide statistical reports for all involved parties.

The system should log events, transactions and access control and should provide a module for automated processing of system logs, offering the capability of generating reports on user/system events. Such reports can bring in light attempts to perform illegal activities, like changing data and accessing confidential information. Only authorised personnel / state auditors should be able to gain access to this tool.

7.5. Digital certificates

The software package should be PKI enabled for all the modules of the system. When a registered user uses the digital certificate to authenticate, the request is routed to the CA via the application. On successful authentication the login request is accepted and the user is allowed to access designated software modules and to make transaction.

7.6. Security of uploaded documents

- Documents virus check
- Document corruption check
- Digital signature verification
- Document encryption verification

8. Performance and Scalability

The solution should be scalable to support growing numbers of users while adhering to performance requirements.

The e-Procurement system must be able to establish connections with existing applications within the Contracting Institution and to be able to exchange data with them in XML format. The two core applications within the City of Skopje that needs interface with the e-Procurement system are:

- Work Flow for archive books and documentation of procurement,
- System for following the realization of Contracts about procurement and with Public Procurement Bureau.

9. Backup and Recovery

The e-Procurement system is an around the clock system where the business continuity is crucial and the vendor of the software is obligated to cooperate with the application host on defining and testing the back-up and recovery procedures for the developed system. The backup should be done on external media and in accordance to the standards defined by application host.

10. Reporting

The present legislation requires Contracting Institution to be in a position to report the ongoing or completed public procurements upon request from the Governmental authorities. Statistical analysis of e-Procurement data must be possible. Contracting Authorities can understand their spending policy and savings generated from e-Procurement, allowing for better spending policies and more efficient procurement procedures. Suppliers can benefit from obtaining accumulated data on their e-Procurement participations.

Advanced reporting system for vendors, contracting institution and auditors

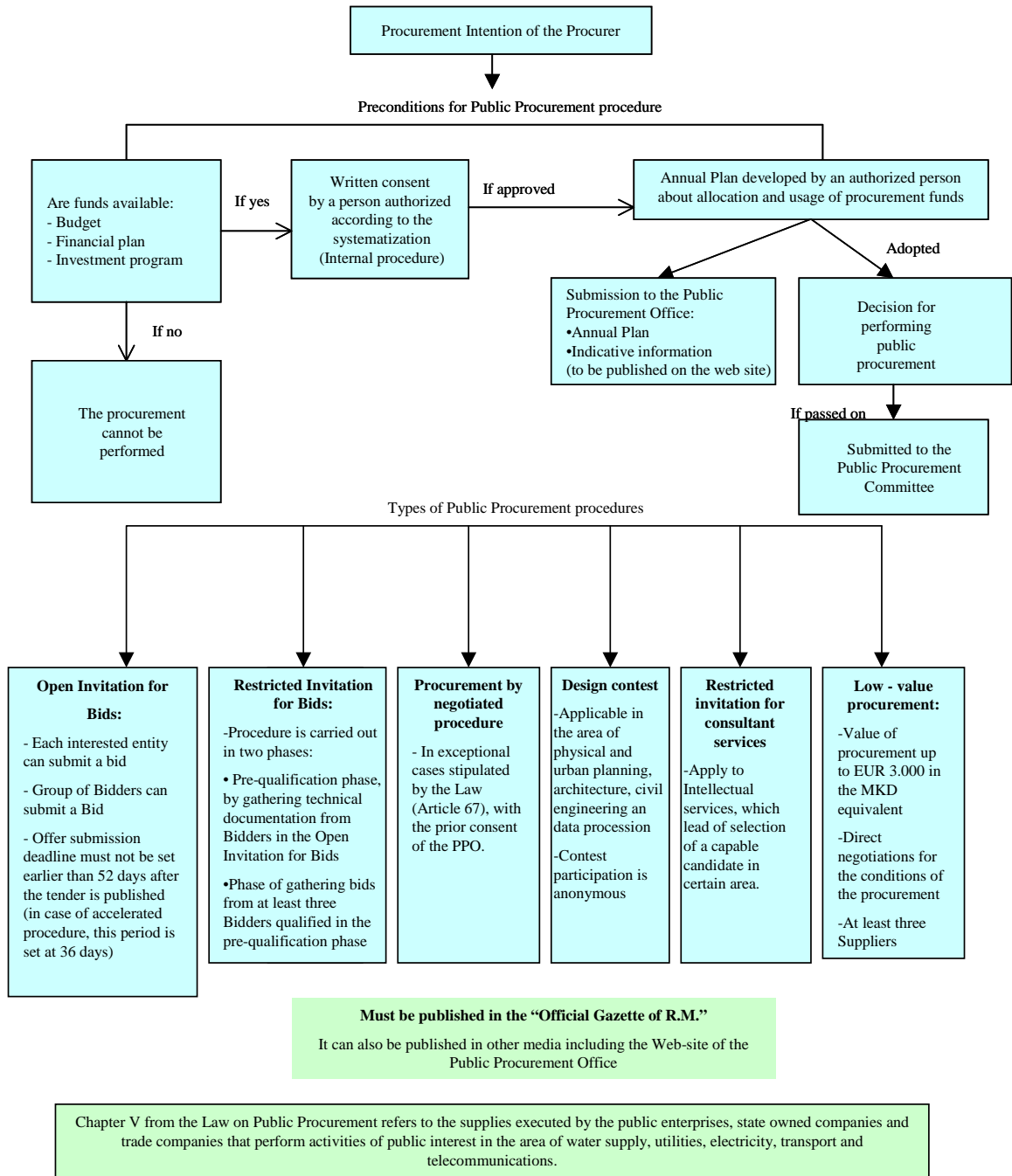
Vendors should be able to get statistical information about procurements the vendor previously has participated in.

