



## **Mission Report**

# **SMS4DC Training, Workshop and Installation in the Ministry of Telecommunications and Information Technology**

**Sana'a, YEMEN  
27<sup>th</sup> November to 7<sup>th</sup> December 2007**

## **Table of Content**

|                                                       |           |
|-------------------------------------------------------|-----------|
| <b>INTRODUCTION</b>                                   | <b>3</b>  |
| <b>1. MISSION DESCRIPTION</b>                         | <b>4</b>  |
| <b>2. MISSION PERIOD AND LOCATION</b>                 | <b>4</b>  |
| <b>3. MISSION OBJECTIVES</b>                          | <b>5</b>  |
| <b>5. NATIONAL FREQUENCY ALLOCATIONS TABLE (NFAT)</b> | <b>6</b>  |
| <b>6. APPLICATION FORMS</b>                           | <b>6</b>  |
| <b>8. CUSTOMIZATION OF SMS4DC PACKAGE</b>             | <b>7</b>  |
| <b>9. OTHER ISSUES</b>                                | <b>8</b>  |
| <b>APPENDIX 1.</b>                                    | <b>9</b>  |
| <b>APPENDIX 2.</b>                                    | <b>11</b> |
| <b>APPENDIX 3.</b>                                    | <b>12</b> |

# Introduction

Similar to water, space, land and numbers, radio frequency spectrum is a national natural resource of each country which has to be managed properly to attain its wide social and economical advantages. Inline with telecommunication technology growth and consequent to increasing number of radio-communication networks, the demands for the application of frequencies is growing rapidly. Human desire to use variety of radio-communication services anywhere anytime changes frequency to the most predominant need of all wireless apparatus. Airplanes, ships, satellites, radars, cell phones, sound and TV broadcasters, TV receivers, radio transceivers, microwave links, radio trunks, cordless phones, handsets, wireless apparatus, home appliances, industrial and medical equipments, weather forecasters and many other applications are coordinated internationally and nationally to employ radio frequency spectrum interference free.

In continuation to deployments of SMS4DC (Spectrum Management System for Developing Countries) package developed by ITU-D, the Republic of Yemen requested ITU-D for this software (3 users) and also for a short training course for its designated local experts and some experts from Palestine.

Now, we, as members of the team engaged to deal with SMS4DC, are delighted to present the report of sixth successful installation/customization of SMS4DC package in Sana'a/Yemen.

Indeed, administration of this training program was hardly possible without liable collaboration and support of ministry of telecommunication and information technology and especially:

1. H.E. Eng. Yassin Mahmood Ali, Deputy minister of MTIT,
2. Eng. Abdelghader Ibrahim, Director general of frequency management,

8 December 2007, Behzad Paknahad, Saman Jalayerian & Alireza Darvishi

## **1. Mission Description**

The first installation of SMS4DC was in Republic of Guinea during December 5<sup>th</sup> to 23<sup>rd</sup> 2005. In view of the fact that the copyright of the package had not been registered by legal department of ITU, a time-limited copy of package installed and customized for the spectrum management authority of host country. The second deployment carried out in Lao P.D.R. on April 2006. The third deployment was done in the Republic of Cape Verde. The fourth deployment was performed in Albania. The fifth deployment took place in East Timor.

In the first, second and fifth missions, the national frequency allocation table of hosting countries as well as corresponding wall-charts prepared in addition to the training workshop/seminar and SMS4DC customization for the host countries.

For this sixth deployment, the following tasks were requested:

- 1- Installation of time-limited version of SMS4DC on selected 8 PCs for training
- 2- Customization of 4 licenses, invoice and receipt of SMS4DC
- 3- Training and assistance on data entry for existing licenses and stations
- 4- Preparation of data acquisition forms for Fixed, Land mobile (2 forms), Broadcasting services and Earth stations and customization of them
- 5- Training of 11 local experts and 7 experts from Palestine on all aspects of SMS4DC and also on background technical issues such as propagation models
- 6- Training and assistance on data entry for existing National Frequency Allocation Table

Three following consultants appointed to accomplish the above mentioned tasks:

Mr. Behzad Paknahad, Mr. Alireza Darvishi and Mr. Saman Jalayerian

## **2. Mission Period and Location**

The training and installation of SMS4DC carried out in the capital of Yemen from 27<sup>th</sup> November till 7<sup>th</sup> December 2007 (Thursdays inclusive). The program hosted in the building of the ministry of telecommunications and information technology in Sana'a. The list of experts participated in the activities is attached as appendix 1.



