



**Short-term mission on
Standards and System Design**

Report

9th – 13th February 2004

Rune Gløersen

**TA for the Scandinavian Support Program to Strengthen the
Institutional Capacity of the National Statistics, Mozambique**



Instituto Nacional de Estatística

This report contains
restricted information
and is for official use only.

Ref. no. 104.Moz.98

February 2004

Rune Gløersen
Assistant Director General
Department for IT and Data collection
rune.gloersen@ssb.no
Tel. +47 21 09 45 90
Fax. + 47 21 09 49 31
Mob. +47 45 00 49 00

Statistics Norway
Kongensgt. 6
PoBox 8131 DEP
N-0033 Oslo
Norway

Table of Contents

1 EXECUTIVE SUMMARY	4
2 INTRODUCTION	4
3 MISSION PROGRAM.....	5
4 MISSION ACTIVITIES AND VIEWPOINTS FROM THE CONSULTANT	5
IT-Strategy and IT-Policy discussed	5
Meeting with the President of INE.....	6
Presentation of SEN.....	6
Meetings with subject matter staff	6
Systems development.....	7
Documentation Standard.....	8
5 CONCLUSIONS AND RECOMMENDATIONS	11
ANNEX 1 TERMS OF REFERENCE FOR THE MISSION.....	12
ANNEX 2 PERSONS MET DURING THE MISSION.....	16

1 EXECUTIVE SUMMARY

The mission was conducted from 9 February to 13 February.

During the mission the present status of IT-Strategy and the IT-Policies on Documentation Standards and System Development Methods was discussed with people inside DISI. The proposed updated IT-Strategy and IT-policy is now very mature and needs approval and implementation, so INE can move forward towards the proposed IT-Architecture.

Both the draft Documentation Standard and the draft Manual for developing Statistical systems with focus on IT methodology seem to be very good starting points to encompass the needs for documentation of better quality and availability. The documents will form important guidelines to improve the ways to structure, control and follow up the development work.

Both drafts should be given priority in terms of resources both from IT and subject matter key personnel, to get them finalized and approved in order to be available for the forthcoming projects at INE. Rather than waiting for the perfect, focus should be put on the need for short-term enhancements, and the current urgent need of guidelines and standards within these fields.

One or two development projects should be pointed out for trailing the results from the development work done on standards and project guidelines. Neither the documentation standard nor the systems development manual need to be completely ready and approved before elements of them are trailed in projects. One such project that could act as valuable input and trial is the forthcoming Labor Force Survey.

2 INTRODUCTION

The Mission was carried out 9 – 13 February 2004 in Maputo.

The consultant would like to express his thanks to all officials and individuals met for their kind support and valuable information. In particular he would thank the counterpart in INE the Head of DISI, Ms Anastásia Judas Honwana, for her preparation of the program and valuable information and support to facilitate the work of the consultant.

Several activities at INE, and especially within DISI, concern how to develop and implement into regular use common guidelines to accomplish development projects and to promote the use of documentation standards.

- INE is in the process of discussing and approving the updated IT-strategy and IT policy. It is foreseen that the IT strategy will be approved within a few weeks. An approved IT strategy is crucial to the implementation of further guidelines and standards within this area.
- INE has developed a vision of a coherent information architecture to fulfill the needs of the National Statistical System (SEN)
- INE has established a project on Systematic Quality Work. Joint guidelines concerning development work and joint requirements on documentation are a core issue of improving quality.
- A draft document in terms of a Manual for developing statistical systems with focus on IT methodology has been prepared.
- A draft document in terms of a Documentation standard has been prepared.

These activities form the basis of the recommendations that are given.

Terms of reference for the mission is in annex 1

3 MISSION PROGRAM

The general objective of the mission was to discuss the current state of work on guidelines and standards concerning development and operation of statistical systems, and to give recommendations towards successful implementation of a common approach and use of standards within this field.

More specific the consultant should have clear and operational ideas

- 1) About how to implement policies for standards for documentation, standards for development of statistical applications, including draft manual about development of statistical systems
- 2) About how to integrate the activities on the IT-area with the activities on the quality area.
- 3) About a precise and well-defined information architecture that reflects the ideas in IT-strategy and in the manuals about standards and development of applications.

