

System Description
e-Budgeting
for the Ministry of Finance

INTRODUCTION	3
1. STAKEHOLDERS OF THE SYSTEM.....	3
1.1 DEPARTMENT OF BUDGETS AND FUNDS OF THE MOF	3
1.2 TREASURY DEPARTMENT OF THE MOF AND OTHER INDIVIDUALS WITHIN THE MOF .3	
1.3 USERS OF THE FUNDS OF THE BUDGET OF THE REPUBLIC OF MACEDONIA.....	3
2. LEGAL BASIS FOR PREPARATION, ADOPTION AND EXECUTION OF THE BUDGET OF THE REPUBLIC OF MACEDONIA.....	4
3. OVERVIEW OF THE PROCESS.....	5
4. CURRENT ICT INFRASTRUCTURE OF THE MOF.....	8
5. ARCHITECTURE OF THE E-BUDGETING SOFTWARE SOLUTION.....	8
6. MODULES	9
6.1 MODULE I - PREPARATION OF THE BUDGET CIRCULAR	9
6.2 MODULE II - PREPARATION OF THE BUDGET REQUESTS	9
6.3 MODULE III – PREPARATION, ADOPTION AND EXECUTION OF THE BUDGET...	10
6.4 MODULE IV - SIMULATIONS	11
7. ACCESS RIGHTS	11
8. SECURITY AND SAFETY WITHIN THE SYSTEM	12
9. LANGUAGE	13
10. BACK UP AND RECOVERY	13

INTRODUCTION

The USAID funded e-Gov Project (hereinafter: e-Gov Project) and the Ministry of Finance of the Republic of Macedonia (hereinafter: MOF) shall create, design and implement an e-Budgeting software application.

The application shall cover the overall process of preparation of the Budget of the Republic of Macedonia and shall be compatible with the existing software and IT infrastructure within the MOF. The e-Budgeting application will communicate with the Treasury database and allow for the final budget to be uploaded into the Treasury database. It should allow Treasury budget execution data to be downloaded from the Treasury database and uploaded into the e-Budgeting application for analysis of the budget.

The e-Budgeting SW application should provide at least the following benefits:

- Simplify and improve the process of preparation of the Budget of the Republic of Macedonia;
- Improve transparency and communication between the Budget users and the Funds with the MOF
- Provide better analysis and planning of the Budget

1. STAKEHOLDERS OF THE SYSTEM

1.1 Department of Budgets and Funds of the MOF

The *Department of Budgets and Funds of the MOF (the Budget Analysts)* plays one of the key roles in the process of preparation, submission and adoption of the Budget, and also in the process of monitoring of the Budget execution.

1.2 Treasury Department of the MOF and other individuals within the MOF

Treasury Department of the MOF is responsible for the actual execution of the Budget funds. A Treasury software is already in operation and the e-Budgeting software must consequently be fully integrated therewith.

Besides the Department of Budgets and Funds and the Treasury Department also other individuals within the MOF shall be identified as users.

1.3 Users of the funds of the Budget of the Republic of Macedonia

Budget Users and their spending units use the funds of the Budget of the Republic of Macedonia (legislative, executive and judicial authorities). They receive budget circulars from the Department of Budgets and Funds of the MOF and prepare Budget requests according to the circular. The Budget requests are submitted to the Department of Budgets and Funds of the MOF. The Budget Users communicate with the Department of Budgets and Funds of the MOF and mutually discuss and make necessary adjustment in the Budget requests.

Funds: Pension and Disability Insurance Fund; Health Insurance Fund; Road Fund and the Employment Agency of the Republic of Macedonia also submit their Proposal Budgets to the MOF.

2. LEGAL BASIS FOR PREPARATION, ADOPTION AND EXECUTION OF THE BUDGET OF THE REPUBLIC OF MACEDONIA

Here is listed the legislation relevant to the budget process. It is important that the contractor has a good knowledge of this legislation when developing the software.