Figure 1: Two views of training sessions

### 3. Mission objectives

According to the Job Description defined for each consultant, following areas have to be covered during 2 weeks, 27<sup>th</sup> November to 7<sup>th</sup> December 2007:

- Delivery of all items mentioned in appendix 3
- Overview of SMS4DC package,
- Presentation, training and workshop on Administrative features and procedures of SMS4DC including:
  - Principals of Data Management System of SMS4DC,
  - Owner creations, modification and cancellation,
  - License issuing, modification and rejection,
  - Invoicing licensees,
  - Station, equipment and antenna assignment, library creation,
  - Electronic notices including terrestrial and earth stations.
  - Point to point, point to area, point to multipoint, Fixed, land mobile and broadcasting radio networks establishment,
  - Presentation of database structure of SMS4DC and security levels, auditing actions of different operators,
  - Presentation on interfacing SMS4DC with BR IFIC and BR SRS international databases,
- Presentation and workshop on technical features of SMS4DC including:
  - Introduction of propagation models included in SMS4DC,
  - Calculation of coverage area and coverage contours in land mobile and broadcasting services,
  - Link budget, visibility and availability calculation in point to point systems,
  - Point to area networks designing by SMS4DC,
  - Network calculation, aggregate field strength, maximum server and best server analysis,
  - Coordination methods under regional GE06, GE84, GE89 and ST61 agreements and SMS4DC capability,

- o Definition and application of user defined agreements and border coordination,
  - o Principal and types of interference,
  - o Methods of interference calculation by SMS4DC,
  - o Method of frequency assignment in SMS4DC,
  - o Calculation of coordination contours for earth stations and interference calculation between earth stations in opposite direction / earth stations and terrestrial stations.
- Presentation and workshop on GIS features of SMS4DC including:
  - o Utilization and manipulation of vector and raster maps,
  - o On-map drawing features,
  - o Demonstration of calculation results on map,
- Presentation and workshop on Frequency Allocations Table including:
  - o Principal of National Frequency Allocations Table,
  - o SMS4DC capability to use regional and national frequency allocations plan,
- Presentation and workshop on Frequency Assignments plan including:
  - o Principal of National Frequency Assignment Table,
  - o SMS4DC capability to use national frequency assignments plan,

## 5. National Frequency Allocations Table (NFAT)

During the second week of the mission and in parallel to training for data entry of NFAT into SMS4DC, the existing draft NFAT was reviewed with the local responsible persons. Data entry of the existing NFAT into SMS4DC was done by the local personnel under supervision of ITU experts. Local staff were trained and assisted to enter NFAT to the software.

## 6. Application Forms

From the second day of the mission, the licensing procedure of the ministry and their existing applicant forms for frequency assignments were analyzed. To fulfill information necessary for SMS4DC software, as well as BR notification, new license application forms prepared. Following applicant forms developed during work in Yemen by the ITU experts:

- a. F-FX Applicant Form; for acquiring information of point to point and point to multipoint System,
- b. MT-FB Applicant Form; for acquiring information of Base Stations in land mobile service,
- c. MT-ML Applicant Form: for acquiring information of Mobile (Handset and Vehicular) Stations in Land Mobile Service,
- d. B-BC; for acquiring information of FM-sound Broadcasting Station in accordance with the GE84 Plan,
- e. B-BT; for acquiring information of TV Broadcasting Station in accordance with GE89 plan,
- f. ES; for acquiring information of earth stations in space services

The final versions of proposed forms as well as license, invoice and receipt templates were introduced to the deputy minister to authorize the usage of these forms from now on.

Local experts trained how to customize these applicant forms and which references have to be used.



Figure 2: Group photo of the participants and consultants

## 8. Customization of SMS4DC package

All data for existing Fixed and Land mobile stations/licenses were revised for missing parts. Especially the coordinates and then some of the data were entered into SMS4DC database by two local experts under supervision of ITU expert. There was a lack of some essential information so transferred data was not complete for calculations of SMS4DC but the local experts were trained to complete them later.

