



## NADABAS and its Environment

### Report from a mission to the National Statistical Institute of Mozambique, Maputo Mozambique

**5-18 February 2010**

within the frame work of the

***AGREEMENT ON CONSULTING ON  
INSTITUTIONAL CAPACITY BUILDING,  
ECONOMIC STATISTICS AND RELATED AREAS***

between

***INE and Scanstat***

***Søren Netterstrøm***



Instituto Nacional de Estatística

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## **Executive summary in English**

The primary purpose of this mission was to re-establish the NADABAS system that was lost due to a server failure and to implement procedures in order to avoid such a situation in the future.

Secondly to prepare NADABAS to be able to work with multiple data bases as a preparation for the Contas Nacionais 2008, i.e. shift in base year to be carried out later this year.

To reach the primary goal, a new server was set up, with the assistance of Niels Poulin from Statistics Denmark, who happened to be on a mission in Maputo. The server was set up as both a file server and a database server, in order to hold all data related to the National Account System, the database, all the Spreadsheets of Excel and all the source files and other relevant files used.

The database was then, after some experiments, built using a copy of the database from 2006 and the Excel-files belonging with the system. The National Account team was very supporting during this stage to identify the files needed.

It was not in any way possible to construct a database that was an exact copy of the one that had crashed, as some data had been updated in the sheets in the time since the crash and most important new data for foreign trade 2008 had been received. The staffs at the National Account has verified the content of the database, by looking through a sample of the workbooks and making comparison to copies saved before the operation.

A plan for backing up both data and the database was set up in cooperation with the IT department. If carried out it should make it possible in the future for INE to re-establish the system in case of loss without any further assistance.

As for the secondary goal a new version of NADABAS was developed that in a robust way will allow several parallel systems, each system having its own database and a set of associated spreadsheets. The system is designed to make sure, that the systems will not by accident interfere. Since the last mission the consultant had in cooperation with the Statistical Office in Lesotho and Mr. Jan Redeby, developed a set of new features for NADABAS that was introduced at this occasion.

INE has changed to Excel 2007 and a set of potential problems arising from this was addressed as well in the new version of NADABAS.

During most of the mission the network at INE had very long response times and frequent complete dropouts. The situation was improved dramatically during the last days due to a change in the setup, but not without some dropouts. The whole setup of the National Account System and NABADAS is based on all data residing on the network to allow cooperation and coordination. The network should be closely monitored and in case of decreased performance action should be taken immediately.

## **Resumo executivo em Português**

O objectivo principal desta missão foi a de restabelecer o sistema NADABAS que foi perdido devido a uma falha no servidor e implementar os procedimentos necessários a fim de evitar uma situação deste tipo no futuro.

Em segundo para preparar NADABAS ser capaz de trabalhar com várias bases de dados como uma preparação para o Contas Nacionais 2008, ou seja a mudança de ano base a ser realizado ainda este ano.

Para atingir o objectivo principal, um novo servidor foi criado, com o apoio de Niels Poulin de Estatística da Dinamarca, que passou a ser numa missão aqui em Maputo. O servidor foi configurado tanto como um servidor de arquivos e um servidor de banco de dados, a fim de manter todos os dados relacionados ao Sistema de Conta Nacionais; o banco de dados, todas as planilhas do Excel e de todos os arquivos de origem e outros dados relevantes usados.

O banco de dados foi então, após algumas experiências, construído usando uma cópia do banco de dados a partir de 2006 e os arquivos de Excel pertencentes ao sistema. A equipe de Contas Nacionais deu muito apoio nesta fase para identificar os arquivos necessários.

Não foi de qualquer forma possível construir um banco de dados que foi uma cópia exacta do que tinha deixado de funcionar, como alguns dados já foram actualizados nas folhas no tempo desde o acidente e mais dados novos importantes de do comércio exterior 2008 foram recebidos . O pessoal na Contas Nacionais tem verificado o conteúdo do banco de dados, procurando através de uma amostra de livros e fazendo comparação com cópias salvas antes da operação.

Um plano para fazer backup dos dados e do banco de dados foi criado em colaboração com o departamento de TI. Se realizada, deve permitir no futuro para INE de re-estabelecer o sistema em caso de perda, sem qualquer assistência.

