International Telecommunication Union

SMS4DC

SPECTRUM MANAGEMENT SYSTEM FOR DEVELOPING COUNTRIES

Version 4

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International Telecommunication Union

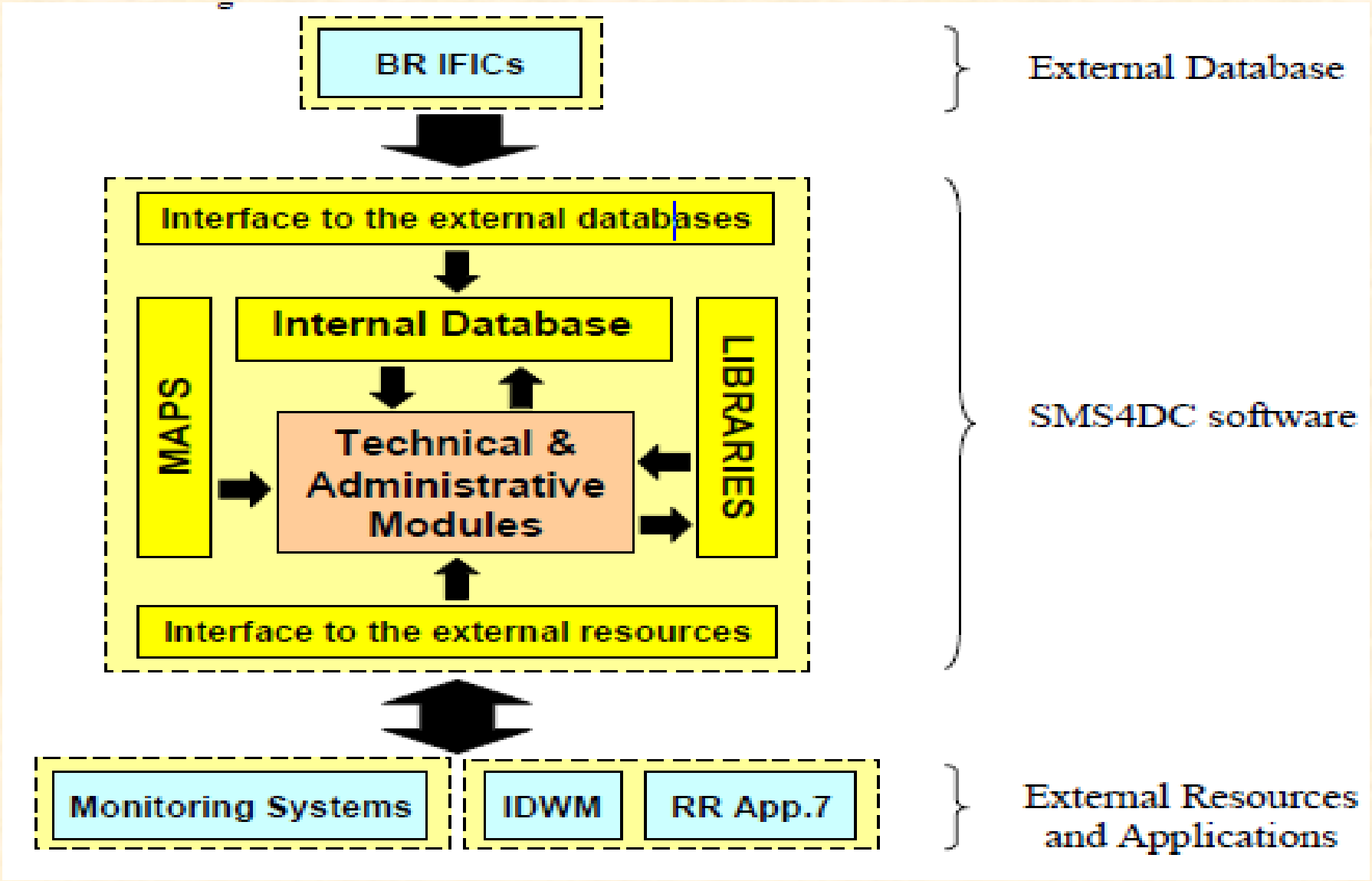
OUTLINE

- What is SMS4DC
- How Nigerian Communications Commission (NCC) is using SMS4DC tool in Managing Spectrum?.
- What are our experience encounter by using the tool?.
- What can be improved in later version to meet our needs?.