Six HTML templates, one for invoice, one for receipt and four for licenses in Fixed, Land Mobile and Broadcasting services and also Earth Stations in space services, prepared and integrated to the administrative part of SMS4DC package.

During customization of SMS4DC package, local experts were trained to install and administrate all aspects of software. Finally a CD containing the second version of SMS4DC and other documents created and delivered to the Yemen authority. Appendix 3, presents the confirmation of this CD as well as confirmation of other delivered items.

## **9. Other issues**

There were some problems occurred during the mission, which are listed in the following:

- 1- There were some problems in the coordination and pre-arrangement for this mission (e.g. visas, facilities, transfer ...) by the host and ITU regional office, therefore the experts and participants missed three working days and also some hours during the workshop.
- 2- To compensate the loss of working days, the experts and the participants worked from 8am till 7pm in normal working days and also two Thursdays half-day.
- 3- On the first working day, there were no computers ready in the training room and it took about half a day to prepare the room.
- 4- From the first minutes of the mission, the experts requested the MTIT to provide their SMS4DC package (CD+dongles) to the experts to proceed the installation process but they never showed it, therefore it seems they didn't have the dongles and they cannot use the software until they get the dongles from ITU.

8<sup>th</sup> December 2007

Behzad Paknahad,  
Alireza Darvishi,  
Saman Jalayerian

## Appendix 1.

### List of Participants

| No. | Country   | Name                | Title / Organization                                     | Telephone      | E-mail                                                               |
|-----|-----------|---------------------|----------------------------------------------------------|----------------|----------------------------------------------------------------------|
| 1   | Yemen     | Mahmood Monef       | Ministry of Telecommunication and Information Technology | 00967777003359 |                                                                      |
| 2   | Yemen     | Abdullah Hezam Ali  | Ministry of Telecommunication and Information Technology | 00967777007796 | <a href="mailto:Almamari_1976@yahoo.com">Almamari_1976@yahoo.com</a> |
| 3   | Yemen     | Abdulaziz Ibrahim   | Ministry of Telecommunication and Information Technology | 00967777001061 | <a href="mailto:ibrahim9mh@yahoo.com">ibrahim9mh@yahoo.com</a>       |
| 4   | Yemen     | Abdul Hafidh        | Ministry of Telecommunication and Information Technology | 00967777005604 | <a href="mailto:Albthigia@maktoob.com">Albthigia@maktoob.com</a>     |
| 5   | Yemen     | Ms. Amany Ezzadin   | Ministry of Telecommunication and Information Technology | 00967777002723 | <a href="mailto:Amanyezza@yahoo.com">Amanyezza@yahoo.com</a>         |
| 6   | Yemen     | Ali Ali Alhadad     | Ministry of Telecommunication and Information Technology | 00967777005638 | <a href="mailto:Hadad100@yahoo.com">Hadad100@yahoo.com</a>           |
| 7   | Yemen     | Mohammad Alshamhazi | Ministry of Telecommunication and Information Technology | 00967777005636 |                                                                      |
| 8   | Yemen     | Abdulsalam Saif     | Ministry of Telecommunication and Information Technology | 00967777001092 |                                                                      |
| 9   | Yemen     | Abdul Hameed Sallam | Ministry of Telecommunication and Information Technology | 00967777001032 | <a href="mailto:haidarah@maktoob.com">haidarah@maktoob.com</a>       |
| 10  | Palestine | Ahed Zebda          | Ministry of Telecommunication and Information Technology | 00970599342078 | <a href="mailto:ahedzebdeh@yahoo.com">ahedzebdeh@yahoo.com</a>       |
| 11  | Palestine | Osama Abed          | Ministry of Telecommunication and Information Technology | 00970599243451 | <a href="mailto:osabed@gmail.com">osabed@gmail.com</a>               |

