



# The household budget and expenditure data collection module (IOF 2014/2015) within a continuous multipurpose survey system (INCAF)

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

8 - 18 December 2014

*within the frame work of the*

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

*between*

**INE and Scanstat**

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## Resumo em Português

Logo no início da missão a consultora e seu homólogo acordaram sobre quais devem ser as prioridades do trabalho (Lista de assuntos: Ver anexo 1). Infelizmente, não houve tempo suficiente para terminar a lista inteira, mas as tarefas mais importantes foram feitas. Se vai haver outra missão, o resto da lista ainda continua ser prioridade.

Além desta lista, também foi acordada de simplificar a aplicação, tanto que possível, para melhor a possibilidade para INE adicionar questionários e modificar o sistema sem ajuda de consultores. Este último tópico tomou a maior parte do tempo da missão.

Além disso, um aplicativo *batch* foi feito para corrigir alguns erros nos dados. A consultora espera que este aplicativo pode ser usado como modelo para problemas posteriores deste tipo.

### Saídas

Os seguintes resultados foram produzidos e encontram-se anexados:

- Um aplicativo mais robusto, com uma estrutura mais simples
- Um "mapa"/visão geral do aplicativo para torná-lo mais fácil de entender, e possivelmente mais fácil fazer alterações ao sistema
- Uma descrição sobre como adicionar novos questionários para o sistema

## Summary in English

The consultant and her counterpart agreed early in the mission on what should be the priorities of the work (List of issues: See appendix 1). Unfortunately, it was not enough time to finish the whole list, but the most critical things got done. If there will be another mission, the rest of the list will still be priorities.

In addition to this list, it was also agreed to simplify the application as much as possible to make INE better capable of adding questionnaires and modifying the system without the help of consultants. This latter topic took the most time of the mission.

Also, a batch job to correct some errors in the data was made, and the consultant hopes this program can be used as template for later problems of this kind.

### Outputs

The following outputs were produced and are annexed:

- A more robust application with a simpler structure
- A "map"/overview of the application to make it easier to understand the system, and hopefully make changes to it
- A description on how to add new questionnaires to the system

## **The consultancy**

### **The objectives of the mission were to:**

- To secure that the work progresses securely and along international standards.

### **Activities according to ToR**

- Monitoring the operations
- Data Management (at closure of an area)
- Data transfers
- Communication between questionnaires
- Miscellaneous

### **The expected results were as follows:**

- A better system.
- Written documentation of the above activities;

Full ToR are found in annex 4.

## **Recommendations/suggestions for modification for INCAF/IOF 2014/15**

### **Modifications needed to be done immediately (by INE)**

A few minor things are still left to do with the new version of the application before it is ready for use in the current quarter. These are time consuming but not very complicated, so it was left for INE staff to finish:

- When inconsistent data is entered by the interviewers, currently a warning is displayed, but the interviewers are free to ignore it. These occurrences should be changed to force the interviewer to go back and change the problem. A description on how to do it is to be found in the appendix.
- Some numeric fields have no value sets, and this makes it possible for the interviewer to enter data that is far outside of the probable range for the question. This applies to different kinds of incomes and payments in the emprego questionnaire and probably in other questionnaires (For the diaries and prices questionnaires, a substantial reconstruction is suggested in next paragraph, so not too much work should be put into these questionnaires)
- In the new version of CSPro, an input type called “numeric pad” is available. This makes entering numeric values much easier for the interviewers. The consultant has already changed many of the numeric fields to use this type, but INE staff should look through all questionnaires to make sure that none is left.
- “fit windows to questions”: Sometimes the CAPI questions are too big to fit into the default CAPI question window. This is easily solved by doing the following in the form view in CSPro: From the menu choose “CAPI options” – “Fit window to questions” in all the different applications.

## **Next steps**

The consultant is impressed with the CSPro knowledge of some of the staff at INE, but still recommends more training (as was discussed with Mr. Muianga) – both to train more staff in using CSPro, but also to improve the knowledge of the experiences.