- ***Constitution of the Republic of Macedonia*** defines the position and the role of the Government and the Parliament to propose and adopt the budget

- ***Law on Budgets*** (Official Gazette of the Republic of Macedonia no. 64/2005)

Budget of the Republic of Macedonia for current fiscal year, or 2006 (“Official Gazette of Republic of Macedonia “ nos. 120/2005)

- ***Law for Budget Execution of Republic of Macedonia for current fiscal year, or 2006*** (“Official Gazette of Republic of Macedonia “ nos. 120/2005)

- ***Law on Public Procurement*** (“Official Gazette of Republic of Macedonia” nos. 54/2004)

- ***Revenue Classification*** (“Official Gazette of Republic of Macedonia” nos. 100/2001; 45/2003; 07/2004 and 85/2004)

- ***Expenditure Classification*** (“Official Gazette of Republic of Macedonia” nos. 85/2004; 04/2005; 24/2005 and 86/2005)

- ***Guidelines on the manner of managing the budget users and the spending units during the performance of the treasury activities*** (“Official Gazette of Republic of Macedonia” nos. 10/04);

- ***Guidelines on the manner of recording, distribution and refund of the public revenues*** (“Official Gazette of Republic of Macedonia” nos. 08/06);

- ***Guidelines on the manner of recording the commitments of the budget users and the spending units*** (“Official Gazette of Republic of Macedonia” nos. 55/03 and 41/05);

- ***Guidelines on the manner of keeping the register of budget users and spending units*** (“Official Gazette of Republic of Macedonia” nos. 99/01);

- ***Guidelines on the manner of opening and closing accounts of the budget users and the spending units*** (“Official Gazette of Republic of Macedonia” nos. 90/01 and 117/05);

- ***Guidelines on the form and the content of the payment requests of the budget***

users and the spending units of the Budget of the Republic of Macedonia (“Official Gazette of Republic of Macedonia” nos. 70/02)

- *Guidelines on the manner of executing the warrants issued upon basis of enforced collection decisions and which indebted the treasury account, i.e. the account of the debtor which is part of the treasury account* (“Official Gazette of Republic of Macedonia” nos. 55/03, 45/05 and 115/05).

- *Methodology for strategic planning and preparation of the Annual program for the performance of the Government of the Republic of Macedonia*

- *Decision for the strategic priorities of the Government of the Republic of Macedonia*

3. OVERVIEW OF THE PROCESS

The Budget of the Republic of Macedonia is an annual plan of revenues and expenditures for the central budget and the budgets of the funds.

According to the *Law on Budgets* (Official Gazette 64/2005), the Ministry of Finance – Department of Budgets and Funds prepares a **budget circular** - instructions for preparation of budget requests. The budget circular is prepared according to previously adopted Fiscal strategy and maximum approved ceilings for spending.

The deadline for submitting the budget circular to the budget users and the funds is June 15th.

A **special budget circular for the municipalities** is prepared by the Department of Budgets and Funds of the MOF. The Minister of Finance sends the budget circular to the mayors of the municipalities by September 30th. The Budgets of the municipalities are adopted according to the Law on financing the municipalities and are independent from the Budget of the Republic of Macedonia in regards to the adoption.

Each Budget user/fund prepares a **budget request** in accordance to the budget circular and submits it to the Department of Budgets and Funds of the MOF.

If the budget users or the funds do not submit any budget request in the period prescribed by the Law on Budgets, the MOF prepares the request for them.

