Introduction and System Structure

SMS4DC training seminar

18 to 22 April 2006

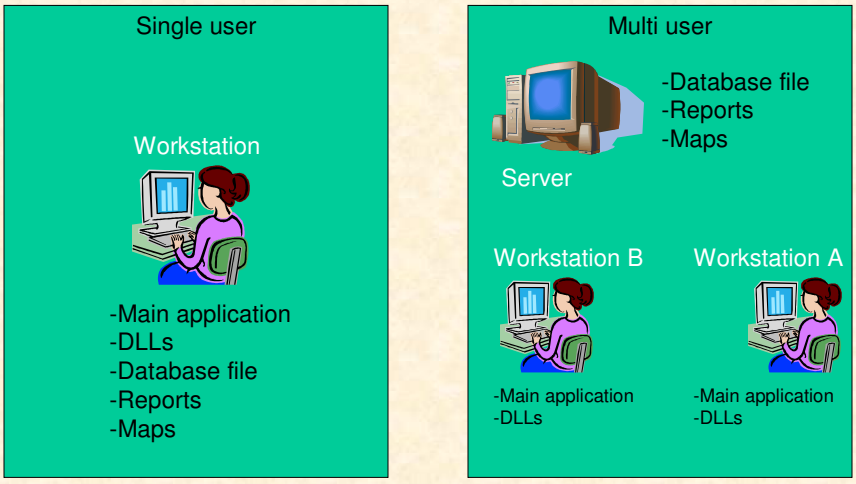
Introduction

- Background and study
  - Different countries (Myanmar, Afghanistan)
  - More than 4 years of study and 2 years of development
- Prototype by Matlab®
  - Algorithms are mathematically tested
  - Implementation of the recommendations
  - Visualization
- SMS recommendations
  - ITU-R SM.1604, SM.1048, SM.1370-1
- Release version by Microsoft Visual C++® 6.0 (MFC)
  - Efficient code generation
  - Vast capabilities
  - Best for heavy processing applications
- Microsoft ACCESS® Database
  - Good performance for single-user systems
  - Internal security level definition

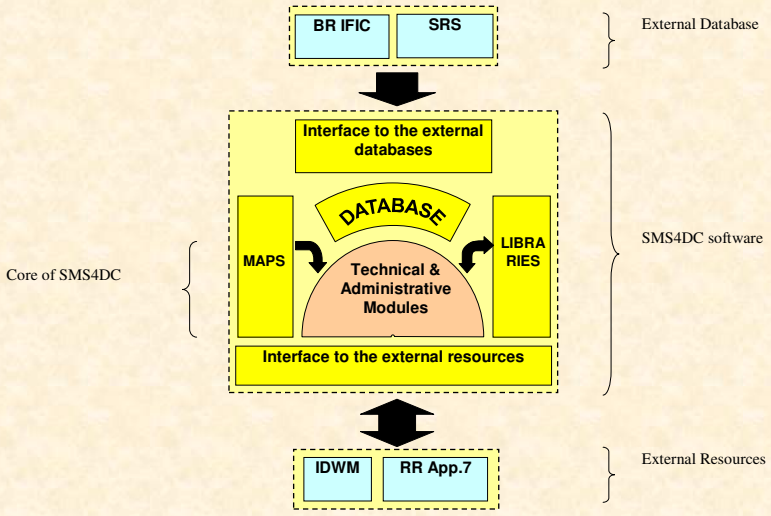
Introduction

- Modular structure by DLLs
  - Distributed programming, Integrated
  - Ease of update
  - Reduction of the size of main EXE file
- HTML reports
  - Ease of customization
  - Portability
- BRIFIC
  - Import with simple queries
- 3D view (OpenGL)
  - Fast and beautiful graphics
  - Better feeling
- IDWM data and functions

System Configuration



System Structure



Security Mechanisms

- **Database is only accessible through the application**
- **Backup and Restore**
- **Access Levels**
  - ***Data entry (Licensing and Billing)*: Privileged to read/write licensing and billing data,
  - ***Engineers*: Privileged to read/write technical data, No read access to administrative data,
  - ***Senior operator*: Privileged to read/write all data, as well as to manage user IDs and passwords, audit trail and to configure and enjoy any features of software,
  - ***Supervisor:*** The same as senior operator,
  - ***Licensing*: The same as data entry,
  - ***Read-only*: Privileged to use software without permission to edit or add any data,

Vector maps

Vector maps
Using ITU Digitized World Map (IDWM Release 7):

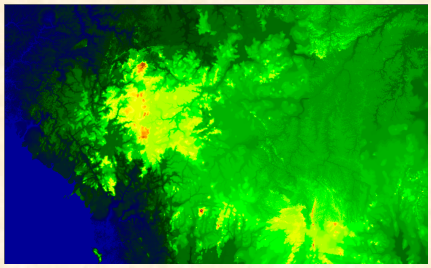
- Political border lines,
- Coastal lines as defined in ITU-R Recommendation P.452,
- ITU radiocommunication regions,
- ST61 geographical areas,
- GE84 geographical areas,
- GE89 geographical areas,
- GE2004 geographical areas,