Also, the application has far left before it is perfect. For instance is there currently a big manual job to do for each new quarter – also with programming the application and this should be fixed. Unfortunately, it was not enough time this time.

The recommendations are the following

- Workshop/training for INE staff in CSPro in two modules: First week for beginners and second for more experienced staff (planned so that beginners can do both weeks). The workshop should cover, in addition to creation of dictionaries and forms and programming, batch programming and tabulation.
- Make the change from one quarter to the next automatic. Consider whether more data processing should be done using CSPro. This will make it “safer” to change the questionnaires, as the same metadata will be used in data processing and editing after capture.
- Make a system to look up classifications from files rather than hard coding them in the application (For instance: the items in the Preco Do Mercado questionnaire probably change regularly, and it shouldn't be necessary to have a programmer update the programs.
- Any other issues that might come up.

## **Reporting and counterparts**

The mission reported to

- Arao Balate – Director de Census e Inqueritos
- Salomao Muianga – Director Adjunto da DICRE

The counterparts for the mission:

- Eugenio Matavel – Tecnico de Informatica
- Antonio Nhamuave – Tecnico de Informatica

## Annex 1: List of Suggestions/issues fixed in IOF 2014 application

### The “administrative” system

- Issues fixed:
  - Remove children that are  $\leq 5$  years from emprego menu
  - Fix preco do Mercado for 2 trimester.
  - Make persons that are not in the household invisible or as protected field
  - Make the system give error messages when things don't work
  - Incorporate the consist applications into the system (for the supervisors)
  
- Issues partly done
  - Make the whole thing more robust: *Partially done. An IT system is never “finished”, so more work should be done at later stages*
  
- Issues not done due to lack of time
  - “Complete” status: Once a questionnaire is finished, it should be marked as “Completo” in the menu. This was done for the agreg\_familiar questionnaire, but at this level it does not make sense: The Household is not finished once the agreg\_familiar application is finished, so this only adds to confusion for the interviewer.  
For the other questionnaires, however, this should be added, and then, once all the questionnaires is finished for one household, it should be given the status “Completo”.
  - Make plan/Evaluate the difficulties on how to make one application for all trimesters

### The questionnaires

- Issues fixed:
  - Fix hard coding of dates and years
  - The system accepts values totally outside of value sets (A little clean-up job left to do for INE staff – as described in main part of the report)
  - Agreg\_familiar
    - The child form: no check that age and birth year are consistent
    - Error in logic for the Commentario field: If you're directed back in the questionnaire to correct the data for a child, you are redirected to the wrong line.
    - If a child has died: make sure questions are not asked about it.
  - Emprego
    - Salaries and income from other sources as well as Travel questions should have value sets added: Left for INE staff to do
  
- Issues not done – mostly due to lack of time
  - Use external files for displaying items in classifications (items in the prices questionnaires and similar)