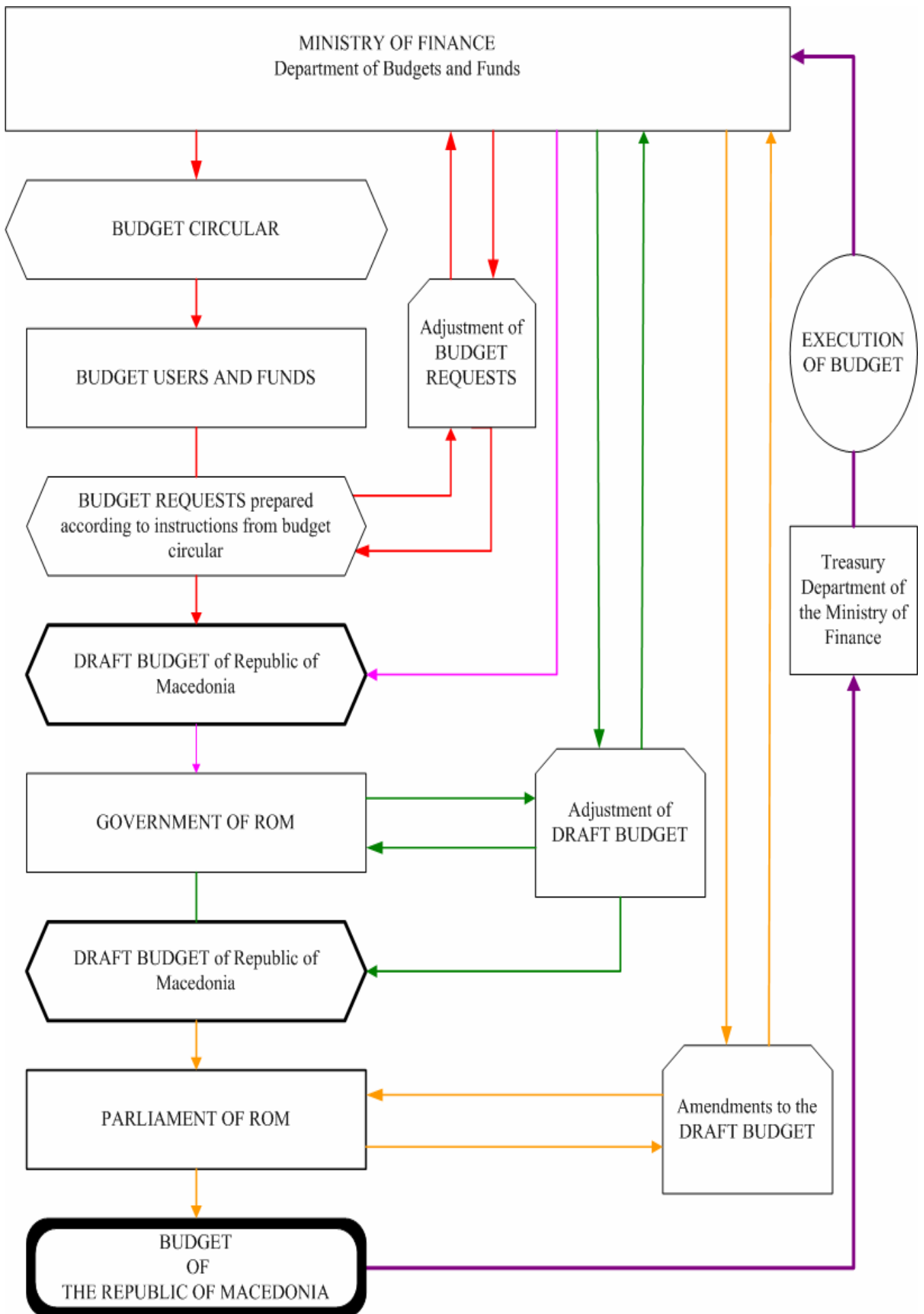
The budget analysts within the Department of Budgets and Funds of the MOF revise, analyze and make adjustments to the Budget requests in accordance with directives of the MOF. After all requests are revised, the Department of Budgets and Funds creates a **draft Budget** which should be submitted to the Government by November 1st.

The Government may request modifications to the draft, which thus are made by the Department of Budgets and Funds. The **final draft budget** is then submitted by the Government to the Parliament by November 15th. The budget should be adopted by the Parliament at the latest by December 31st.