The mission was shortened to one week. This has some impacts on the level of details that could be accomplished during the mission. However, fruitful discussions was carried out with the counterpart, with the long-term consultant Mr. Mogens Grosen Nielsen, with Ms. Destina Eduarda Sidónio Uinge, Director of DICRE, with Jorge Utui, Head of DPCRE and Manager of the Quality project, with Ms. Fatima Zacarias, Director of DEMOVIS, and with the President of INE, Dr. João Dias Loureiro. The discussions gave a consistent description on the current situation and to some extent the needs for future enhancements.

At the last day of the mission, a fruitful discussion took place with most of the personnel at DISI, based upon parts of the demonstration planned for the Quality seminar. The conclusions from the discussion were that there is a joint interest and need for standards and guidelines to help structuring both documentation and development work. The areas pointed out in the strategy were regarded as important fields of development by the staff.

A presentation on documentation standards and development guidelines was planned as a part of a two-days seminar arranged by the Quality project, but the seminar was unfortunately cancelled on a short notice. The presentation has been delivered to the Counterpart.

4 MISSION ACTIVITIES AND VIEWPOINTS FROM THE CONSULTANT

IT-Strategy and IT-Policy discussed

The consultant, the long-term IT consultant and Anastásia Judas Honwana had a detailed discussion of the proposed updated IT-Strategy and the IT-Policies.

The discussions focused on the policies for Documentation standards and Systems Development work. The general conclusion was that for the policies to become part of real work, IT strategy must be strongly supported by the top management level of INE. This corresponds to the earlier recommendations made, i.e. from Lars Thygesen's mission. However, some activities are already progressing well, like the development and implementation of the IT Security Policy and the established projects on development of a CMS based web site and the Statistical Databank.

Two main papers were presented to the consultant, one being a draft on Documentation standard, the other being a draft on a Manual for developing statistical systems.

Both papers should be elaborated according to the existing outlines. Again, it is important that we bear in mind the current situation within these fields, where close to no guidelines exist, when the ambitions are set for the level of details and complexity of the standards and guidelines.

Meeting with the President of INE

Both the IT-Strategy and the IT-Policies have been developed with support from other short-term missions. They now seem to have reached their final forms and the main task is now to have final approval, and to start implementation. From my meeting with the President I understand that final approval should happen shortly. During the meeting there was a joint conclusion that the approval is vital to legitimate further work, more important than further enhancements of details in the strategy and policies. Furthermore, the President stressed the need for better documentation, both in terms of structure, content and availability. He also focused on the need for the subject matter staff to enhance their ability to get better access to data, with regards to the knowledge of sufficient IT tools, but also ensuring secure access and manipulation of data to reduce the risks of unintended loss of information. Finally he stressed the need for the development work to contribute to fast and sustainable results and knowledge within INE.

Presentation of SEN

Ms. Destina Eduarda Sidónio Uinge, Director DICRE, presented the National Statistical System (SEN). Ambitious goals have been set for the development of a coherent statistical system based on a data warehouse model. The matters concerned in the mission is crucial to be able to reach the objectives of SEN, especially the focus on Documentation Standards. These standards form the necessary basis to develop the standard interfaces needed between the subject matter systems and the data warehouse, and the definition of the minimum documentation required supporting the data.

Meetings with subject matter staff

During meetings with subject matter staff, the main view was that there is a strong need to get better access to their own data. Different databases not being compatible with each other make unnecessary constraints in daily work. The feeling of unwanted dependence on IT experts is quite typical, but does also constitute a risk for wrong conclusions concerning the strategic development of the IT function. The short-term solution to this is usually to move IT people closer to the subject matter users to solve the problem. The long-term and strategic solution is to strengthen the IT functions' ability to provide systems that fulfill the needs of the user. Furthermore, the subject matter staff should get access to, and be trained to use tools that can help them accessing their data for further analysis, tabulation etc.

The basic issue is that these goals can only be reached by means of standardization in order to create standard interfaces, and mandatory demands on documentation in order to facilitate internal and cross sectional usage. It seems reasonable that the users would welcome the proposed actions within the fields covered by the short-term mission, as long as they are regarded as steps forward to solve their current problems.

