

## SUMMARY

### **Audit of the Government, Government-guaranteed and Municipal Debt Management Information Systems in the Ministry of Finance of the Republic of Bulgaria**

#### **I. Audit report**

This audit report investigates the government, government-guaranteed and municipal debt management information systems established and functioning at the Ministry of Finance, namely: System for analysis, prognoses and management of the government and government-guaranteed debt (SDMS) and the Central Municipal Debt Register (CMDR). Analysis has been performed on the strategy, policies and procedures for the information technologies (IT) management at the Ministry of Finance. The effectiveness of the IT government, government-guaranteed and municipal debt management information systems has been assessed in relation to the completeness of information contained in the registries and submission of updated and correct information to the Ministry of Finance and other national and international institutions. Common controls were reviewed as a prerequisite for the effective functioning of the information systems at the Ministry of Finance, as well as the input controls set at application level in the two information systems.

The audited entity is the Ministry of Finance and the units within its structure in charge of maintaining the registry for government and government-guaranteed debt - Government Debt and Financial Markets Directorate at the Ministry of Finance and the Local Government Financing Directorate for the municipal debt registry.

#### ***1.1. Subject of the audit***

The audit subject is the government, government - guaranteed and municipal debt management information systems for the period from 01.01.2013 to 31.12.2013.

#### ***1.2. Audit objective***

The audit objective is to assess the effectiveness of the government, government-guaranteed and municipal debt information systems for 2013.

#### ***1.3 Scope***

The main audit question studied during the audit is: Are the government, government-guaranteed and municipal debt management information systems at the Ministry of Finance effective? The audit covered the period from 01.01.2013 to 31.12.2013 and investigated four major areas: IT system strategy and general management, IT security and controls against disasters; Operational controls and Documentation; Application Controls.

#### ***1.4 Researchable questions and assessment criteria.***

With regard to answering the main audit question, a series of specific questions were reviewed and the relevant assessment criteria were set:

<b>№</b>	<b>Specific question</b>	<b>Assessment criteria</b>
1.	Is there a strategy, policies and procedures for IT management developed at the MF, relevant to the	Sufficient number of internal acts;- Existence of clear and friendly developed and approved strategy, policy

№	Specific question	Assessment criteria
	achievement of the objectives set?	and procedures for IT management; - Existence of procedure for updating the internal acts; Existence of actually functioning rules and procedures.
2.	Do the government, government-guaranteed and municipal debt information systems provide for the implementation of the duties Ministry of Finance/Minister of Finance in accordance with the Government Debt Act?	Completely automatization of activities and processes related to information service and operational debt management.
3.	Is there sufficient administrative capacity ensured; clear segregation of duties and responsibilities among the units in charge of debt management at technical level, detailed allocation of the work related to the instruments in the SDMS and the Central Municipal Debt Registry (CMDR) in respect to departments and individual employees within them?	Existence of appropriate organizational structure; - - Existence of adequate allocation of functions; - Existence of coordination among the structures related to the managerial government, government-guaranteed and municipal debt information systems.
4.	What technical maintenance support is in place for exploitation of the information systems?	Signed contracts for warranty and out-of-warranty maintenance.
5.	What changes are envisaged in the information systems with regard to the newly adopted Public Finance Act since the beginning of 2014?	Information systems are subject to continuous improvement.
6.	Which are the main controls in the government, government-guaranteed and municipal debt management information systems?	Existence of general controls of the information system and application controls.
7.	Are the government, government-guaranteed and municipal debt management information systems protected?	Protection of damages, disasters or loss, caused by human intervention; Arrangements made for creating back-up of data and programmes to keep and protect them securely; Measures for recovering applications in the event of non-availability of system or data; Keeping full documentation for the procedures related to processing of debt information and information system components.
8.	Are the IT management debt systems for input, processing and reporting of transactions reliable?	Correct and timely information is maintained in relation to taking correct management decisions; Existence of SDMS system and Municipal Debt Register with different rights of access to its applications; - Existence of written rules, procedures, instructions and orders for registration, processing and reporting of transactions, related to debt; Observing the requirements for entering, processing and reporting of transactions, quality and efficiency; User friendly and easy to maintain information system.
9.	Is there control exercised over the government, government-guaranteed and municipal debt management information systems?	Adequate controls in place for input, processing and distribution of information, ensuring accuracy, completeness and timeliness: authorization control, control for completeness of information, accuracy control and validity control; Existence of controls over the physical access to files and IT equipment; Controls in place for protection of computer applications and debt data base against unauthorized access.

## **II. Framework of the defined chapters**

### ***1) Area– IT System Strategy & General Management***

The starting point of the audit was review and analysis of the existing strategies, policies, procedures and internal rules, outlining the main principles related to IT management in the Ministry of Finance. Do the detailed written rules and procedures developed at the MF reflect the management's vision and commitment towards the information management and security? In view of that many internal acts, strategies, policies and procedures, supporting the achievement of organization's objectives are developed at the MF.