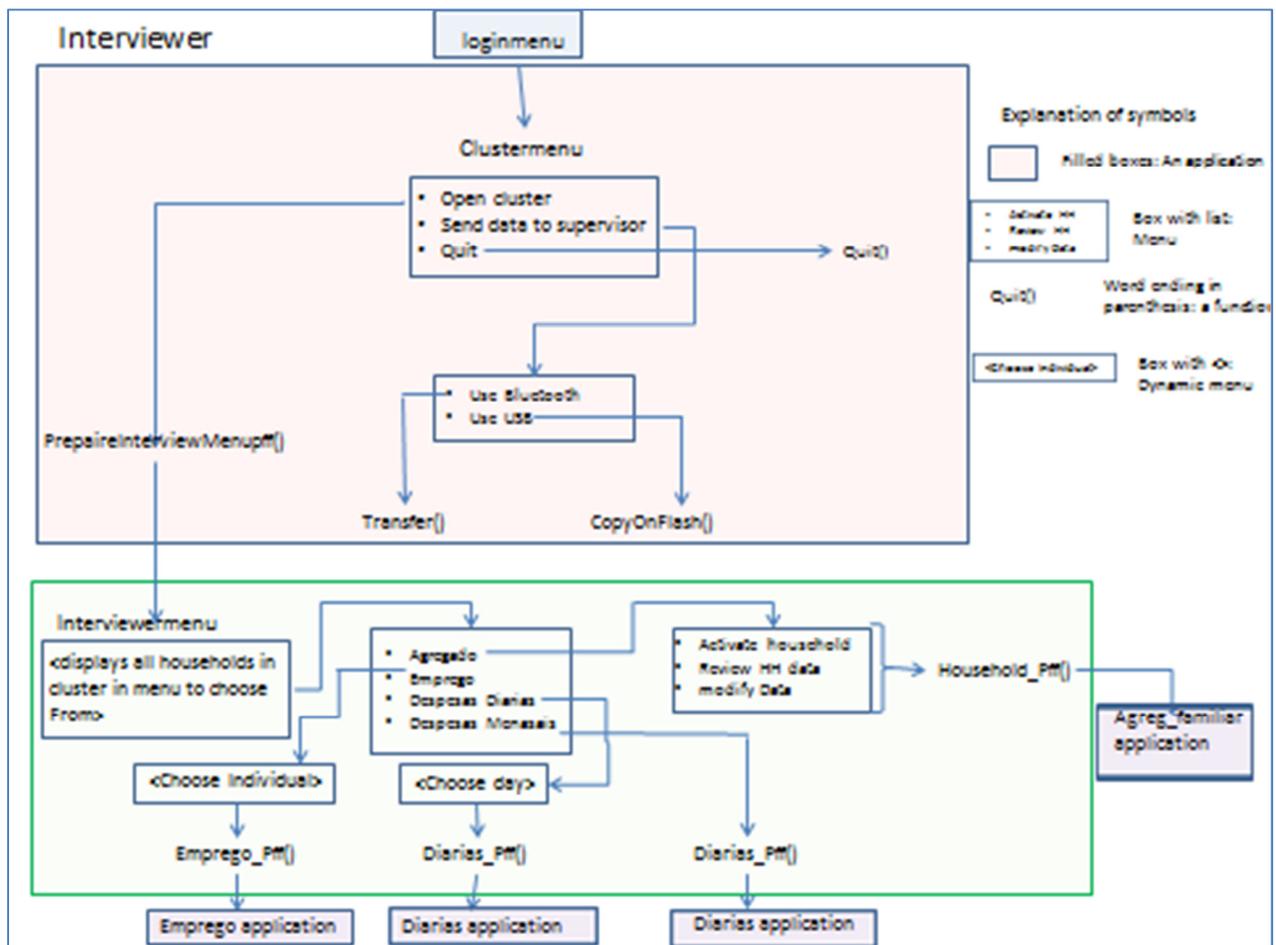
- Add code to check that more values are within limits, make better value sets in general: Partly left to INE staff to do, and partly dependent on the bullet point above.
- Time it takes a respondent to get to school/hospital/.. the valueset is 5 – 997.  
Should be the following
  - 0-14 minutes,
  - 15-29 minutes,
  - 30-59 min,
  - 1 – 2 hours
  - More than 2 hours

This was done, but changed back, as the survey is in the middle of a quarter. It is, however, recommended to do it at a later stage.