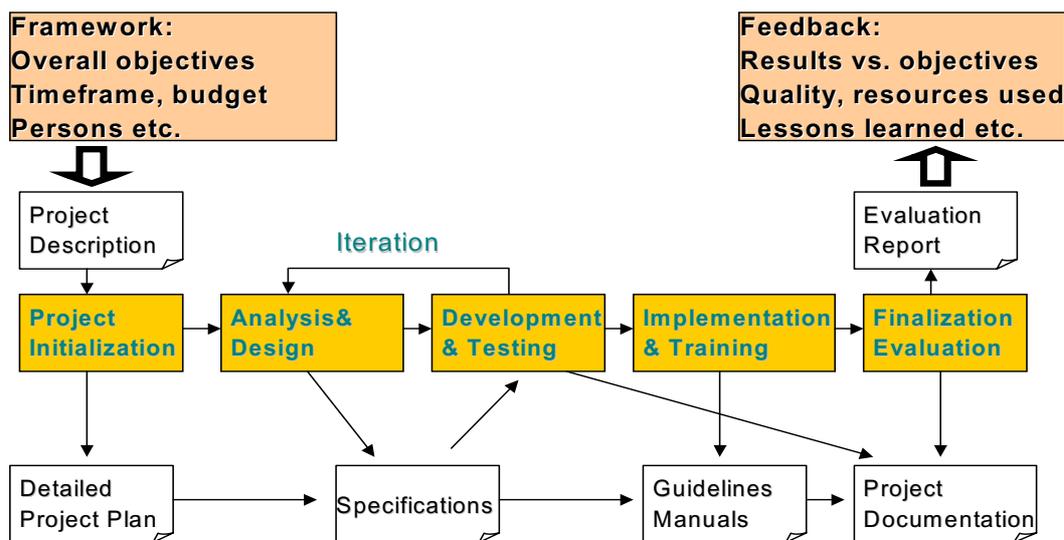
Systems development

An overall approach to a methodology for systems development is shown on the next page. The model is drawn from the outlined manual presented by DISI.

Every IT information system at INE should have a formal owner. This is normally the subject matter unit. The responsibilities of the owner of an information system should be made clear, according to the outlines suggested in the IT Policy on security.

A complete manual based on the model will follow the structure of the phases in the development work as shown. The necessary input and output information from each phase should be described carefully, with regards to a level of ambitions relevant to the present situation in INE, and also taking into account a down-to-earth expectation of the resources available for implementation and training of the methodology.

It should be set as a mandatory procedure that the relevant management level initiates every development project at INE by an approved Project Description. A template should be elaborated. It should also be set as a mandatory procedure that the relevant management requests an evaluation report of a project, before the results of a project are formally accepted. A template should be elaborated.



Project Initialization

Input to this phase is the approved Project Description. The first task of the project is to elaborate a detailed Project Plan within the framework outlined in the Project Description. The Project Plan acts as an accept, made by the Project Group to carry out the work as foreseen. As a consequence, the project group should bring forward any obstacle they encounter during the planning phase that could be a risk of failure accomplishing to the outlined framework of the Project.

IT personnel should be appointed and involved already at the beginning of the project.

All projects should report to a Steering Committee comprising managers with power to decide upon the framework of the project, i.e. budget, personnel, time, deliverables. The project Plan should point out at which milestones the Steering Committee should meet to discuss the progress of the work.

As stated in the IT Policy, a joint area at a fileserver should be reserved for the project and all those involved, where all appropriate documentation should be kept. The structure of such an area should be defined in the manual.

Analysis&Design

This phase consists of two activities carried out in close cooperation by statisticians and systems developers. The statisticians analyze and put forward the requirements to the system from the subject matter point of view. Based on this the system developer designs the IT system. Some joint methods should be used to ensure the quality in the communication between both parties, like elaboration of a context diagram, dataflow diagram(s), data models, process diagrams etc. The output of this phase is the complete specification of the system. Development of templates should be considered to ensure proper content and quality of the specification.