Quanto ao objectivo secundário uma nova versão do NADABAS que foi desenvolvido de forma robusta permitirá que vários sistemas paralelos, cada sistema tem o seu próprio banco de dados e um conjunto de planilhas associados. O sistema é projectado para ter certeza, que os sistemas não por casualidade interferir. Desde a última missão o consultor tinha, em cooperação com o Serviço de Estatística do Lesotho e Mr. Jan Redeby, desenvolvido um conjunto de novas funcionalidades para NADABAS que foi lançado no sistema nesta ocasião.

INE mudou para o Excel 2007 e um conjunto de potenciais problemas decorrentes disto foi também abordada na nova versão do NADABAS.

Durante a maior parte da missão da rede no INE tinha os tempos de resposta muito longa e frequente abandono completo. A situação melhorou dramaticamente nos últimos dias devido a uma mudança na configuração, mas não sem algumas desistências. Toda a configuração da Conta Nacional do Sistema e NABADAS baseia-se todos os dados residentes na rede para permitir a cooperação e coordenação. A rede deve ser cuidadosamente monitorizados e, no caso de redução do desempenho acção deve ser tomada imediatamente.

## **Restoring the database**

The National Account System consists of a large number of spreadsheets that exchange data using an SQL Server database using NABABAS.

In November 2009 the database server failed and proper backup procedures were not established. Consequently the database was lost. However, as the database is loaded from the spreadsheets, it was possible to re-establish the database from the spreadsheets.

A copy of the database taken at the time it was transferred to SQL Server (2008) was used as the starting point to establish the structure of the database, as this is specific for each implementation of NADABAS. Next a proper order of updates was established. The spreadsheets can be grouped into source data (Fontes), products (Produtos), Activities (Ramos) and general Tables (Tabelas). Source data are processed first. Next information about products is made, using the source data as primary input. Next the activity level is created based on data from products. There are a few Activities/Products, where this process is reversed, activity is established first and subsequently the product is compiled. Finally the tables can be compiled.

Within each of the groups mentioned above some spreadsheets may take data produces by other sheets in the group, so within each group there may be an order to follow as well.

NADABAS keeps track of which spreadsheets that provide each data element and which spreadsheets that consume the data elements. Using this information it was possible to establish a correct order of update.

Using this information, a set of batch update procedures was established and executed to save data from and load data to the spreadsheets in the proper order. This was done for all years covered by the system.

The result was then tested by INE. It turned out, that for the years 2003-2007 this process was given some unwanted side effects, as data in some of the higher level spreadsheets was changed for this years. However these years are published and consequently should be frozen. It seems that for some products, after the summary of products had been created for the year, the information in the product sheet was updated, however the updates was not carried through the system.

It was finally decided, that for the years 2003-2007, data would only be saved but not loaded to the spreadsheets so there would not be any changes in the spreadsheets. For 2008 in progress, data was both saved and loaded. Most important new data for external trade was introduced. All members of staff were informed and ask to examine the sheets they are responsible for carefully.

## **NADABAS version 3.1**

During the mission NADABAS has been upgraded to version 3.1. New features developed for the Statistical Office in Lesotho in March 2009 including batch updates was introduced. Classifications can be used now, but it not exploited.

To prepare for the coming shift of base year (CN 2008) there was a request to facility working with multiple NADABAS systems. This has been developed. It allows working with several parallel systems and is build to ensure that data are not mixed up between the different system, as each system should have its own database and all spreadsheets should be contained within a specific base folder connected to the database.

The documentation of NABABAS has been updated.

### **New server**

The National Account system has now been established on a server of its own. This server is located at the national account on 8<sup>th</sup> floor and not in the server room at 5<sup>th</sup> floor. This seems presently to provide for a better access and may for this reason be preserved. When INE moves to a new building it should be reconsidered to locate this server in the proper server room.

The server is both database server and file server. It is very important that backups are taken regularly of this server, as this is the only place were all National Account data resides.

A new machine has been ordered to be used as a server. It had not been delivered, so the server now installed is seen a temporary replacement. The following should be observed if (when) the server is replaced

- Windows and SQL Server Express must be installed similar to the present
- a daily backup of the database (to E:\Backup) must be scheduled as it is established on the present server. See more information in C:\Backup and E:\Backup.