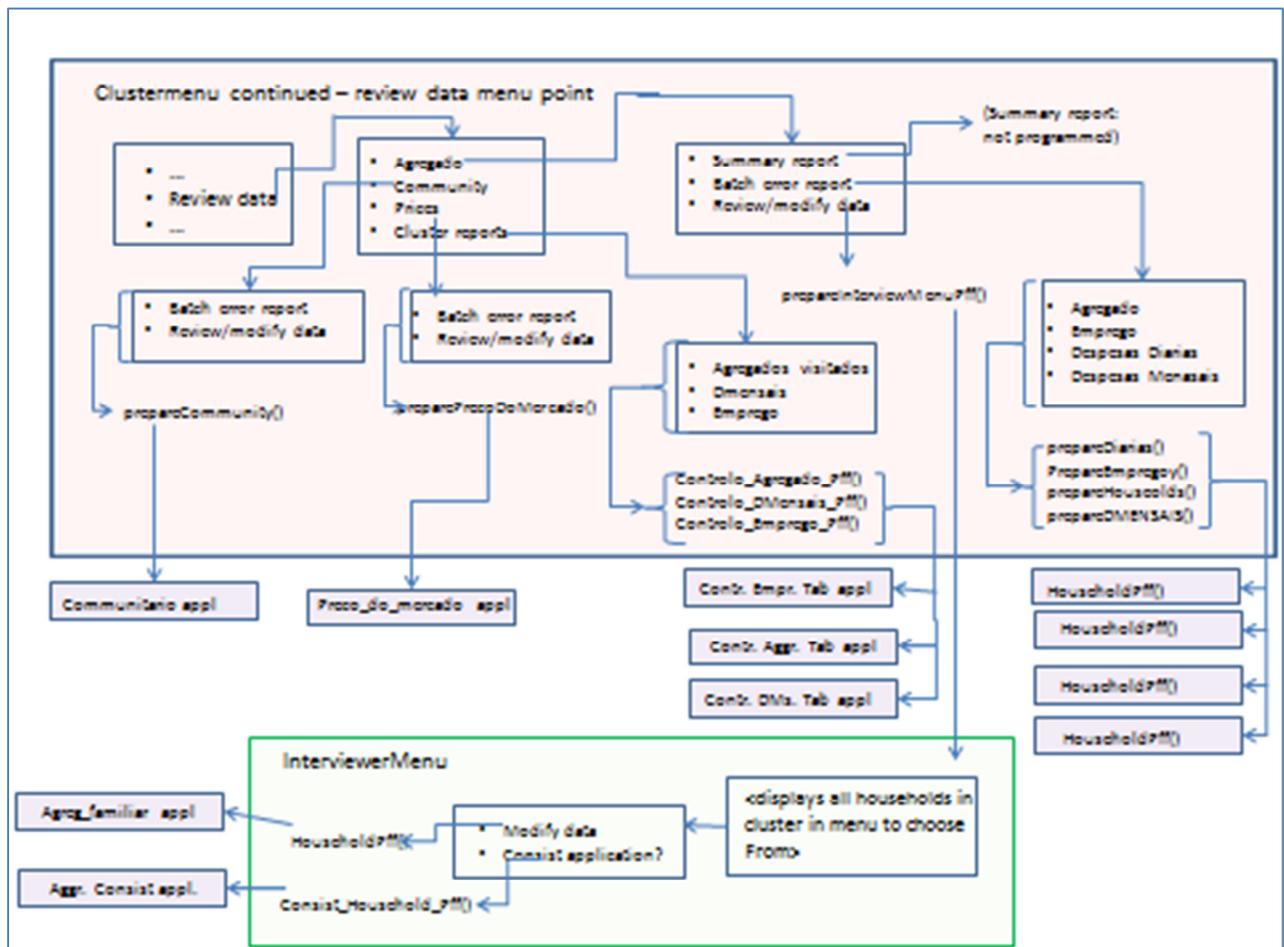
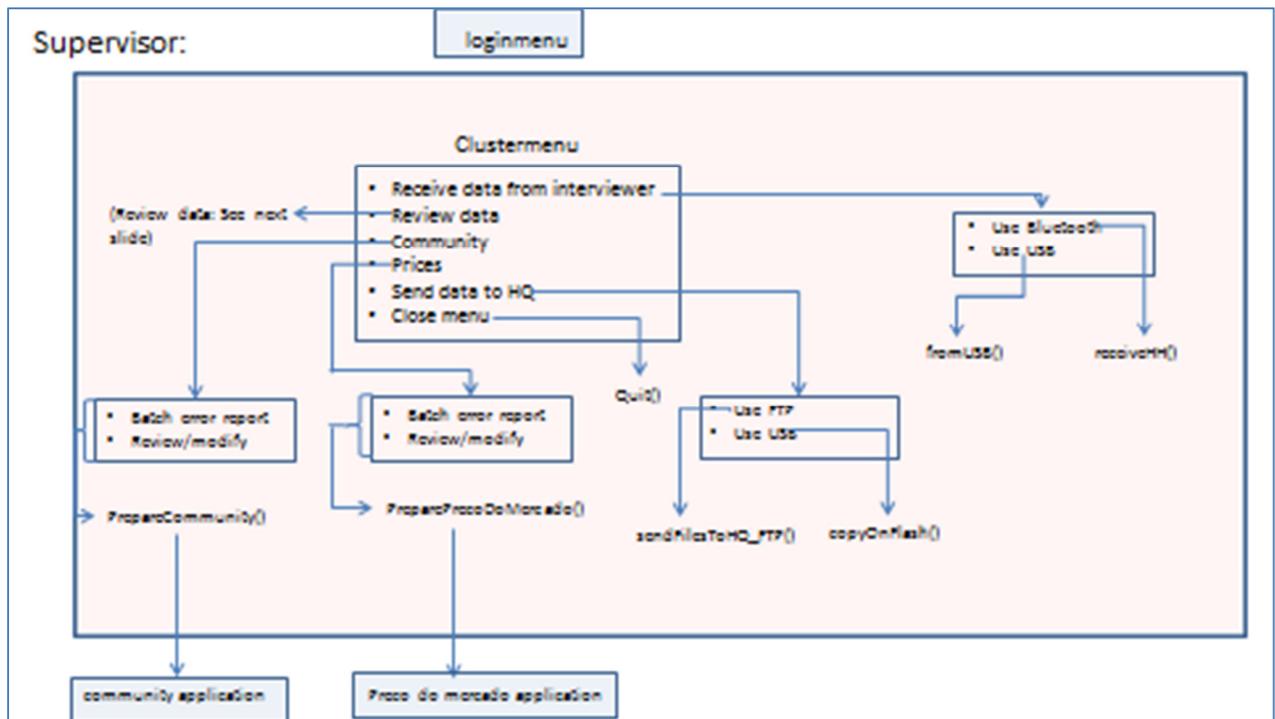
- Some numeric fields lack value sets at all (the valor fields): Left for INE staff to do
- Comunitario/preço do Mercado: Make better total checkings in EDUCAÇÃO, SAÚDE E ACÇÃO SOCIAL form