Development&Testing

This phase is basically the construction of the system. The work comprises elaboration of physical data flows, physical database design, programming etc. Use of prototyping techniques should be considered. Testing is done in cooperation with the users, which indicates that there will be a number of iterations back and forth between the design and development phases.

Implementation&Training

Depending on the size and complexity of the system, necessary guidelines and training manuals should be elaborated. The maintenance aspect of the system should be examined carefully. Some formal procedures should be followed when a system is put in production. This should comprise ownership responsibilities, user restrictions, security aspects, backups, archiving of historical data etc.

Project Finalization

The finalization of the project should be a mandatory procedure. An evaluation report should be written and accepted. All documentation made throughout the project should be quality assured. It should be defined what part of the documentation that should be brought into the maintenance lifecycle of the project.

The consultant has examined the draft manual with respect to the guidelines mentioned above and made some recommendations.

Documentation Standard

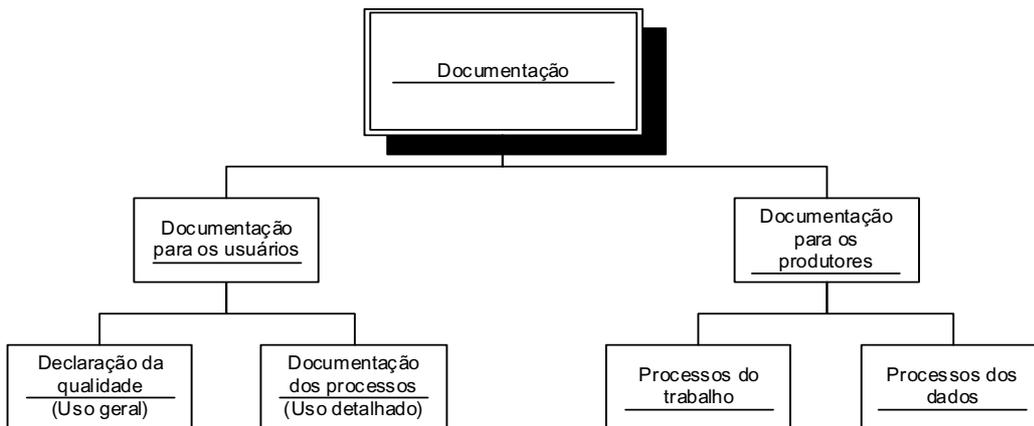
The Documentation Standard will comprise all relevant documentation for

- The producer of statistics to describe the workflow and the data processed of a survey. The purpose of this documentation is to ensure proper and efficient management and maintenance of a survey
- The user of statistics to be able to use, understand and decide upon statistical products

The proposed split of the documentation into these two main parts seems reasonable. However, the most important issues are

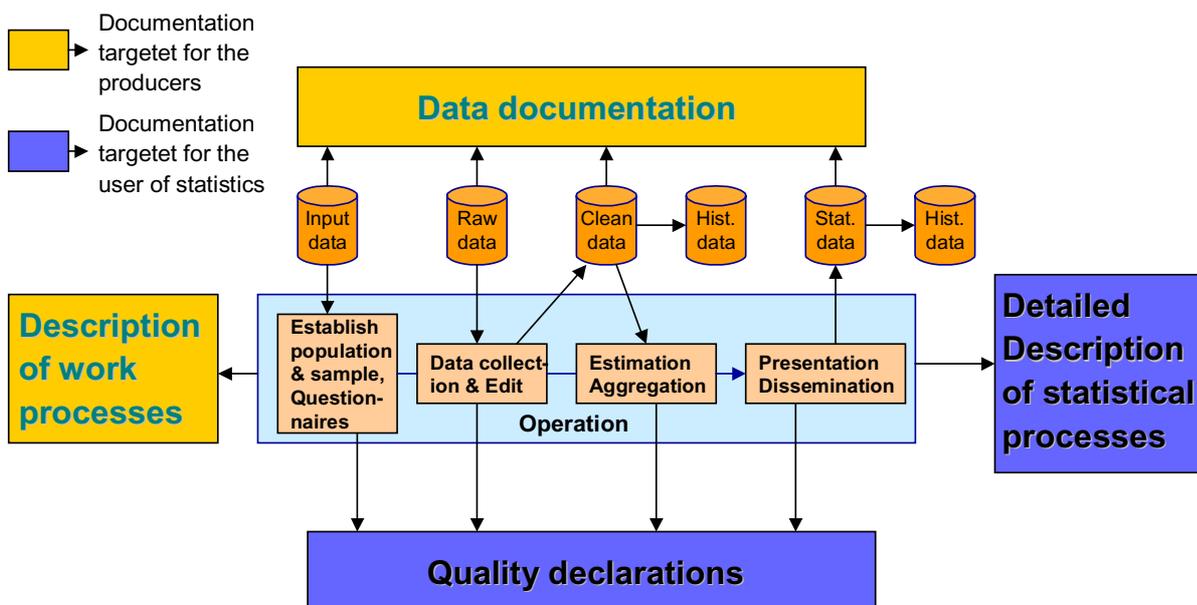
- To ensure that the necessary documentation have been made
- To structure this documentation so that it can be brought available and even reused as components of documentation