|    |           |                    |                                                          |                |                                                                    |
|----|-----------|--------------------|----------------------------------------------------------|----------------|--------------------------------------------------------------------|
| 12 | Palestine | Amaar Maree        | Ministry of Telecommunication and Information Technology | 00970599216850 | <a href="mailto:Maar98@hotmail.com">Maar98@hotmail.com</a>         |
| 13 | Palestine | Abed Alqader Riahi | Ministry of Telecommunication and Information Technology | 00972599342077 | <a href="mailto:abetsofia@yahoo.com">abetsofia@yahoo.com</a>       |
| 14 | Palestine | Eyhab Esbaih       | Ministry of Telecommunication and Information Technology | 00970599205794 | <a href="mailto:Eyhape_sbaih@yahoo.com">Eyhape_sbaih@yahoo.com</a> |
| 15 | Palestine | Mohammad Bader     | Ministry of Telecommunication and Information Technology | 00970599342081 | <a href="mailto:ambader@hotmail.com">ambader@hotmail.com</a>       |
| 16 | Palestine | Ahed Sbaih         | Ministry of Telecommunication and Information Technology | 0097092386058  | <a href="mailto:Sbaih6@yahoo.com">Sbaih6@yahoo.com</a>             |
| 17 | Yemen     | Mohammed Ameen     | Ministry of Telecommunication and Information Technology | 00967711593830 | <a href="mailto:Maay33@yahoo.com">Maay33@yahoo.com</a>             |
| 18 | Yemen     | Abdulgader Ibrahim | Ministry of Telecommunication and Information Technology | 00967777001006 | <a href="mailto:Agader@yemen.net.ye">Agader@yemen.net.ye</a>       |

## Appendix 2. Agenda of the training

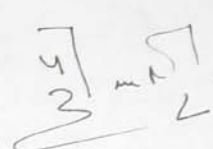
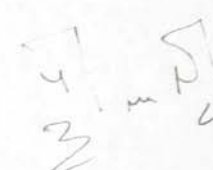
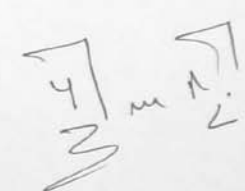
| Session<br>Date         | Morning Sessions                    |                         |                                     |             | Afternoon Sessions                                                |                         |                                         |
|-------------------------|-------------------------------------|-------------------------|-------------------------------------|-------------|-------------------------------------------------------------------|-------------------------|-----------------------------------------|
|                         | 9:00-10:45                          | 15 minutes coffee break | 11:00 – 12:45                       |             | 15:30-17:00                                                       | 15 minutes coffee break | 17:15-18:45                             |
| Tuesday<br>2007/11/27   | Room and computers preparation      |                         | Installation                        | Lunch break | SMS fundamentals + Administrative functions and supervisory tasks |                         | General Overview + General calculations |
| Wednesday<br>2007/11/28 | Point-to-Area Propagation           |                         | Point-to-Area propagation           |             | Workshop                                                          |                         | Workshop                                |
| Thursday<br>2007/11/29  | Point-to-Point propagation          |                         | Workshop                            |             | -                                                                 |                         | -                                       |
| Sunday<br>2007/12/2     | National Frequency Allocation Table |                         | Frequency Allocation and Assignment |             | Coordination                                                      |                         | Coordination                            |

| Session<br>Date        | Morning Sessions     |                         |                      |             | Afternoon Sessions                         |                         |             |
|------------------------|----------------------|-------------------------|----------------------|-------------|--------------------------------------------|-------------------------|-------------|
|                        | 9:00-10:45           | 15 minutes coffee break | 11:00 – 12:45        |             | 15:30-17:00                                | 15 minutes coffee break | 17:15-18:45 |
| Monday<br>2007/12/3    | Interference         |                         | Workshop             | Lunch break | Appendix 7 and Earth stations Interference |                         | Workshop    |
| Tuesday<br>2007/12/4   | GE-06                |                         | GE-06                |             | Workshop                                   |                         | Workshop    |
| Wednesday<br>2007/12/5 | GE-06                |                         | GE-06                |             | Workshop                                   |                         | Workshop    |
| Thursday<br>2007/12/6  | Workshop             |                         | Closing ceremony     |             | -                                          |                         | -           |
| Saturday<br>2007/12/8  | National consultancy |                         | National consultancy |             | -                                          |                         | -           |