## Annex 2: IOF Application overview

### The interviewer's menus



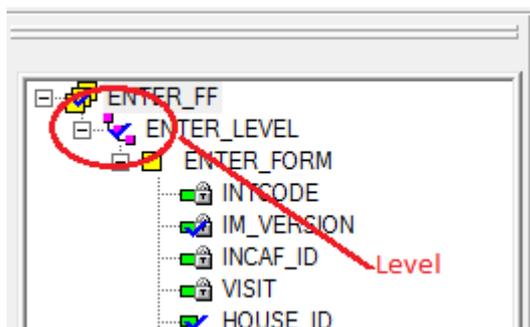
## The supervisor's menus



## Annex 3: How to add a new module to the IOF CPro application

Every time a new questionnaire or batch is to be added, what's needed is the following few steps:

- 1) Decide what application and menu to put the questionnaire/batch in:
  - a. If the questionnaire is asking questions at cluster level (for instance COMUNITARIO), it should be somewhere in the ClusterMenu (at the time being, no interviewer tasks are started from the clusterMenu)
  - b. If the questionnaire/batch is at household level or "lower" (employment/diaries etc), it should be in the InterviewMenu.
- 2) Decide which menu to put the questionnaire/batch into. (For now, it is not recommended to make new menus). Add a line (at the end of the menu) with the description of the questionnaire/batch to the selected menu. The new menu point will now have the number *one bigger* than the previous, so scroll down and add an "elseif.." to the end of the if statement right after the menu.
- 3) You now have to make a function that you can call from the "elseif.." in the bullet point above. At the end of this document, there are templates for the functions.
- 4) In the new questionnaire/batch, the parameters from the pff file have to be taken care of, to open the right records in the data files. The parameters should be dealt with in the preproc of the level:



If the new batch/questionnaire uses external dictionaries for looking up other data, this needs to be done in the postproc of the *last* identification element of the application.