If you have documentation available and standardized by means of content and structure, you can easily change the way it is stored and presented, according to new requirements or experiences. In other words, it is the bottom level of the model below that is the crucial part, not the model itself.



A draft of the Standard has been discussed with the consultant. For the four major areas of the documentation (quality declarations, statistical processes, workflow and data/dataflow) templates will be developed and included in the manual as proposed standards.

Sufficient resources should be allocated for the finalization of the standard for documentation. The proposed structures and contents of the different templates seem adequate. Anyhow, it is expected that such templates will have to be elaborated over time, hence it should be better starting off rather soon and not wait for something perfect in a far future.



As shown in the figure above, documentation should be made from all phases of the survey process. It should be possible for the user of statistics to drill down in details, and to be able to go from a table to variable definitions, classifications used, and even back to the questions originally asked. Quality declarations are to be made throughout the process. The Documentation Standard should ensure a consistent documentation sufficiently covering the whole process.

5 CONCLUSIONS AND RECOMMENDATIONS

Recommendation 1:

Development of Documentation Standard and relations with the Quality Project

The work in the Quality project should be aligned with the work on Documentation Standards. Especially concerning the development of sufficient templates for quality declarations. The Documentation Standard is not the work of DISI alone, and should be given focus at high level of INE.

Recommendation 2:

Organization of the work

The development of Documentation Standards and the manual for Systems Development should be organized as projects, with involvement from key personnel representing the relevant user groups (Subject matter, methodology, IT). The top management should mandate these projects.

Recommendation 3:

Taking user needs into account

It is advised that one or two development projects should be pointed out for trailing the results from the development work done on standards and project guidelines. It should not be necessary to wait until the documentation standard nor the systems development manual are completely ready and approved before elements of them are trailed in projects. One such project that could act as valuable input and trial is the forthcoming Labor Force Survey.

The forthcoming mission on documentation of data flows for the National Accounts should be considered as another trial for developing and testing templates to be included in the Documentation Standard. The Consultants for this short-term mission should be involved in this before the mission starts, on order to prepare for both objectives.

Recommendation 4:

Study visits

A study visit to one of the Scandinavian partners to study Documentation standards and Systems Development Methods is envisaged. At the same time, systems for Classification databases and Variable Definition databases should be examined with respect to possible implementation at INE.

Recommendation 5:

Short-term missions

Supervision and training within the fields of

- Documentation Standards and development of documentation systems
- Project Management and System Developments Methods

in terms of short-term missions from experts working within these fields in the Scandinavian countries is envisaged. However, the INE staff should be encouraged to work with development of guidelines and methods before new missions or study visits are planned, in order to ensure sufficient contribution to ongoing projects concentrating on concrete problems and challenges.

Most likely, such missions will be needed by the end of the year.