Spectrum Management System for Developing Countries-SMS4DC

- SMS4DC is software designed by ITU based on ITU recommendations , and it is mainly designed to help Regulators to manage spectrum scientifically and is consist of both administrative and engineering tools and it relatively cost friendly.
- SMS4DC covers terrestrial fixed, mobile, broadcasting services in the bands above 30 MHz, as well as satellite Earth stations in space services.

Structure of SMS4DC Software



Why SMS4DC Software ?

- The radio frequency spectrum, is a limited and valuable resource, used for all forms of wireless communication.
- The growth in telecommunications services and radio technologies have led to an ever increasing demand for the use of spectrum among competing business, public sector and other users.
- SMS4DC software enable efficient management of the radio frequency spectrum and help in mitigation of interference.

NCC Case

The Spectrum Administration Department of NCC is made of four units namely;

- Planning Unit
- Assignment Unit
- Monitoring Unit
- Database Unit

Basically the SMS4DC software is used at the moment by Assignment Unit and Planning Unit of the department for evaluation of frequency applications and planning of frequency channels arrangement in accordance with ITU specifications.

Our Challenges before acquiring SMS4DC

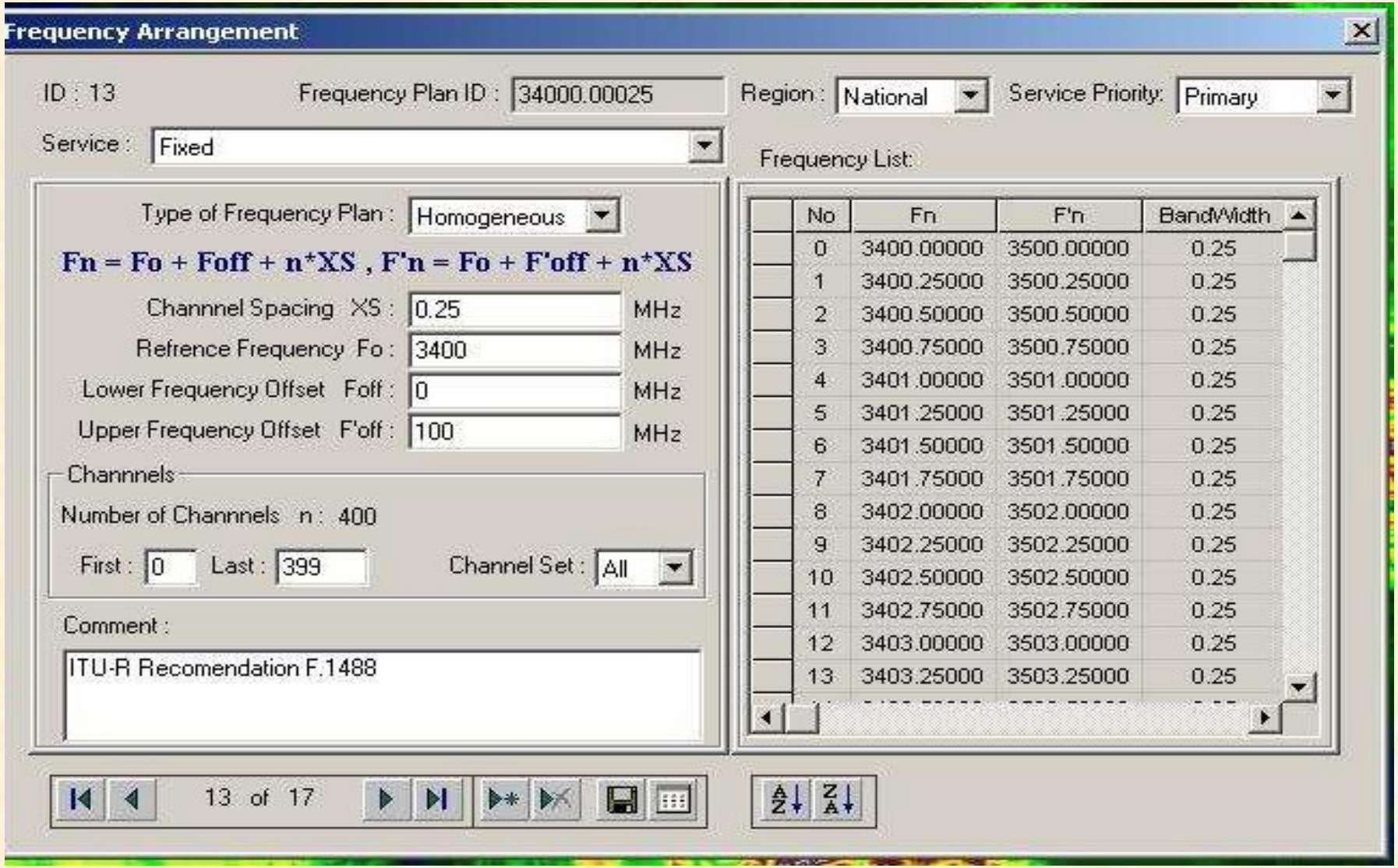
- Planning of frequency channels arrangement was an issue, it was done manually.
- Evaluation of frequency applications was done manually and with engineering assumptions.
- Operators were dictating the frequency band they wanted and planning their network as they like and equally deploying as they like.
- The spectrum were not manage efficiently leading to many interference and lost of revenue in resolving it.

