QUANG NGAI RURAL DEVELOPMENT PROGRAM (QNRDP) - PHASE II

Database Specialist Visit Report

VIET NAM-AUSTRALIA

Prepared for

AusAID

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Limitations

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Acronyms

AMC	Australian Managing Contractor
AP	Annual Plan
ATL	Australian Team Leader
DBMS	Database Management System
DS	Database Specialist
DDO	District Development Officer
GIS	Geographical Information System Specialist
GOA	Government of Australia
GOV	Government of Vie Nam
KRAs	Key Result Areas
M&E	Monitoring and Evaluation
MEGO	Monitoring & Evaluation/GIS Officer
MES	Monitoring and Evaluation Specialist
MSDE	Microsoft Database Engine
PMU	Program Management Unit
PPC	Provincial People's Committee
QNRDP	Quang Ngai Rural Development Program
TOR	Terms of Reference

Summary

This report summarises the activities, issues, training and recommendations for the visit of the Database Specialist in Quang Ngai in November/December 2002 and February 2003. The Database Specialist reported to the Monitoring and Evaluation Specialist (MES) and worked in close collaboration with the Monitoring and Evaluation/GIS Officer (MEGO), the GIS Specialist (GIS), the Australian Team Leader (ATL), counterparts and other members of the PMU.

1 Background and Objectives

The Quang Ngai Rural Development Program (QNRDP) aims to address poverty alleviation in Quang Ngai province of central Viet Nam by increasing incomes and employment opportunities for poor households and by enhancing strategic community infrastructure. Equity of involvement for all stakeholders, in particular across genders, is a prime consideration, as is the sensitivity of the environment and the sustainability of the overall process following cessation of QNRDP support.

The income generation needs of poor households, rather than overall communes or districts, are being highlighted by QNRDP as this is where poverty occurs and it must be the target for any program that seeks to reduce poverty over a wider area.

As part of ensuring that QNRDP is achieving its goals, a process of continuous monitoring and evaluation has been established (see Monitoring and Evaluation Plan). The main purposes of monitoring and evaluation are to:

- make available timely and relevant information on project implementation which will support effective management decision making by all key stakeholders – including community planning and self management;
- promote discussion of Program progress within AusAID, and with other stakeholders, and plan any required remedial action;
- contribute to accountability since AusAID and GoV managers need to know that activities are being implemented in accordance with memoranda of understanding, project documents and contracts, and are achieving their stated objectives;
- provide the main source of performance information for internal management and validation of inputs to external reporting requirements; and
- influence policy, since AusAID needs to know how well the policies and procedures governing the development cooperation program are working and whether modification is desirable or necessary.

The prime responsibilities of the Database Specialist are to work closely with the M&E Specialist (MES), the GIS Specialist (GIS) and the Australian Team Leader (ATL) to ascertain the needs for a database to meet the above M&E requirements of the Governments of Australia and Vietnam. The Database Specialist will liaise with Program staff and counterparts, in particular the Monitoring/GIS Officer (MEGO), to lead the development of a spatially enabled database that will house and present the necessary information. A full specification of the terms of reference for the Database Specialist is contained in Annex 2.

2 Why do we need a Database Management System?

2.1 Monitoring and Evaluation and Other Reporting Requirements

The QNRDP Monitoring and Evaluation Plan introduces a framework of indicators, processes, and personnel roles and responsibilities to enable regular assessments of the progress of QNRDP implementation. The Database Management System (DBMS) works within that framework as a tool to collate, store, analyse, retrieve and present information that is collected in the field by participants and project teams in order to meet the Program's monitoring and evaluation responsibilities.

The need for reporting to AusAID and GoV will be met by automated and manually created reporting tools within the database that queries data and presents information relevant to each report. Reports required in the scope of services include:

- Annual operating plan
- Progress reports – annual and six-monthly including Key Result Areas (KRA's)
- Case studies
- Structured consultation
- PCC and PSC reports

The DBMS will be able to provide graphical and spatially based data on a monthly basis (management reports to PMU and activity groups), 6-monthly (progress reports) and annually (progress reports and AP). For a detailed description of what these reports will contain and therefore what information will be obtained via the DBMS, refer to the Monitoring and Evaluation Plan.