ANNEX 1 Terms of Reference for the mission

TERMS OF REFERENCE

for a short-term mission on

Standards and system design

9 – 13 February 2004

within the Scandinavian Assistance to Strengthen the Institutional Capacity of INE/Mozambique

Consultant: Rune Gloersen, Statistics Norway

Counterparts: Anastácia Honwana

Background

According to the 5 year strategy the overall objective for the IT-area is to contribute to make the production of statistics well coordinated and more efficient, to reduce the costs and to improve the quality of the service and the quality of the working processes¹. The goal is to have an infrastructure with a well-functioning network administration, including well-established security measures, standards for hardware, software, documentation and system development. Further the strategy emphasizes development of Internet and Intranet.

For the time being INE follows various tracks to reach these goals such as:

- Discussion and preparation of the IT-strategy and IT-policies. The relevant parts for this mission are the areas about standards for documentation and standard for the development of statistical applications. The vision of the future information architecture is also important. See annex 1.
- Preparation of documents about documentation standards. A manual with documentation standards is ready for approval – this manual contains documentation oriented both towards users and producers of statistics. The development of documentation standards oriented towards users is closely connected to ongoing activities on implementation of Total Quality Management. (See below)
- Preparation of a manual about development of statistical applications. This work includes considerations about the development of applications at the subject areas. These considerations include how to ensure that new applications are integrated into the overall information architecture (decentralized entry of data, dissemination via Internet etc). Later this year this work must be followed up by a course in system design.
- Improving the webpage. A tender procedure has been carried out. A project aiming a introducing a content management system (Zope and Plone) has to be initiated. It is the intention that the restructuring the web page should be hooked up to a common active database for external and internal use. As a first step we expect to introduce an Internet database. This will be done by using and evaluating the use of PX-Web (see references)
- Development and maintenance of the infrastructure. This work include among other things implementation of security policies (central back up and storage of data, policies for handling confidential data etc), implementation of migration from Windows NT to

¹ Plano Estrategico do Sistema Estatistico Nacional 2003-2007, section 4.6

Windows 2000, investigation of technologies and preparation of installation of network in provincial offices.

- Systematic quality work based on Total Quality Management. Two of the basic issues are declaration of quality and documentation/ metadata. One prioritised task in the Quality work is to complete and test a documentation standard.

It is important that these initiatives get coordinated. This implies among other things:

- The work on quality must be coordinated with the work on implementation of documentation standards – including the building of the documentation database
- The work on manuals about development standards must be seen as an integrated part of the implementation of the overall information architecture.

Purpose of the mission

To evaluate and discuss the IT-strategy and the IT-policy in order for INE to

- 4) Have clear and operational ideas on how to implement policies for standards for documentation, standards for development of statistical applications, including draft manual about development of statistical systems
- 5) Have ideas on how to integrate the activities on the IT-area with the activities on the quality area.
- 6) Have a precise and well-defined information architecture that reflects the ideas in IT-strategy and in the manuals about standards and development of applications.

Expected results

- 1) A proposal on implementation of a common documentation standard
- 2) New version of the manual for design, including considerations about application architecture etc
- 3) Evaluation of suggested information architecture, including possible use tools following internet technology related standards
- 4) Presentation material about various topics from the workshop

Activities

- 1) Informal meeting with management at INE the first day about scope and purpose of the mission and to agree on the agenda for the mission.
- 2) The agenda should cover
 - a. Presentation and discussion about IT-strategy, IT policies and Quality plan
 - b. Discussion / preparation of draft manuals for documentation and manual about development of statistical applications
 - c. Discussion about quality
 - d. Discussion about application architecture - How to build flexible and easy maintainable applications?
 - e. Meeting / workshop

Tasks to be done by INE to facilitate the mission

- Elaborate ToR for the mission
- Prepare and supply the consultant with necessary documents and information
- Supply good working conditions for the consultant

Consultant and Counterpart

Consultant: Rune Gloersen, Statistics Norway

Main counterparts:
Anastácia Honwana
Calado Pereira Fijamo

Timing of the mission

One week (9 – 13 February 2004)

References:

“Exploratory mission on The creation of an Output Database. Report from a short-term mission 5th – 18th December 2003”, Jesper Ellemose Jensen and Annegrete Wulff

“Strategic IT development issues. Report from a short-term mission 21-25 July 2003” Lars Thygesen

“Mission report form a short term mission on Systematic Quality Work 10-19 November 2003” Hans Viggo Saeboe.