The Benefit of SMS4DC to NCC

- Evaluations of frequency applications is being done in accordance with ITU RF specifications, Equipment Specification and above all we decide to the Operators the required frequency band for deployment as appropriate not as applied with scientific proof as the regulator.
- Using SMS4DC and others software has help in mitigating interference cases cause by indiscriminate deployment of NW links by Operators,
- Spectrum planning is done effortlessly in accordance with ITU RF specifications.
- We managed the spectrum more efficiently by Using SMS4DC software.

SMS4DC's Engineering Functions

Frequency arrangement (Homogeneous)



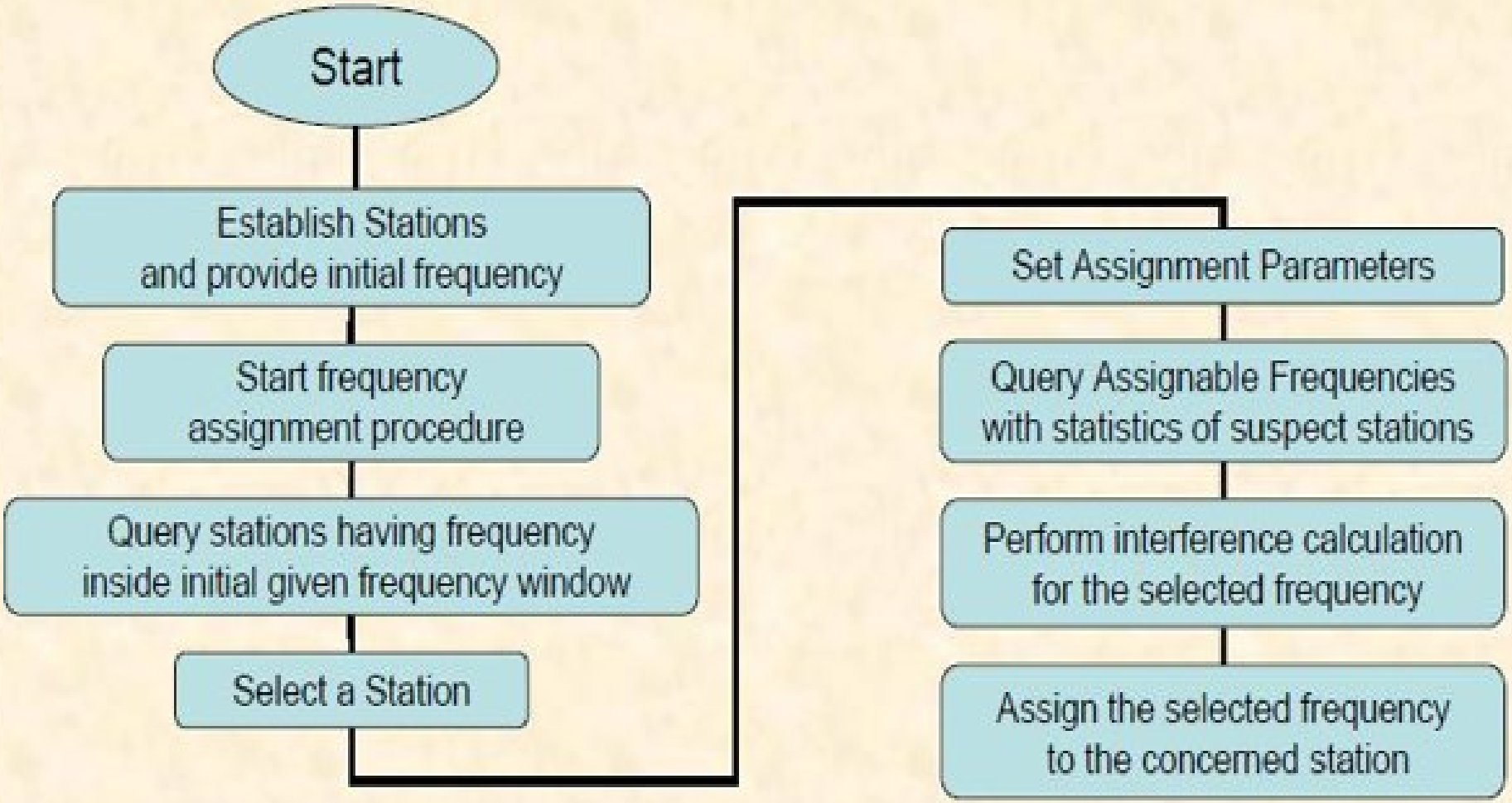
Spectrum licensing and Assignment

- Licensing/Authorization is the process by which users gain access to the spectrum resource. This involve assigning specific frequencies to users.
- A combination of administrative and technical procedures are used to ensure the efficient operation of radio communications without causing interference.
- Assignment of radio frequency channel is an authorization given by an administration to an operator to use a radio frequency channel under specified conditions.