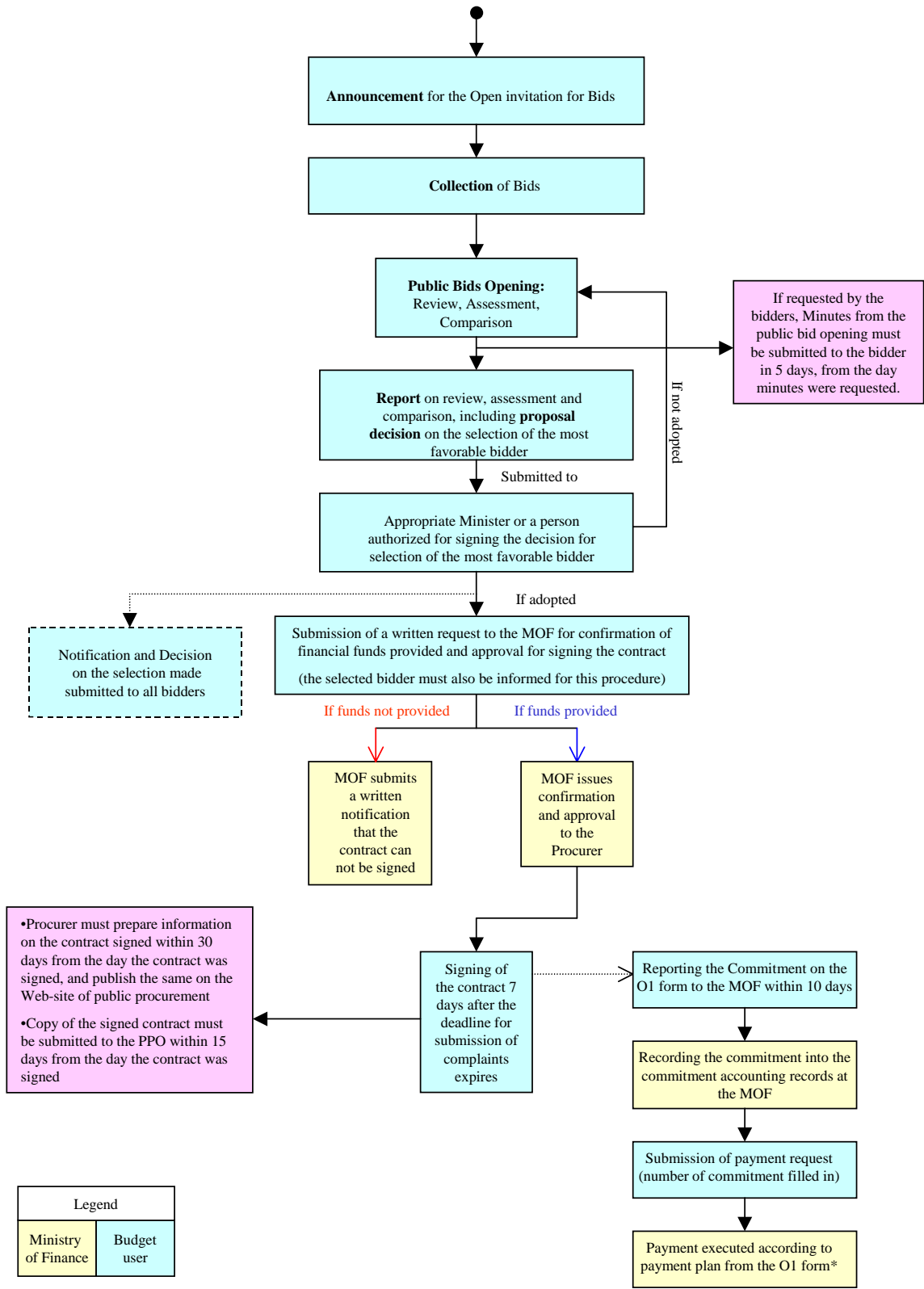
Information regarding accrued spending, specified for each individual budget item, should be continuously available for the **Contracting Institution** as well as the savings achieved through the e-procurement system, as calculated in relation to the opening maximum price determined by the contracting institution.

Auditing authorities should be in a position to study the information stored in the system logs.

ANNEX 1

PUBLIC PROCUREMENT PROCEDURE





ANNEX 2