### Example of function to add to interviewMenu

All code in red has to be modified when using this example. Also: the number of parameters for the function, is dependent on what "level" the questionnaire/batch is to be used in:

- For cluster level applications: Only visitNumber, clusterId and Mode are mandatory. InterviewerCode can also be added when relevant (when information about who did the interviewing is to be saved).
- For household level, use parameters visitNumber, ClusterID, HouseholdId, (InterviewerCode) and mode.

- For individual level: visitNumber, ClusterID, HouseholdId, (InterviewerCode), indId and mode
- For diary: visitNumber, ClusterID, HouseholdId, (InterviewerCode), day and mode

```

Function FunctionName (VisitNumber, ClusterId, HouseholdId, InterviewerCode, IndID, String Mode);
string thePath = "..\ENTRY\EMPREGO\ENTRY\";
string theApp = "Emprego";
string inputData = concat("..\.\.\.WORK\EMP\EMP", edit("9", VisitNo), "-", edit("9999",
                        Clust), ".dat");

String externalDicts;
string appType;
string StartMode;
string listing = concat("..\.\.\.WORK\EMP\EMP", edit("9", VisitNo), "-", edit("9999", Clust));

string theParams = concat(edit("9", VisitNo), "-", edit("9999", Clust), "-",
                        edit("999", household), "-", edit("9999", Code), "-",
                        edit("99", Ind), "-", Mode);

//The following is only relevant if the application uses external dictionaries
if VisitNo = 1 then
    externalDicts = HOUSEHOLD_SAMPLE_DICT=..\\.\.SCF\Household_Sample.dat.txt\n";
else
    externalDicts = "HOUSEHOLD_SAMPLE_DICT=..\\.\.SCF\Household_Sample_"
                    + edit("9", VisitNo) + ".dat.txt\n";
endif;

externalDicts = externalDicts + "AGREG_FAMILIAR_DICT=..\\.\.WORK\HH\HH" + edit("9", VisitNo)
                        + "-" + edit("9999", Clust) + ".dat\n"
                        + "INT_STATUS_DICT=..\\.\.WORK\STATUS\ST" + edit("9", VisitNo)
                        + "-" + edit("9999", Clust) + ".dat\n";

changeAppBehaviour(Mode, thePath + theApp);

if Mode="A" then //Data entry - add mode
    appType = "Entry";
    startMode = concat("add;", edit("9999", Clust), edit("999", Household), edit("99", Ind));
elseif Mode="M" then //Data entry - modify mode
    appType = "Entry";
    startMode = concat("modify;", edit("9999", Clust), edit("999", Household), edit("99", Ind));
elseif Mode="B" OR Mode="D" then {BATCH MODE}
    appType = "Batch";
endif;

if appType = "Entry" then
    createAndRunEntryPff(thePath, theApp, inputData, externalDicts, theParams, startMode);
else
    createAndRunBatchPff(thePath, theApp, inputData, listing, externalDicts, theParams, ".ent");
endif;
end;

```

## Annex 4: Terms of reference

November 2014

### TERMS OF REFERENCE

for 1 short-term mission on

#### INCAF/IOF

#### the Household Budget module of the Continuous Multi-purpose Survey 8 – 19 December 2014

within the

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

between INE and Scanstat.

Consultant: Anne Abelseth Statistics Norway

Counterparts: Arão Balate and the INCAF team at INE

#### Background

The National Statistics Institute of Mozambique (INE) has re-designed the household budget survey Inquérito sobre o Orçamento Familiar (IOF) to function as a module of the continuous multi-purpose survey (INCAF) which covers the seasonality in household income and expenditures over a period of 12 months. The International IT specialist will provide technical assistance and training to INE on the INCAF/IOF IT procedures and the consultant will coordinate the work with other Scanstat consultants working in the same field.