Using SMS4DC in Frequency Assignment for Fixed services

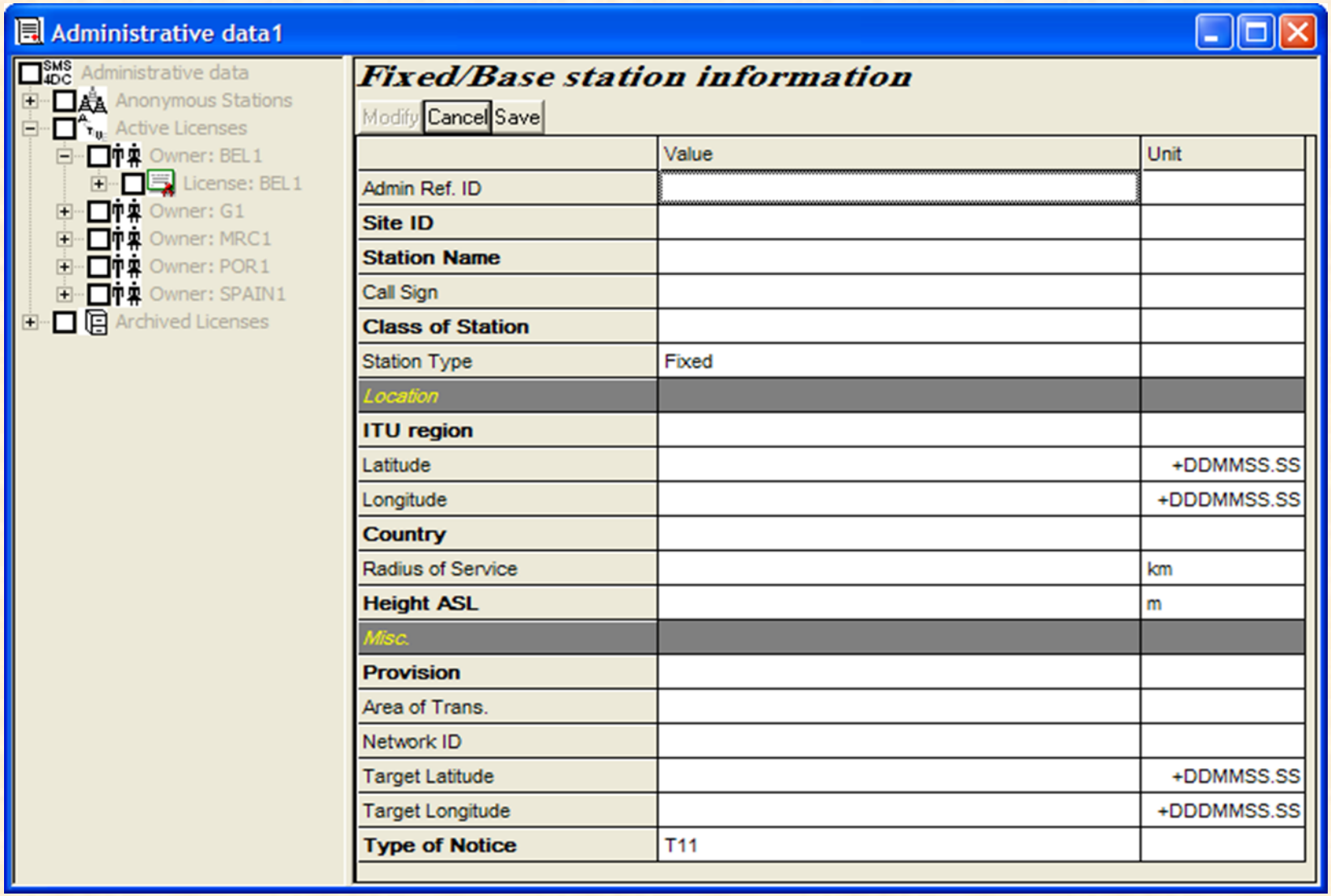
SMS4DC is empowered by an advanced method of frequency assignment based on interference calculations to/from any other stations in a given frequency band inside a circular search area.