Report

The consultant will prepare a draft report to be discussed with INE before leaving Maputo. He will submit a final draft to INE for final comments within one week of the end of the mission. Statistics Denmark as Lead Party will print the final version within 3 weeks of the end of the mission.

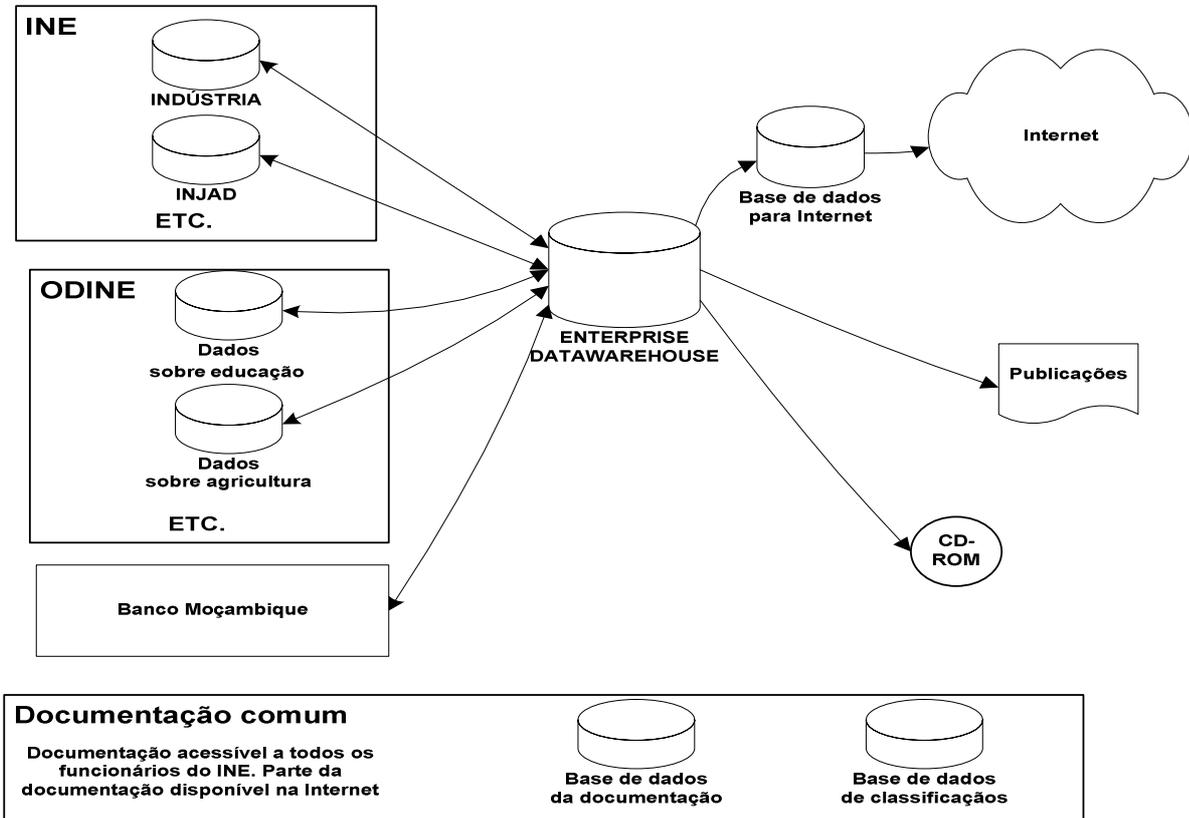
These Terms of Reference were prepared by

Day / /

Approved by/in the name of the President of INE

Day / /

Annex 1. Information architecture vision



ANNEX 2 Persons met during the mission

Dr. João Dias Loureiro, Presidente do INE.
Ms. Destina Eduarda Sidónio Uinge, Director DICRE.
Ms. Anastásia Judas Honwana, Head of DISI
Mr. Jorge Utui, Head of DPCRE
Ms. Fatima Zacarias, Director DEMOVIS
Mr. Marcelino Silva, Head of DDD
Mr. Hans Erik Altvall, Consultant, Coordinator.
Mr. Mogens Grosen Nielsen, Consultant
Staff at DISI