### ***2) Area - Security & Environmental Controls***

Protection of information systems which maintain critical business activities should possess an appropriate physical security in view of avoiding any confidential or sensitive materials to be exposed to unprotected environment and to be protected against accidental access. In relation to the protection of the government, government-guaranteed and municipal debt management information systems, a series of internal rules and security guarantee procedures have been elaborated in the MF to guarantee the security of information resources through regulated physical access, information system protection against damages, disasters and/or human interference, and back-up of information. Physical access to servers and other devices in the IT premises at the MF is controlled very strictly. There are sufficient number of input controls for protection of IT infrastructure, incl. such related to environmental impact ensuring protection of the government, government-guaranteed and municipal debt information systems.

**In respect to the segregation of responsibilities** it was identified that with an order issued by the Minister of Finance there are three employees at the Government Debt and Financial Markets (GDFM) Directorate appointed for SDMS system administrators who also perform functions related to business processes and users' profiles management. This overlapping of responsibilities creates risk and requires the introduction of additional control through monitoring in view of observing the principle for segregation of responsibilities.

**Weaknesses have been identified in relation to passwords security.** During a test conducted on the government debt registry and municipal debt registry, the systems allowed the passwords for access to applications to be changed with very easy ones which does not comply with the MF's policy requirement for complexity of passwords. In relation to the password security policy, SDMS and CMDR information systems thoroughly rely on SQL server. The password complexity management is performed through ascertainment of flag CHECK\_POLICY at the moment of their creation. The problem was identified during the check of logical controls and probably the reason to identify a password which does not correspond to the complexity requirements is the availability of flag CHECK\_POLICY = OFF for the relevant login at the moment of its creation.

Other weaknesses identified regarding the logical controls are related to the Central Municipal Debt Registry. It was ascertained that the system allows simultaneous registration of more than one user with one and the same user name from two different computers.

The Central Municipal Debt Registry is an internet-based application. During our audit we identified that once the system has being logged out through an internet browser (internet explorer) and then again logged in through the same browser, the user who has been logged in the system is still active; i. e. the user's session is not interrupted. This creates risk from unauthorized access and possibilities for infringements of the data integrity in the system.

### ***(3) Area - (Operational Controls & Documentation)***

The technical assistance provided and the out-of-warranty maintenance for operation of the government, government guaranteed and municipal debt information system guarantee their: continuous working capacity, effective use of their functional capacity, possibility for expansion, (in case of necessity) and maintenance in updated status. Thereby, contracts are signed with external companies for information systems' hardware and software maintenance and out-of-warranty maintenance for securing their working capacity and effective functioning of the applications. In relation to both systems, during the audited period, there were no conditions provided enabling traceability of changes and /or corrections made in the SDMS Central Municipal Debt Registry information systems, which restrict the possibility for tracing the problems declared, their priority and time for response.

Information is not maintained on the critical levels, time for reaction, exact date and time for elimination of the problem. During the audited period, there is no complete and systematized information kept at Government Debt and Financial Market (GDFM) Directorate about requests sent by e-mail for problems emerged in relation to the system and for their critical level.

For the year 2013, the Ministry of Finance does not maintain systemized information for problems announced and/or actions undertaken regarding Central Municipal Debt Registry information system, but only information concerning incidents emerged.

### ***(4) Area - Application controls***

Application controls are specific to computer systems and comprise controls for authorization, integrity, accuracy and validity both of transactions and incoming information. They are directly introduced into the application and encompass three areas: entering and processing of information and output data in order to guarantee completeness, reliability and accuracy of information.

The application controls are defined in the Guidance for controls in the processes of entering controls, controls for processing information and output data controls. The controls introduced at applicable level in SDMS are effective and guarantee that all debt transactions are reflected completely, exactly and timely and entered into the system by authorized persons.

## **III. Conclusions and recommendations:**

The following conclusions are made on the basis of the audit performed and assessment criteria defined:

1. Strategies, policies and procedures for the government, government-guaranteed and municipal debt management are developed at the Ministry of Finance in compliance with the requirements of the active legislation. The policies and procedures approved for the IT management at the audited entity are appropriate and support the achievement of objectives of the directorates and units engaged with the government, government-guaranteed and municipal debt management.

2. Complete automatization has been achieved at the Ministry of Finance of the activities and processes related to information service and operational debt management. Government, government-guaranteed and municipal debt information systems provide for the Minister of Finance's observance of duties in pursuance of the Government Debt Act and Municipal Debt Act.

3. The established organizational structure corresponds to the functions set in the legislation and covers the main aspects, related to information systems' functioning.