2.2 Management Information and Continuous Improvement

For Program managers, information feedback is vital to inform them of the prior performance of the program and therefore what changes may be needed to improve that performance. M&E establishes a process for continuous improvement, allowing Program mangers to tweak the program where required on an on-going basis.

Minimising the time delay between collection of information, analysis and presentation to managers, will allow the provision of more relevant information and lead to a higher likelihood of appropriate decision making. This is referred to as 'real-time' information and decision making and is only achievable via the use of electronic DBMS and communication protocols such as those in use for QNRDP.

2.3 Participant Feedback

A crucial element of monitoring and evaluation is the feed back of information to program participants that illustrates how information from their involvement in the M&E process was used. This increases the 'ownership' felt by participants in the Program and encourages them to continue to stay involved. The DBMS provides the means by which this information can be readily summarised and fed back.

In the context of QNRDP this may include illustrating the increasing number of households from a Commune who are involved in the program, the number and type of

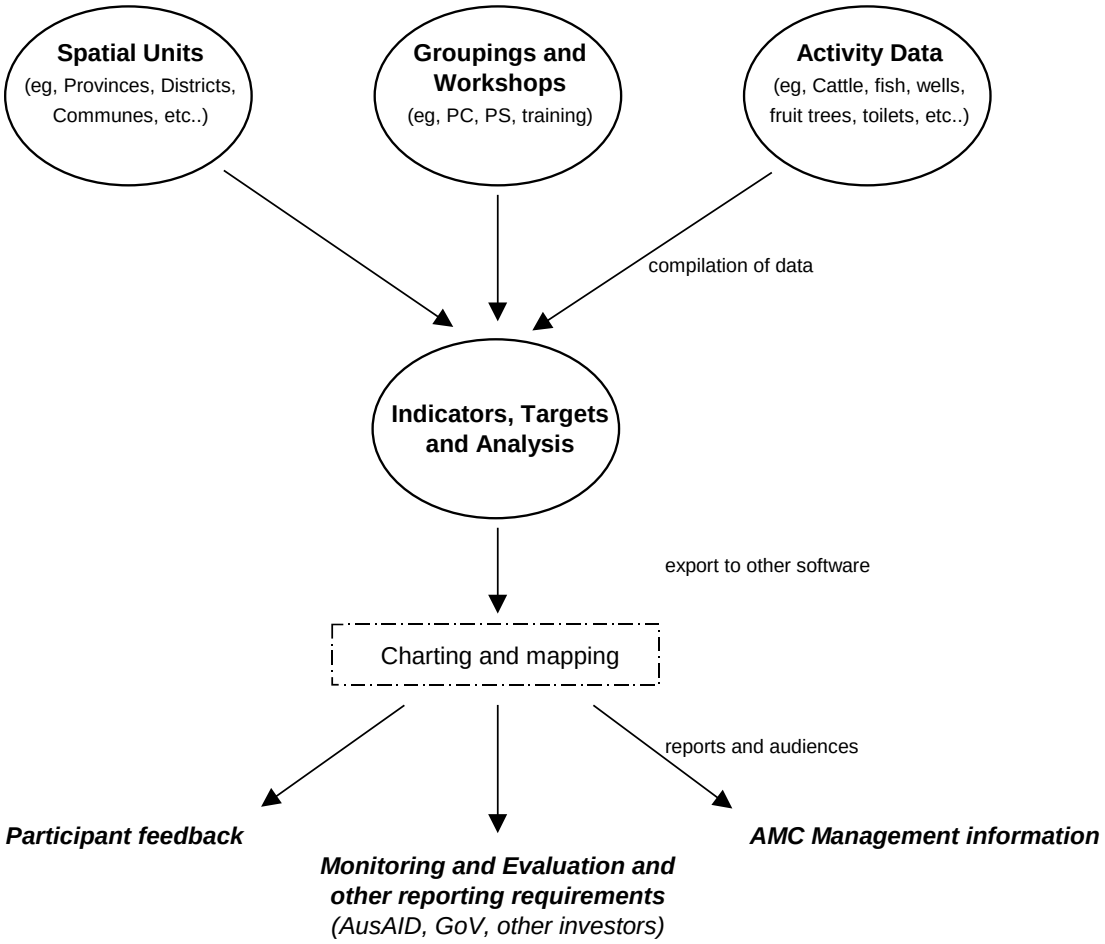
income generating or social infrastructure activities being undertaken in a commune, or the increase in average household incomes for participating households.