The adopted version of the Budget is uploaded into the Treasury system and the Treasury Department of the MOF then executes the Budget. The Treasury Department analyses the process of execution, together with the Department of Budgets and Funds of the MOF. The Department of Budgets and Funds develops a rebalance of the Budget when required.

Table 1. Process of preparation and adoption of the Budget of the Republic of Macedonia

Action	Institution	Period
Maximum amount of funds approved for the next year, defined according to the Fiscal Strategy	Government of Republic of Macedonia	End of May
<i>Budget circular</i> is prepared according to adopted Fiscal Strategy with approved ceilings and submitted to the Budget Users and Funds	Ministry of Finance <i>Department of Budgets and Funds</i>	June 15
<i>Special budget circular for the municipalities</i> is prepared and submitted to the municipalities	Ministry of Finance <i>Department of Budgets and Funds</i>	September 30
<i>Budget requests</i> prepared according to budget circular and submitted to the MOF	Budget users and Funds	August 15
<i>Draft Budget</i> is prepared after all budget requests are adjusted and approved by the MOF and then it is then submitted to the Government of Republic of Macedonia	Ministry of Finance	November 1
Final draft Budget is submitted to the Parliament	Government of Republic of Macedonia	November 15
The Budget is adopted.	Parliament of the Republic of Macedonia	December 31



4. CURRENT ICT INFRASTRUCTURE OF THE MOF

<i>Base</i>	<i>Name</i>
Operation System	Debian 3.1r Linux “Sarge”
Main Database	DB2 UDB 8.1 for Linux
Database on remote site	DB2 UDB c-Max or MySQL
Application Server	LAMP (PHP, Python) stack or WebSphere or Apache TomCat
Client side software at the MoF	Delphi 7, Magic
Web Server	Apache on Linux

5. ARCHITECTURE OF THE e-BUDGETING SOFTWARE SOLUTION

The solution should be based on the current ICT infrastructure in the Ministry of Finance. Special attention should be paid on the modularity and scalability of the system. The new system should be built on security standards.

- *Modular design*
Modular design means that the application is built on functional units that communicate with each other to make one whole application. Each module performs functions which are grouped by logic and are strictly defined in the budgeting process. The modules should be scalable to accept new features which can be added in the future.
- *Multi-tier and client/server architecture*
The application will use the classical client/server architecture for the local users, as well as the WEB 3-layer solution as alternative access. WEB portal will have all the necessary specification for distance users, in this case specifically in the part of budget preparation, by which the budget users within their responsibilities will be involved directly in the process of budget creation. The web application should be fully compatible with the main industry standard browsers, such as IE 6.0 with SP1, Mozilla 1.5.1, and Opera 8.X for Windows and UNIX/Linux platforms. Additional considerations with respect to performance, variety of applications and security may be met by possibly using thin clients.
- *Interaction with other applications*
This system will provide exchange of data with various databases existing and maintained within the MOF (Data from the Treasury system, Data on the local self-government units) and will provide creation of various reports based on these data.

- *Export/Import of the data.* The system must be able to export and import data in ODF¹ (Especially ODS - Open Document Spreadsheet), as well as Microsoft Excell (.xls) format.
- *Reporting.* The system must include intuitive, efficient and powerful Report Engine, which the budget analyst will use for individual creation of their own reports, detached from the prescribed and standard reports.

6. MODULES

6.1 *Module I - Preparation of the budget circular*

This module will provide the Ministry of Finance – Department of budgets and funds the capability to prepare the budget circular. In this manner the MOF will fulfil its obligation, which is prescribed by the Law on Budgets (Official Gazette 64/2005).

The process of preparation and the content of the budget circular are prescribed in the article 19, paragraph 1 and article 20 from the Law on Budgets (Official Gazette 64/2005).

The budget circular is intended to provide policy direction and instructions for preparing the budget for the upcoming fiscal year and is revised annually.