Administrative capacity is ensured – number of staff, experience and qualification of employees engaged with the effective implementation and achievement of the objectives set. The internal rules for administration and work with SDMS information system do not contain control procedures. Also monitoring has not been performed on the functions related to management of business processes and users' profiles.

4. A number of internal rules and procedures are developed at the Ministry of Finance to guarantee information resources security through regulated physical access, information system protection against damages, disasters and/or human interference and information back up. The physical access to servers and other devices at IT premises is well controlled. There are sufficient controls in place for protection of IT infrastructure, including such against environmental impact to secure protection for the government, government-guaranteed and municipal debt information systems. Conditions are provided at the Ministry of Finance for creating backup copies and keeping information. In case of disaster or a crisis, rules for applications recovery are followed.

5. The process of entering data in the government, government guaranteed and municipal debt management information system is strictly regulated to guarantee the correct entering of information. Adequate controls are created to reduce the risk of mistakes in the data entering process. A wide range of controls are introduced in the processing of information to provide for accuracy, completeness and compatibility of data.

Data "stabilization" function is realized in the information system, which does not allow corrections to be made after a fixed date. The established and maintained SDMS and Central Municipal Debt Registry information systems ensure and provide correct and timely information to the Minister of Finance enabling him to take informed decisions for presenting information to different international institutions about the status of the government, government guaranteed and municipal debt in different information sections.

6. A sufficient number of internal controls are established at the Ministry of Finance creating prerequisites for good human resources management, allocation of responsibilities, continuity of IT processes, and protection against harmful impact of environment, security of the physical and logical access. General controls are incorporated into IT processes and services at the Ministry of Finance as activities, daily performed by Information System Directorate and comprise activities related to the quality of IT services delivered to the MF's employees.

In relation to the CMDR, lack of function for interrupting the user's session after closing and then opening again the internet browser used, as well as existence of more than one user registered into the system with the same user name and password which create risk for unauthorized access and infringement of data integrity in the register.

7. In pursuance of the contracts signed for out-of-warranty guarantee for 2013, monthly technical maintenance has been provided to government, government guaranteed and municipal debt management information systems to guarantee the usual working capacity and effective functioning of the applications.

In 2013 conditions for a complete traceability have not been thoroughly created for the changes and/or corrections made at SDMS and SMDR information systems, which restrict the possibility to trace the problems announced, their priority and time for response.

8. The government, government-guaranteed and municipal debt management information systems are subject to a continuous improving. The improvements in their functionalities are conducted under control, within fixed duration through review in a test

environment by the software designer and following an approval by the directorates that are beneficiaries – through introduction of the functionalities in a real environment.

The changes in the government, government-guaranteed and municipal debt management information systems are in compliance with the requirements of the Public Finances Act.

9. The input controls at SDMS application level are effective and guarantee that all debt transactions are recorded completely, exactly and timely in the system by authorized persons.

An example of a good practice is the new functionality created for data stabilization in the systems which does not allow corrections to be made of historical data after a certain period.

**The conclusion is that the Ministry of Finance has established an integrated information infrastructure developed at a modern technological level which ensures introduction of information technologies and specialized information systems. For the management of the government, government-guaranteed and municipal debt, in conformity with the provisions of the Government Debt Act and Municipal Debt Act, in the MF are introduced and maintained the following systems: system for analysis, prognosis and management of the government and government-guaranteed debt (SDMS), and central municipal debt registry (CMDR). The established and functioning government, government - guaranteed and municipal debt management information systems at the MF are effective and present updated, complete and correct information to the MF and other national and international financial and statistical institutions. The SDMS and CMDR are subject to a continuous improvement and optimization**

In view of improving the auditee's activity, the following recommendations are provided to the Minister of Finances:

1. Government Debt and Financial Markets Directorate to update the rules of conduct for SDMS information systems and to perform detailed current monitoring on the performance of the functions related to business processes of – access to credit instruments and to the functions of the information system, - and the functions related to the management of user's profile – creation, change or deletion of a group for defining the rights of access to credit instruments; creation, change or deletion of user's profile etc.

2. Local Government Financing Directorate to undertake actions for systematization and backup of information for changes and/or corrections made in the Central municipal debt registry system in view of creating conditions for complete traceability of all changes and processes.

3. Local Government Financing Directorate to undertake joint actions with the software designer to create interruption function for the user's session after closing and second opening of the browser, as well as to restrict the possibility for registration of more than one user with one and the same user name and password to work with the CMDR application.

4. Information System Directorate to provide policy requiring all users of the specialized applications for the management of the government, government-guaranteed and municipal debt to use complicated passwords, as well as to change them periodically as

stipulated in the “Rules for the management of users’ profiles for IT access in the Ministry of Finance”.