3 Description of the QNRDP DBMS

3.1 Components

The DBMS has four distinct components. These are illustrated in the circles below, along with the various uses and users of the information produced.

Figure 1: Components of the DBMS



- **Geographical/Spatial Units**

Information in these components includes data relating to spatially distinct units such as Provinces, Districts, Communes, Villages, Hamlets, and Households. Within each spatial unit, information is recorded such as name, spatial location, statistical information, and the details of people belonging to that spatial unit. Importantly, information is collected and recorded for those spatial units where QNRDP operates, as well as where it does not. When combined with the information from other components described below, this allows an analysis of the net impact and effectiveness of QNRDP.

Each spatial unit is defined as 'belonging' to the next biggest spatial unit, such as Households belonging to Hamlets, Hamlets belonging to Villages, Villages belonging to Communes, and so on. Clearly defining this association is a first and basic step in

developing a powerful database. Once these relationships have been defined, information of all types can be compared and analysed across the database to provide valuable management and reporting information.

- **Groupings and Workshops**

These components contain information on groupings of people convened for the purposes of QNRDP. This includes groupings such as for Problem Census or Problem Solving meetings, or for the provision of credit and training. Within each grouping, information is collected that relates to that group. For example, for each Problem Census meeting, information on the people who attended that meeting is collected, along with the date and time of the meeting, where it was held, the nature of the specific problems raised in discussions, and the frequency of nominations for each problem by gender. Combining this information with the information in the Spatial Units component, allows an analysis of where certain problems are most apparent, where most people are involved in QNRDP, where the Program is being effective or where more or different effort is required.

- **Activity Data**

The Activity Data component is where all the information relating to income generating activities and social infrastructure is stored. This includes basic information on what activities are being undertaken and where, down to more detailed management data such as feeding rations for livestock activities, or the status of wells and other infrastructure construction.

Whilst much of the detailed information in this component will not be required for M&E and other reporting requirements, it is vital for the ongoing management of the Program and individual activities. 'Real-time' information can be produced that allows a high degree of flexibility and responsiveness to changed conditions in the management and operation of activities.

- **Indicators, Targets and Analysis**

This component contains a listing of the M&E indicators required to be reported on by the AMC as specified in the QNRDP Logframe. At regular intervals as required in the M&E plan, or on an as-requested basis by stakeholders, information that relates to each indicator is compiled, compared to targets, and stored in this component.

This component essentially represents the end product of the database, where the answers for each indicator are stored for presentation via a choice of tabular and graphical mediums. The information for each indicator is exported to other software, such as Microsoft Excel that illustrates the data in charts, or to ArcGIS that digitally 'overlays' the data onto existing maps of the Quang Ngai region to provide a very effective graphical communication of the result. The AMC proposes to use these communication mediums for its reporting requirements, and the PMU will do so as well for its participatory planning processes.

3.2 Functions

The functions of the DBMS are explained in detail in Annex 1 DBMS Operation Manual. In summary, the functions of the database include:

- **Electronic recording of data for storage and future reference**

This is the major function of the database. Enables rapid recall and comparison of data that would otherwise involve time intensive hardcopy records and filing, retrieval.

- **Analysis and comparison of data for managerial, technical and reporting requirements**

Rapid comparison and analysis of otherwise disparate and unrelated data is possible via electronic databases such as the one being used in QNRDP. Electronic spreadsheets, such as Excel are better than hardcopy records, but do not allow the efficient data comparison capabilities of a database.

