United Nations Development Programme

Monthly Report

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1. Introduction

The following report covers the work performed by UNDP's international consultant on Information and Communications (ICTs) during the month of May 2013. The activities in this period are classified into four groups: training sessions, technical support, systems development and technical proposals for the adoption of new technologies.

2. Activities

2.1. Ad-hoc training

Ad-hoc training was carried out at CEP office's and counted with the active participation of four technicians. The meeting hours were from Monday to Friday 9:00 AM to 12:00 PM. We are currently working in the topic regarding database management, specifically Oracle 11g R2, which is the database management system that is used by CEP for the storage of the electoral list.

The topics covered during this period were: *Structured Query Language* (SQL) and *Procedural Language/Structured Query Language* (PL/SQL). SQL was covered in a standard way, so that the acquired knowledge can be applied to other database management systems (engines) compatible with this standard. While PL/SQL is totally Oracle for being exclusive to this database.

During this month, I conducted a total of 17 training sessions, which were divided as follows:

- 1 session: Assessment of SQL
- 1 session: SQL assessment review
- 10 sessions: PL-SQL
- 1 session: Assessment of PL-SQL
- 1 session: PL-SQL assessment review
- 3 sessions: SQL and PL-SQL practice

Each session was about 3 hours, which gives a total of 51 hours of effective training. As part of the training framework, technical assessments were performed at the end of each training session with the purpose of establishing the level of knowledge and skills that were acquired by CEP's technicians. In addition, some practical sessions and the review of topics where performed with the purpose of applying the concepts learned to real life situations.

To carry out the development of the training sessions, CEP technicians have learned to use software tools that allowed them to communicate with the database to extract information, to create objects, to execute scripts and to design database models. The software tools are the following:

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a) **Oracle SQL Developer** is a free integrated development environment that simplifies the development and management of an Oracle Database. SQL Developer offers complete end-to-end development of your PL/SQL applications, a worksheet for running queries and scripts, a DBA console for managing the database, a reports interface, a complete data modeling solution, and a migration platform for moving your 3rd party databases to Oracle.

b) **Oracle SQL Developer Data Modeler** is a free data modeling and database design tool that provides an environment for capturing, modeling, managing, and exploiting metadata.

c) **Tool for Oracle Application Developers (TOAD)** is a paid software application from Dell Software used for development and administration of Oracle Database using SQL and PL-SQL.

The relevance of integrates SQL and PL/SQL languages into the training program, strives in the fact that the current information of the electoral list is stored using an Oracle Database 11g Release 2. For this reason, the domain of these languages and software tools will allow CEP's technicians to have a better understanding of the information and database management in the future. As part of the training activities, I have prepared examples which were very close to the actual procedures that have to be performed with the actual electoral list's database.

See documents attached: *Programme de formation 2013 - Feuille de presence - Mai 2013.pdf*

2.2. Hardware and software quotation update

I have prepared an updated quotation for hardware and software that eventually will be acquired for the project with the purpose of strengthened CEP's technological infrastructure. Detailed technical specifications and referential prices were included as part of the updating process.

Hardware
The hardware component was updated with the following equipment:

a) **Servers**: two new generation HP servers, one for production and second for backup to maintain redundancy and prevent any failure of the primary server.

b) **Storage:** to increase the storage capacity of the database server. At the same time, this storage can be used as a common repository between different servers and lay the foundation for a future upgrade to an Oracle RAC infrastructure.

c) **Uninterruptible Power Supply (UPS)**: two UPSs which allow greater autonomy to the equipment in case of power failure. Ensuring that servers can be shutdown normally and not by a sudden lack of electricity which could damage any connected equipment.

d) **Additional hard drives:** to enable us to have replacements in order to change hard drives with problems.

e) **Rack:** to have and to secure all computers in a common place.

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Software
The updated software is classified as follows:
  a) ***Server side:*** operating system (Microsoft Windows Server 2008), database (Oracle 11g R2), database monitoring and query tools (TOAD for Oracle and Spotlight) and antivirus (Kaspersky Antivirus for Windows Server).
  b) ***Client side:*** desktop and web application development tools, professional database connectivity components, communications and security components, imaging manipulations components and documents manipulations capabilities components.

See documents attached
Hardware and software technical proposal 15.MAY.2013.xlsx
Hardware and software technical proposal 15.MAY.2013.docx

2.3. Technical support

As part of the technical support, database credentials were confirmed and maintained. Also, the appropriate operation of the database and available storage space in the server were verified. An alphanumeric backup for sensitive tables was performed.

Full table spaces backup
A full backup for the two main table spaces of the electoral list database were prepared. This backup is integrated by:

  a) ***LEP_DATA:*** table space with a total of 60 data files, containing updated information about the electoral list.
  b) ***ONI_TO_CEP:*** table space with a total of 7 data files, contains the information exchange between the ONI and CEP through the protocol of data transmission.

The Oracle Enterprise Manager Console which is an essential monitoring tool was fixed from a startup issue and now is fully functional.

2.4. Meeting with the Technical Advisor

Follow up and planning meetings were performed in regular bases. The meetings included: definition of strategies and activities, establishment of solutions for potential issues and further actions in preparation for the upcoming elections.

3. Achievements

As part of the activities described above, the following was achieved:

  • Fifty one (51) hours of training given to four (4) technicians at CEP's office.
  • Two assessments of the covered topics and several practical sessions.

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- One document with the detailed technical specifications for hardware and software.
- One full database backup.
- Increased knowledge of CEP technicians on Oracle databases and electoral list management.

4. Next activities

- Continue CEP training with database administration basics and desktop applications developed with C# language.
- Prepare one week guided workshop where CEP technicians can apply all the knowledge acquired to date.
- Prepare one week laboratory completely performed by technicians CEP.
- Neighborhoods depuration.
- Develop a desktop application for change of voting centers.
- Develop a web application for registration of candidates.