### **The Contas Nationais Folder**

The folder Contas Nationais that should be subject to regular tape backups contains from 30 to 40 GB of data.

Some of these seems to be a complete backup of a user machine (including data that has no relevance for the National Account), a lot are data used to establish the sources in 2003 and the following years.

It is recommended that INE takes a look at these data and performs a proper cleanup. Some data, i.e. sources for 2003 may be saved by making a copy to a CD ROM (with a backup copy) before they are deleted.

After such a cleanup operation is recommended to establish a clear politic on what data to save in the Contas Nationais folder as well as the structure of subfolders. It may be considered, if original sources for a given year should be saved in one specific folder (i.e. Fontes2008), that may the be copied in its total to a CD once the year has been processed.

### **Backup procedures**

During the mission it was agreed that the IT-department will have the responsibility of taking a weekly backup of E:\ContasNationais that has two subfolders, Backup and ContasNationais. The backup must cover both subfolders. The folder Backup contains the backups of the SQL Express server.

It should be underlined, that the log file from the report should be examined to detect and correct any problems. It is recommended, that a copy of the report is forwarded to Mr. Monica or Mr Saide Dade to ensure that the procedure is followed properly.



## **Annex 1: ToR**

INSTITUTO NACIONAL DE ESTATÍSTICA  
DIRECÇÃO DAS CONTAS NACIONAIS E INDICADORES GLOBAIS

**Annex A**  
January 4, 2010

### **TERMS OF REFERENCE**

#### **For a Short-term Mission on NADABAS and its Environment**

**4 – 10 February, 2010**

within the

#### **AGREEMENT ON CONSULTING IN INSTITUTIONAL CAPACITY BUILDING, ECONOMIC STATISTICS AND RELATED AREAS BETWEEN INE AND SCANSTAT.**

**Consultant:** Søren Netterstrøm

**Counterparts:** Saide Dade, Monica Magaua and other staff at DICRE/DISI

#### **1. Background**

In the on-going rebasing and revision of the national accounts the IT-solution has been improved by integrating the database software Microsoft SQL Server Express in the system. This application is called NADABAS (National Accounts Database System) and it has now been used for several years in the compilation of the revised national accounts.

#### **2. Main Reasons for the Mission**

As experience of using NADABAS in practice is gathering, the environment around the system has to be optimized. The national accounts department has arranged a new server to run the system and needs help to set up a secure and robust implementation. There are also needs for minor adjustments and modifications that have been identified. Furthermore, there is a need to accordingly update the NADABAS documentation. Similar missions were made September 2006 ([MZ:2006:12](#)), October 2007 ([MZ:2007:10](#)), July 2008 ([MZ:2008:4](#)) and August 2009 ([MZ:2009:01](#)).

#### **3. Beneficiaries of the Mission**

The mission will primarily benefit the staff at the National Accounts Department and, besides, selected staff at the IT-Department by providing knowledge of the software (NADABAS) for national accounts compilation. The beneficiaries in the long run will

be the users of NA through improved regularity, timeliness and contents quality of the National Accounts.

**4. Objectives of the Mission**

Secure, adjust and modify the system in co-operation with the national accounts staff and the IT staff.

**5. Expected Results**

An adjusted version of NADABAS, running within its dedicated secure and stable environment.

**6. Work to be carried out by the Consultants**

See point 4 above.

**7. Agenda for the Mission**

Working sessions with national accounts staff

**8. Tasks to be done by INE to facilitate the Mission**

- Elaborate the Terms of Reference for the mission
- Prepare and supply the consultant with necessary documents and information
- Arrange meetings with key persons
- Supply good working conditions for the consultant

**9. Timing of the mission**

Se above.

**10. Source of Funding**

Project: MPD008-04-MPD-2008-0013 – Contas Nacionais

PAAO10 – 1.3.1 Contas Nacionais Anuais, Trimestrais e Provinciais

**11. Report**

The consultant will prepare a draft Technical Report to be discussed with INE before leaving Maputo. A final draft will be submitted to INE for final comments within one week of the end of the mission.

*Approved by Saide Dade INE/DCNIG*

*Day / / .....*

*Confirmed by Luis Mungamba, Contract Manager for the INE – Scanstat Contract*

*Day / / .....*