Frequency Assignment Procedure for fixed Service



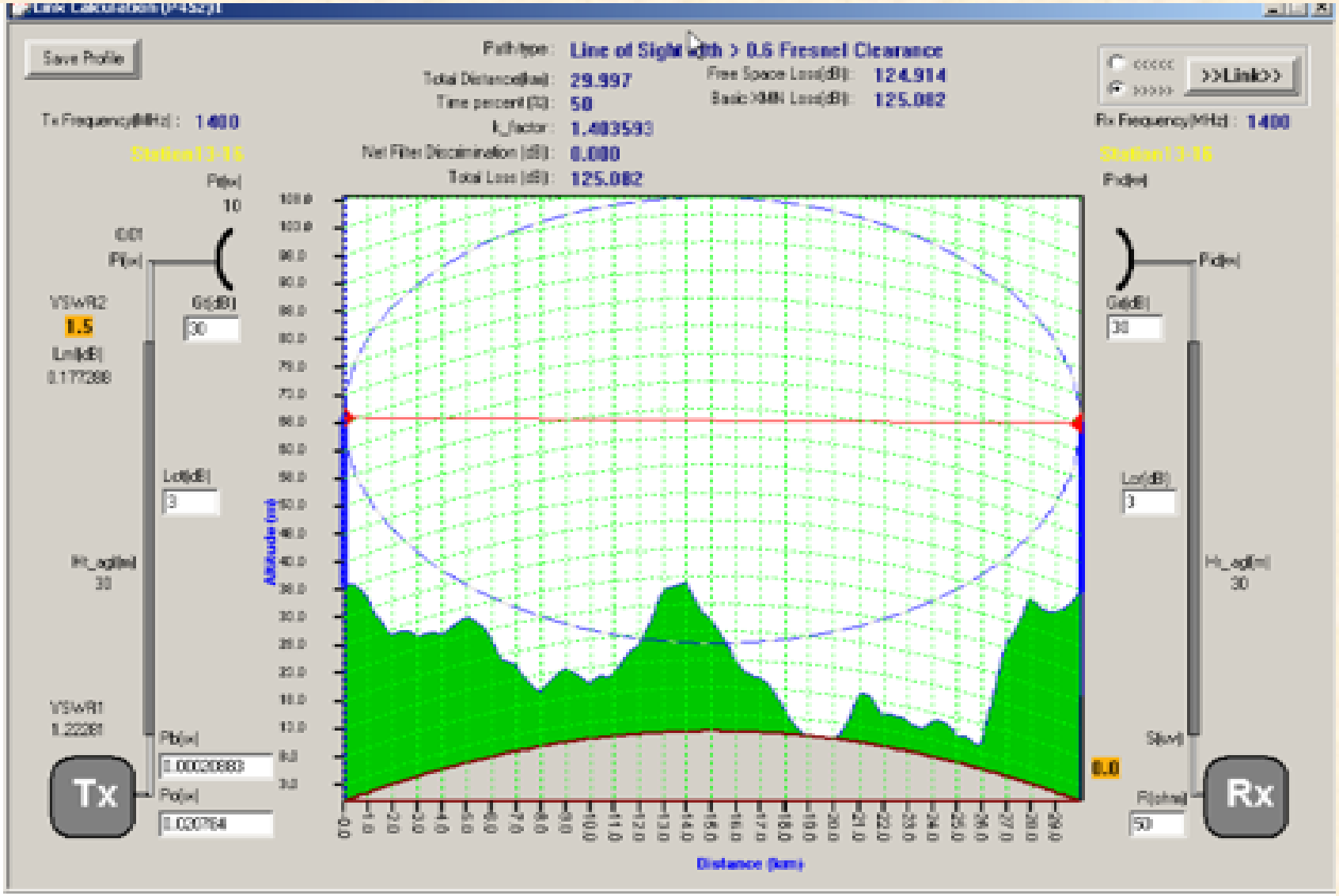
Fixed/Base Station Information entry table