The Department of Budgets and Funds shall use this module to develop the budget circular for each budget cycle, which means that the Department of Budgets and Funds shall have the option to make changes to the form and content of the budget circular, if necessary.

6.2 *Module II - Preparation of the budget requests*

This module will provide the budget circular to the budget users and funds in order to prepare and submit their budget requests.

This module shall exist in on-line and off-line version.

The budget user will have the option to log in the system and enter the budget circular previously prepared and authorized by the MOF, through secured and confidential canal. The budget circular will include all necessary ceilings and balances (dynamic form) available for filling in on-line. The system must provide for temporary saving of the data adjustments that the budget users/funds makes in the budget requests, in a temporary database on the server, until the budget request is finally completed, authorized and signed with digital certificate. After successful authorisation of the digital certificate validity, the budget request is considered as officially submitted to the Department of Budgets and Funds of the MOF and is saved in the internal database where only final and official data from the budget users are stored.

The form and content of the budget request is prescribed in article 23 from the Law on

¹ ODF – Open Document Format, see <http://www.oasis.org> for more. ODF is standard format used in .OpenOffice 2.x.x

Budgets (Official Gazette 64/2005).

When the budget users/fund log in the on-line version, several option will be available to them: view in the draft version of their current budget request; view in the final version of their budget request; search option in the balances of the budgets from the previous years, and other options necessary for creating the current budget request and planning of their budgets for the following years.

Each budget analyst may view the preparation phase of the budget request (from the temporary database) for the budget user/fund assigned to them, if requested and permitted by the budget user/fund.

An off-line version of the budget circular is created for the budget users/funds that are not on-line 24 hours. Consequently an off-line version of the module should be created, which will be installed locally on the budget users/funds system. These budget users/funds should use this module for preparation of the budget request and then submit the final/official version on a floppy, CD or other electronic media to MoF. If some upgrades and changes are made to the on-line version of the module, the MOF will locally upgrade the module.

6.3 *Module III – Preparation, adoption and execution of the budget*

This module shall function locally within the MOF – Department of budgets and funds.

Each budget analyst shall use this module for preparation of the proposal budgets of the budget users/funds assigned to them.

This module shall include options for processing of two budget cycles:

- the budget cycle for the next year
- budget rebalance of the budget for the current year
- projections for the three following years

When the budget users submit the budget request through Module II, they are saved in the system and each budget analyst may view only the budget requests of the budget users/funds assigned to them.

This module will provide the budget analysts the ability to review the balances, balance positions, number of employees, structure of employees, expenditure classifications; revenue classifications, functional classifications; classification by government programs, checking of the budget requests, adjustment of the request to previously defined ceilings and government strategies – creating proposal budgets. When a new version of the draft budget is developed the system shall save the previous versions until the final version of the draft budget has been completed.

The content and the form of the draft Budget of the Republic of Macedonia is prescribed by article 29, paragraph 2 from the Law on Budgets (Official Gazette 64/2005).

The final version of the budget, adopted by the Parliament, is uploaded in the Treasury system. The data on the execution of the budget will be inserted by the Treasury Department of the MOF in the e-Budgeting SW application on a daily basis.

Each budget analyst will be able to monitor the execution of the budget, for the budget users assigned to them.

The system will provide creation of reports based on a variety of parameters, fixed and variable.

The module should provide option for rebalancing of the budget at any time and should also provide the option for distribution of the planned funds in accordance to the dynamic of spending (technical rebalance).

6.4 Module IV - Simulations

This is a value added module, which may serve as a basis for a future full-fledge decision support engine for interactive situation analysis that will eventually produce few near-optimal alternatives of the annual budget. The usage is limited to the internal affairs of the Department of Budgets and Funds. At this stage, the module will be mainly used as a model checker for running simulations that create different outcome states for the budget proposal.