- **Combining spatial and tabular information**

All data entered in the DBMS has spatial identity numbers associated with it. This allows the presentation of data not only via simple tabular charts and summaries, but also via the effective medium of visual maps by using GIS.

- **Data security and backup**

The database represents a safe repository for the significant amount of data that will be collected in QNRDP. Regular backups of the database will occur to ensure no data is lost.

3.3 Roles and Responsibilities

The responsibilities of QNRDP staff in the operation of the DBMS are outlined below:

Database Specialist – lead the initial development of a spatially enabled database that will house and present information required to meet the M&E needs of the QNRDP. Once the DBMS has been developed, the Database Specialist will also manage the early maintenance and troubleshooting issues that arise. Throughout the development of the database, the Database Specialist will work closely with the MEGO to enable him to gradually takeover all aspects of database operation and maintenance. The Database Specialist will be available throughout the term of QNRDP to assist wherever required.

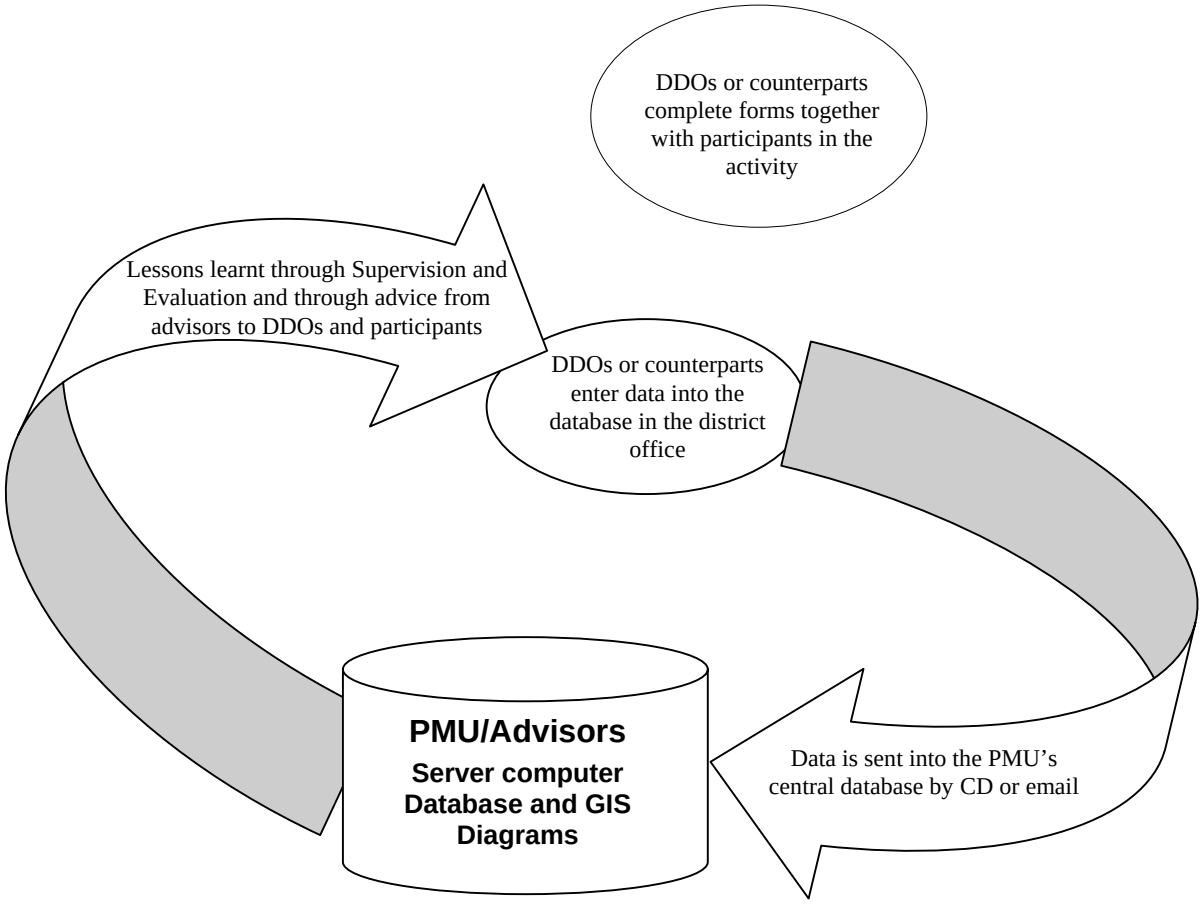
Monitoring and Evaluation/GIS Officer (MEGO) – to develop the Phase 1 database that forms the basis of the DBMS in Phase 2 of QNRDP. Participate in the initial development of the DBMS with a view to gradually taking over all aspects of database management and maintenance. This will entail the provision of training to DDOs and other database users, the generation and analysis of data required for QNRDP reporting requirements on an as-required basis for program management. The MEGO is to ensure that the database is properly and regularly backed up and will conduct quality assurance of new data that is entered by the DDOs and other users. The MEGO will in some instances be responsible for the collection and entry of data in to the database, such as socio-economic data provided by Provincial governments.