#### Main reasons for the mission

The INCAF/IOF has been going on since July 2015 and results are obtained each quarter. There is a need for oversight, assistance and further advice regarding the IT procedures.

#### Objective

To secure that the work progresses securely and along international standards.

#### Activities

To cope with the data processing work of the INCAF, the IT team needs support for the following tasks:

##### 1. Monitoring the operations;

In the operational control is intended that the system should show the actual state of the various questionnaires (Household, Employment, Daily expenses & Auto consumption and Monthly Expenses);

##### 2. Data Management (at closure of an Area).

By data management it is intended to make the application show if all eligible respondents on the employment questionnaire were interviewed or not, and the same for the weight and height of eligible children under 5 years, were weighed and measured;

##### 3. Data Transfers.

At this point the system must ensure that the data transfer from the inquirer to the controller has been successful, i.e., that the file has been completely transferred to the controller tablet. Parallel to this, the system must ensure that the sending from the

controller to the server has been successful. This is because many times it appears that what arrives at the server is an empty file (with no information);

4. Communication between questionnaires.

The system should act as a platform for communication between the various questionnaires in the application;

5. Miscellaneous.

Check and clean the data entry application from bugs that could possibly exist, ensuring that the data is consistent. Also re-checking the current applications used in the data collection for 2<sup>nd</sup> quarter, etc.

### Expected outputs

A better system. The consultant will prepare a written documentation of the above activities;

### Beneficiaries of the mission

The mission will benefit INE and the whole National Statistical System of Mozambique including users of statistical information.

### Tasks to be done by INE to facilitate the mission

- Elaborate ToR for the missions
- Prepare and supply the consultant with necessary documents and information
- Supply good communication conditions for the consultant.

### Source of Funding

Project: MPD-2008-0006 – Inquérito Sobre Orçamento Familiar – IOF

PAAO14 – 1.2.2 Inquérito Contínuo aos Agregados Familiares

PAAO15 – 1.2.2 Inquérito Contínuo aos Agregados Familiares

### Timing of the mission

See above.

### Place

The premises of INE in Maputo with possible allocations to the provinces.

### Language

English.

### Report

The consultant will prepare a short final report to be discussed with INE before ending assignment. Statistics Denmark as Lead Party will publish the final version on <http://www.dst.dk/mozambique> within 3+ weeks of the end of the mission. The structure of the report should be according to Scanstat format.

Approved by Arão Balate, DCI

Day / / .....

Confirmed by Leia Gimo Macamo, DARH, Contract Manager for the INE–Scanstat Contract

Day / / .....

*Termos de referência do consultor informático*

Para fazer face ao trabalho de processamento de dados do Inquérito sobre o Orçamento Familiar, a equipe de informática necessita de um apoio para as seguintes tarefas:

**1. Controlo operacional;**

No controlo operacional pretende-se que o sistema demonstre o estágio dos questionários (Agregado Familiar, Emprego, Despesas diárias & Auto Consumo e Despesas Mensais);

**2. Gestão de dados (fecho da Area).**

Na gestão de dados pretende-se que no aplicativo verifique se todos os elegíveis para o questionário do emprego foram entrevistados ou não, idem para os elegíveis para o peso e altura das crianças menores de 5 anos se foram pesadas e medidas;

**3. Transferências de dados.**

Neste ponto o sistema deve garantir que a transferência de dados do inquiridor para o controlador foi feito com sucesso, isto é, o ficheiro foi transferido completamente para o tablet do controlador. Paralelamente a isto, o mesmo deve garantir que o envio do controlador para o servidor foi feito com sucesso. Isto porque várias vezes constata-se que o ficheiro que chega no servidor está vazio (sem informação);

**4. Comunicação entre questionários.**

Deve se ter uma plataforma de comunicação entre os vários questionários no aplicativo;

**5. Diversos.**

Verificar em todo o aplicativo de entrada de dados os bugs que porventura possam existir de forma que os dados sejam consistentes. Reverificar também os aplicativos em curso na recolha de dados do 2º trimestre. Etc