The simulation module, which will run various scenarios on a same model or the same scenarios on different models, should be capable of identifying pre-conditions based upon post-conditions, and vice versa, as well as trace the causal relations between different budget variables and parameters. This will be necessary to create the decision history for the processes of explanation and justification, which have to be sound and intuitive.

7. ACCESS RIGHTS

Each user of the e-Budgeting SW application shall be assigned strictly defined access rights, in accordance to the assigned responsibilities and authorities. The IT Department of the MOF, which will be the *system administrator*, shall define and assign such rights.

The bidder must thus provide an *administrator's module*, which will offer the option for creating groups of users and individual users, who will be assigned with privileges and users rights to the level of database, as well as to the level of application. The system must keep records of each input and change; who made it and similar records; all in order to provide the necessary data for auditing and historical review of each data regarding the administration of users.

Access to reports will be provided in accordance with relevant instructions and/or decisions regarding the preparation of the budget.

8. SECURITY AND SAFETY WITHIN THE SYSTEM

Sensitive data will be processed over the system and the confidentiality must be protected. Security is a key requirement. Only authorized persons should have access to the data server with a right to review and edit. The latest available safety mechanisms should be used.

The system must provide records of each transaction executed in the system. In this manner an audit of the budget preparation process will be possible. This will provide information on who and when a change or input was made.

The system must provide integrity of the data. Changes should thus only be possible through the application (modules) and not directly to the database.

Modules that are used internally within the LAN of the MoF are client/server, which means that the authentication to the system should be with username and password. Authentication should be done through LDAP of the MoF, to be consistent with the single sign on strategy of the MoF. MoF uses OpenLDAP installed on Linux.

The system must provide choice of authentication method for external users, even using certificates when there is a need. The server within the LAN zone should not be accessible from outside and only predefined ports and services by the contractor will be allowed and enabled. All other ports and services will be blocked and disabled.

Access to the web application has to be done through a secure, safe and encrypted channel. That means that access session will be enabled only through https, that is SSL. Identification and authorization of the users to the system will be enabled only if there is a valid certificate and valid username/password. The logged in user will have access only to its own data.

The system/modules have to provide safe and secure data management, which means it has to provide protection from:

- So called SQL Injection;
- Inappropriate file access control;
- Bypassing security protocols of the application (modules);

Web application module and the temporary data base will be placed in the DMZ of the MoF and protected by firewall. The bidder has to define the minimum number of open ports and active services. Standard http port must not be used. Internal users by the MoF shall have only read access to the data created with the web application module and should access it through the existing proxy server without problems (Squid + SquidGuard + Privoxy installed on Linux).

PKI (Public Key Infrastructure)

Certificate issuance will be the responsibility of the IT Sector within MoF. They will have their own system for that purpose. MoF will establish procedures for issuance, revocation and cancelling of the certificates, as well as resolving other arguable issues. In the first stage the certificates will be issued on a media (CD, diskette, so called *soft certificates*), but the system must be ready from the beginning to accept certificate issued on smart cards or USB tokens. The system must accept the standard X.509 certificate, regardless if it is created by OpenSource or proprietary solution.

This infrastructure will be applied for sending budget requests data from the budget users to the Ministry of Finance. The main idea is to maintain authenticity of the data and to protect the content of the data sent.

9. LANGUAGE

The system must allow for uploading of various types of classifications and balances, as well as generating various types of reports in Macedonian and English language.

Likewise, when the codes and the descriptions of the parameters (described in Module III) are updated, the system must provide automatic updating of the same in both languages.

Code page for the Cyrillic support should preferably be UTF-8, but cp-1251 is also acceptable.

10. BACK UP AND RECOVERY

The system must store data and on request to show data of the budget users in the original digitally signed form, and not only structured in the database tables. This is a requirement which provide effective audit control.

The contractor is requested to elaborate and propose sustainable policy and reliable system for back-up and restoration of the data of both temporary and internal database. The back-up strategy and the system must provide fast, simple and safe data recovery.