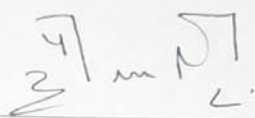
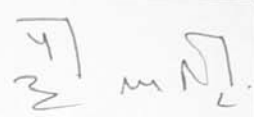
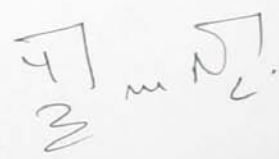
\* Saturday 2007/12/1 was a national holiday in Yemen

### Appendix 3.

## List of Delivered documents and services

| No. | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Confirmation                                                                          |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1   | <p>Updated installation CD of SMS4DC (Spectrum Management System for Developing Countries) version 2.0 including:</p> <ol style="list-style-type: none"> <li>1- Core executables of SMS4DC v.2</li> <li>2- Digital Elevation Model (DEM) of the world</li> <li>3- SMS4DC Database</li> <li>4- IDWM version 7.3</li> <li>5- Customized Invoice and Receipt templates in HTML format</li> <li>6- 4 Customized License and 1 Invoice and 1 Receipt templates in HTML format</li> <li>7- SMS4DC v.2 user manual</li> </ol>                                                                                                                                                                                          |     |
| 2   | <p>Six data acquisition forms as follows which the first three were customized based on their request:</p> <ol style="list-style-type: none"> <li>1- F-FX form: For acquiring information of point-to-point systems (fixed service)</li> <li>2- MT-FB form: For acquiring information of base stations in land mobile service</li> <li>3- MT-ML form: For acquiring information of mobile (handset and vehicular) stations in land mobile service</li> <li>4- B-BC form: For acquiring information of FM-sound broadcasting stations</li> <li>5- B-BT form: For acquiring information of TV broadcasting stations</li> <li>6- ES form: For acquiring information of earth stations in space services</li> </ol> |   |
| 3   | <p>Training materials as follows:</p> <ol style="list-style-type: none"> <li>1- System structure and Introduction</li> <li>2- General Calculations</li> <li>3- Point-to-area systems</li> <li>4- Point-to-point systems</li> <li>5- Coordination and Interference</li> <li>6- Border Coordination</li> <li>7- Appendix 7</li> <li>8- Interference of earth stations</li> <li>9- Frequency Allocation and assignment</li> <li>10- GE06 agreement</li> <li>11- GE06- Identification of affected administrations</li> <li>12- GE06-Affected administrations from the list</li> <li>13- GE06-Coverage service area</li> <li>14- GE06-Interference to and from</li> <li>15- GE06-New tools under DB menu</li> </ol>  |  |

  
  
 6.12.2007

| No. | Task                                                                                                                                                                                                                                                                                                                                                                                                                                    | Confirmation                                                                         |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1   | Review of existing data for terrestrial stations and assistance for completion, correction and data entry of those ready-to-transfer stations/licenses                                                                                                                                                                                                                                                                                  |   |
| 2   | Training and assistance of local experts for data entry of the frequency plan into SMS4DC                                                                                                                                                                                                                                                                                                                                               |   |
| 3   | Preparation of 6 new data acquisition forms for different types of stations existing in SMS4DC                                                                                                                                                                                                                                                                                                                                          |   |
| 4   | Installation of:<br>-SMS4DC v.2 on the 8 PCs of the training room<br>-Microsoft Windows Server 2003 on the server                                                                                                                                                                                                                                                                                                                       |   |
| 5   | Customization of SMS4DC reports according to the needs of MTIT                                                                                                                                                                                                                                                                                                                                                                          |   |
| 6   | Training of local expert on the supervisory tasks of SMS4DC                                                                                                                                                                                                                                                                                                                                                                             |  |
| 7   | Extensive training of 10 local experts and 7 Palestinian experts on technical and administrative aspects of SMS4DC v.2<br>1- General Calculations<br>2- Point-to-area systems<br>3- Point-to-point systems<br>4- Coordination and Interference<br>5- Border Coordination<br>6- Appendix 7<br>7- Interference of earth stations<br>8- Frequency Allocation and Assignment<br>9- Administrative features<br>10- GE84, GE89 and GE06 plans |  |



  
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END