District Development Officers (DDOs) – will be required to enter data in to the database that they have previously collected as part of the normal responsibilities. The DDOs would have received training from the Database Specialist and the MEGO in their aspects of database operation and proper usage. On regular monthly intervals, or when the DDOs attend the central Quang Ngai office for other reasons, they will be required to submit copies of their versions of the database, for quality control by the MEGO and entry in to the central database.

3.4 Using the Database

Figure 2 below illustrates the basic process of how the database is used. For more detailed information on the processes and procedures for using the database, refer to Annex 1 in this document (the Database Operations Manual), and the Monitoring and Evaluation Specialist report.

Figure 2: Use of Database



3.5 Technical Details

Figure 2 illustrates how information is collected by the DDOs and entered in to their own versions of the database. Copies of the DDO databases are then periodically sent in to the Quang Ngai office for checking and transfer across to the central database.

The central database in the PMU office is the final location where data that is collected and recorded by DDO's will reside. It is split into two parts - the first part, the 'front end', is a Microsoft Access file that appears identical to the DDO databases. The difference between the front end of the central database, and the DDO versions, is that all data and database programming is not stored on the front end - all of this is located on the second part of the central database, called the 'back end'. The back end is a Microsoft Database Engine (MSDE) file. When using the central database, the front end communicates to the data and programming that is stored on the back end to appear, and operate, as if it is one single database.

Using a split system for the central database is desirable as it enables a straightforward connection with the Geographical Information Systems (GIS) software. It also enables use of the database by more than one person either in the office, or remotely such as by the DDO's in the districts, or by the Database Specialist in Australia. The remote facility is not yet operational but is planned to be, once the wider M&E system is bedded down.

4 Training and Capacity Building

The Database Specialist worked closely with his Vietnamese counterparts and provided training, particularly to the Monitoring and Evaluation and GIS Officer (MEGO), whose responsibility it will be to train the DDOs (District Development Officers) and other Program staff in the use of the database. Assistance was also provided to the DDOs directly in numerous short workshops and meetings in relation to the functions and operation of the DBMS.

The sustainability of reporting capabilities of the Program and those of the Vietnamese staff following the cessation of the Database Specialist's inputs, are being addressed by the training inputs provided thus far. With the training provided, it is anticipated that the progressive phasing-in of the MEGO's responsibilities relating to database operation, maintenance and training, can continue.

The training provided by the Database Specialist is ongoing, including via remote methods when he is located in Australia, and falls in to the following categories:

- **Microsoft Access Database Design, Operation and Maintenance**

Including basic to advanced levels of table, form, query and macro design. Database relationships, referential integrity and cascade properties. General database maintenance, security, backups. Database replication, partial replication, synchronisation, split design over computer servers and operation under such setups.

- **General Practice Information Technology**

Training in this area has been conducted in an informal manner over the life of QNRDP during periods when the Database Specialist was present in the program office. Topics include tips on proper and efficient use of the suite of Microsoft Office products, basic naming and storage conventions, security and backups.