SMS4DC's Administrative Functions



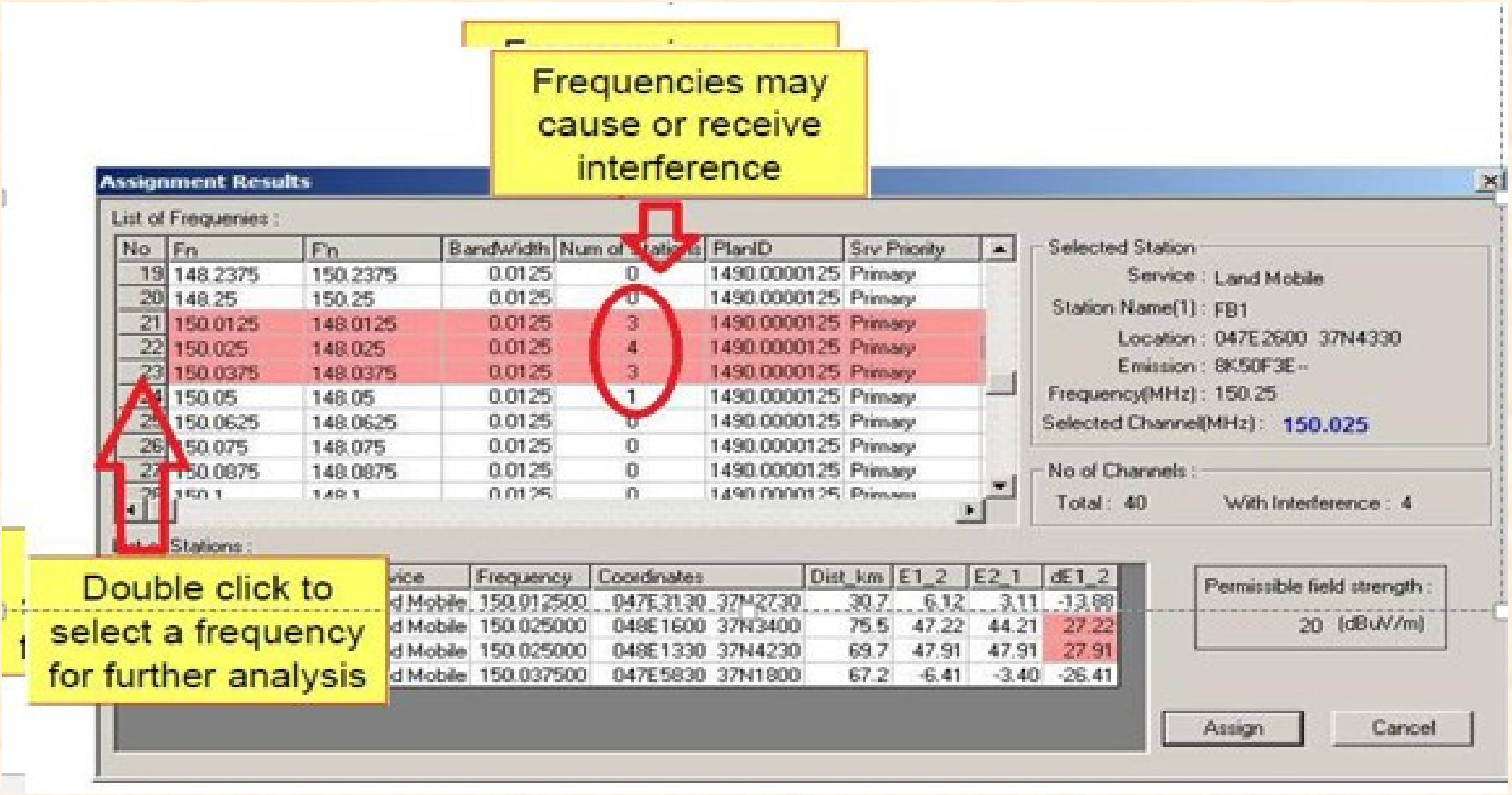
Link calculation

SMS4DC's Engineering Functions



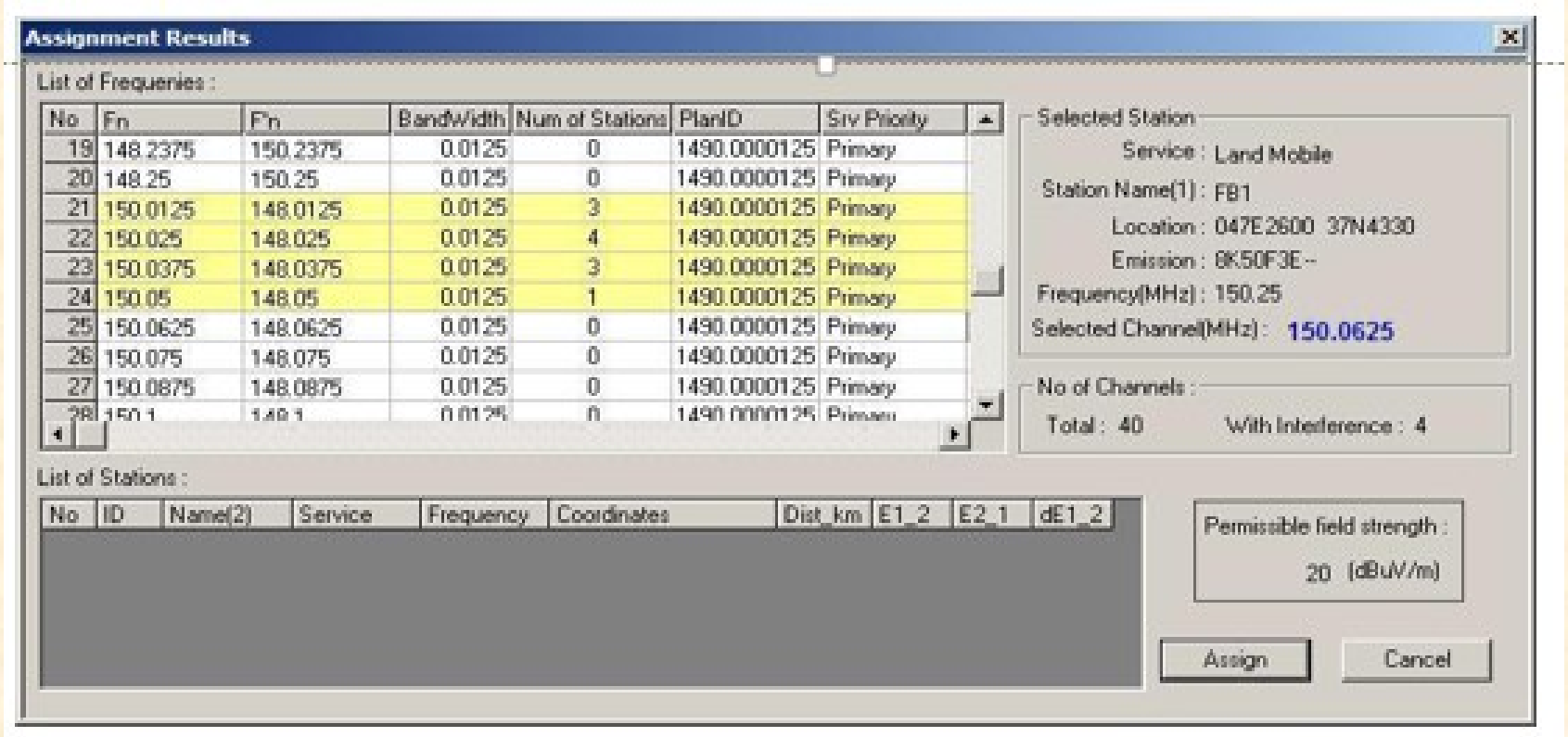
Frequency assignment procedure for fixed service Cont.

Choosing any row with yellow highlight from the list of frequencies by a mouse double left-click, initiates detailed interference calculations,



Frequency assignment procedure for fixed service cont.

- Once the assignment parameters have been set, all frequencies available within those parameters are examined for potential interference and the results are displayed in the



NCC future strategic plan with SMS4DC software

- Development of the Commission's National Frequency Allocation Table.
- Registration of Base stations deployed in Nigeria in the ITU's BRIFIC.
- To resolve interference cases by analysis without deployment of engineers to the field.
- Determining the Coverage Area covered by Operators in Nigeria, once the registration of the Base stations has been published in the subsequent **BR International Frequency Information Circular** (BRIFIC) DVD.
- Carry out Interference analysis before assigning Microwave Frequency channels to a fixed stations.

Limitation of the software and area to improve upon

1.The fee field under billing is limited to only 9 digits.

2. Expiration date drop down options should be more than an annual period.

3. Import of Comma Separated Values (CSV) files and Excel files into the software should be enable.

4. Equipment files needs to be updated

Summary

We talked about the following:

- SMS4DC importance to regulators most especially to the developing countries.
- NCC case, our challenges.
- The benefits of SMS4DC to NCC.
- Limitation of the software and area to be improve upon.
- NCC strategic plan to be accomplished by using the software.

Thank You