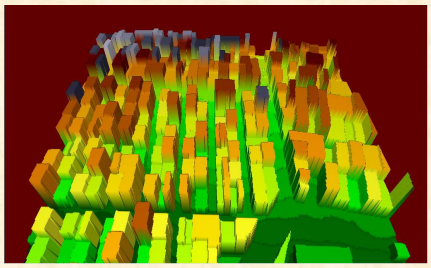
Contours made by the system and user defined vectors (based on the format)

Raster maps

The system is able to load any digital map which is in Lambert or UTM projection system and is in the suitable format for the system. These maps may be in the following types:

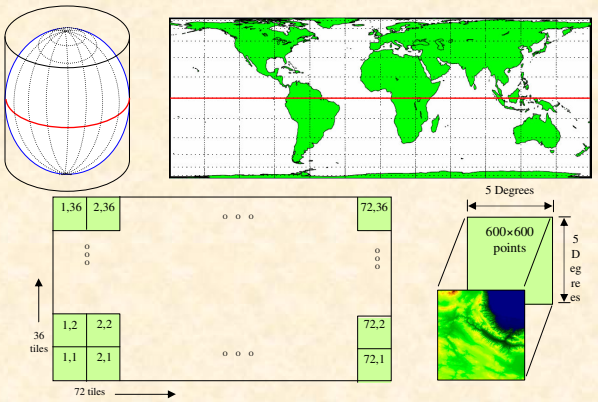
- Digital Elevation Model (which is the base of most of the calculations in the system)
- Geographical/ Political map (usually a scan copy of a paper map)
- Digital Surface Model



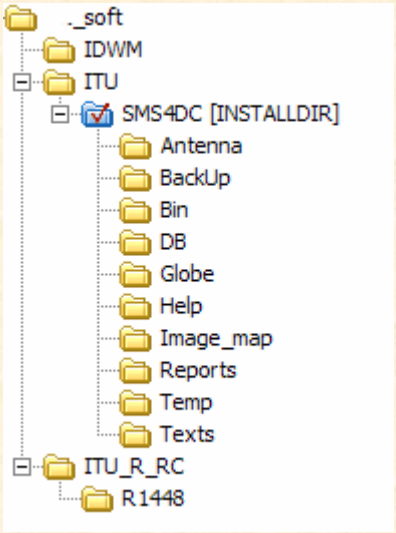


Raster maps (Cont.)

Currently GLOBE-DEM with the resolution of 1 km is used in the system as the base map. For performance and memory considerations the big tiles of this map are divided into smaller (600 pixels x 600 pixels) and are provided in the installation package.



Installation Folders



Antenna definition file

DLL and executable files

Database files (Maybe located on a server)

DEM files (Maybe located on a server)

User manual

Background map

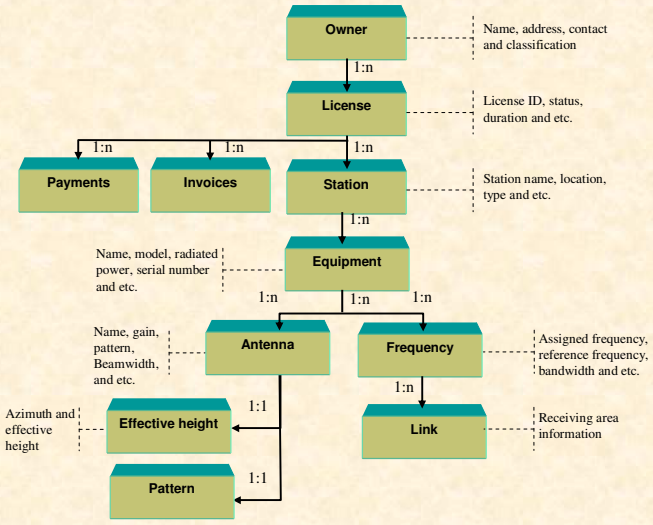
Output report files

For temporary files (technical calculations)

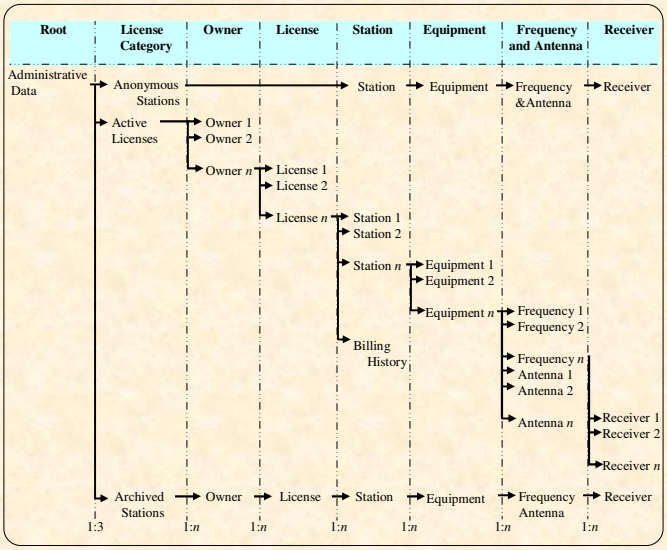
Reference text files and HTML templates

RR Appendix 7

User View of Data



Flow of Administrative Data Entry



Data Entry Scenarios

- All from administrative sub-system
  - All of the required data will be entered through the data entry flow (the antenna with its pattern and the effective height of it should be created in the technical module)
- Mixed Entry
  - Data entry for the owner and license(s) will be done in administrative sub-system and the stations created in the technical module can be attached to these licenses then all those missing data may be completed.