- **Assistance in Monitoring and Evaluation**

In his role as M&E assistant, the Database Specialist also provided support to the M&E specialist in the provision of training and support for monitoring and evaluation. Formal contributions to small workshops and meetings were provided, particularly in relation to the role of the DBMS in the overall process of M&E. Informal assistance was also provided, chiefly to the DDOs, as required for queries relating to monitoring and evaluation.

5 Recommendations

The following recommendations are made in relation to the DBMS:

- The MEGO should undergo advanced training in Microsoft Access database design, operation and maintenance. The Database Specialist has provided what on-the-job training is possible, however the language issue and the technical nature of advanced topics necessitates formal training in Vietnamese. In addition, training at all proficiencies in Geographical Information Systems (GIS) software such as ArcGIS is required for the MEGO to fulfil his GIS responsibilities.
- Training in basic database operation, electronic procedures and processes (in particular backing up and protecting data), and in basic GPS unit operation is required to be delivered by the MEGO to the DDO's. The basis for this training is the Database Operation Manual which is located in Annex 1 in this document. Supplementing this should be training in GPS and basic GIS concepts learned by the MEGO following his training in recommendation 1 above.
- More efficient electronic systems of communication and data transfer are needed for the users/operators/developers of the DBMS. This will become less important between the Database Specialist and the MEGO as the latter becomes more familiar with the operation and maintenance of the DBMS. However, there is scope for improvement in the process used by the DDO's and the MEGO for data transfer. Automated procedures for checking and transferring data between the DDO databases and the central database will save considerable time. The Database and GIS specialists, in association with the MEGO should develop these new systems.

6 Contacts

For all technical issues associated with the DBMS, please contact:

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Quang Ngai Town, Quang Ngai Province
VIET NAM
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Annex 1

DBMS Operation Manual

(translated version)

Tina,

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Quang's database manual - gwm edits accepted.doc

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Annex 2

Database Specialist – Terms of Reference

Annex 2: Database Specialist – Terms of Reference

Duration: Short term input of 1 month (including one visit to QNRDP Office) per year for each year for the 5 year program

Report to: Monitoring & Evaluation Specialist

Duties: The prime responsibilities of this position are to lead the initial development of the database/s that will house and present information required to meet the M&E needs of the QNRDP. The Database Specialist will work closely with the M&E Specialist (MES), the GIS Specialist (GIS) and the Australian Team Leader (ATL) to ascertain the needs for a database to meet the M&E requirements of the Governments of Australia and Vietnam. S/he will liaise with the Participatory Development Advisers (PDAs), the Monitoring & Evaluation/GIS Officer (MEGO) and their counterparts in the operation of the M&E database and guide its ongoing development. The Specialist will provide on-the-job training to the MEGO, the District Development Officers (DDOs), counterpart staff and field staff involved in data collection.

Responsibilities include:

- Undertake the design, specification and installation of a spatially referenced M&E database using both English and Vietnamese language.
- Enable the database to provide routine progress reporting information as part of regular M&E requirements.
- Undertake the design and validation of data collection and data entry proformas to support such activities by the MEGO and PDAs.
- Collaborate with the GIS to enable the database to contain and provide spatially referenced M&E information to inform the M&E system.
- Contribute to the specification of equipment, software and capacity building requirements to install and operate a spatially referenced M&E database.
- Coordinate training of the MEGO in the operation and management of the M&E database as part of their capacity building.
- Train the DDOs in using the M&E database from program income generating, infrastructure support, activity funds and capacity building activities.
- Provide ongoing monitoring of the M&E database to ensure currency, integrity, relevance and accuracy.
- Provide ongoing mentoring for the MEGO, DDOs and other staff concerned with database and M&E activities.

Qualifications/Experience:

Essential

- Qualifications in developing relational databases, and experience in the development of these for M&E purposes.
- Experience in a rural development related discipline.
- Experience in the design, implementation and monitoring of M&E systems to meet AusAID requirements.
- Experience in SE Asian region, preferably Vietnam.
- Demonstrated written and oral skills.
- Ability to work in a social setting with high levels of poverty.

Desirable

- Experience working with multi national teams.
- Knowledge and experience of institutions in Viet Nam.