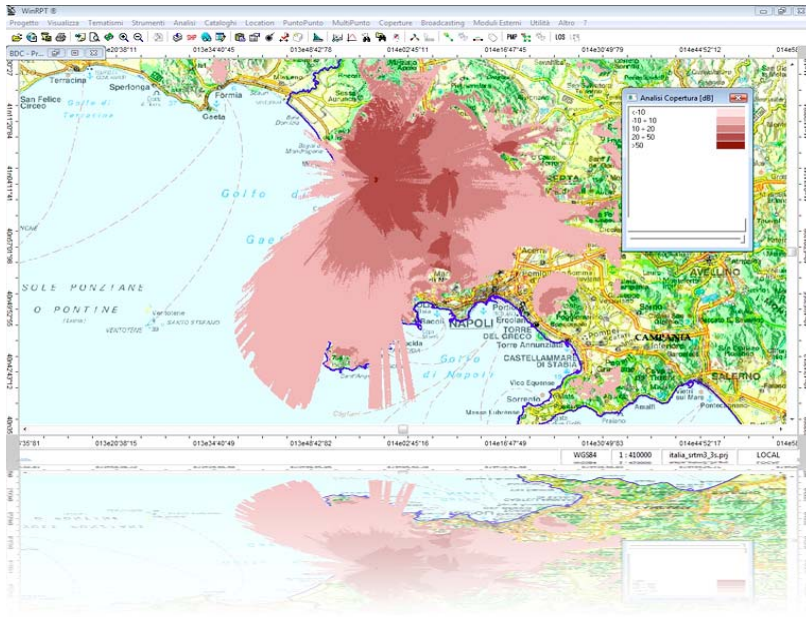


## Broadcasting Planning and System Design

Coverage and Interference analysis - New technologies management - Antenna systems engineering



WinBDC is the software aimed at **broadcasting systems design**. Sharing the full WinRPT environment, WinBDC works on **3D solid modeling of the region**.

WinBDC manages **analog and digital technologies** (DVB-T/H, analog TV, FM Radio).

Starting from antenna system building, technologies characterization and **coverage/interference analysis**, it performs a complete design of your network.

### Coverage/Interference study

Coverage/interference analyses can be performed, according to **ITU/ETSI regulations**. WinBDC has been studied to permit analysis both for simple and complex scenarios (high number of transmitters, high resolution territorial data). An optional functionality lets you manage the same analysis, on a grid of points at your choice.

### SFN and Gap Filler

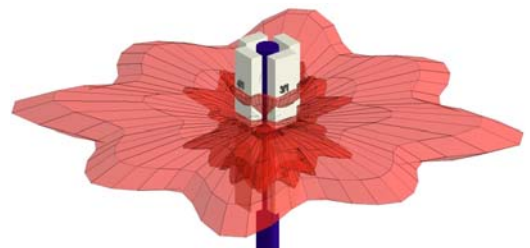
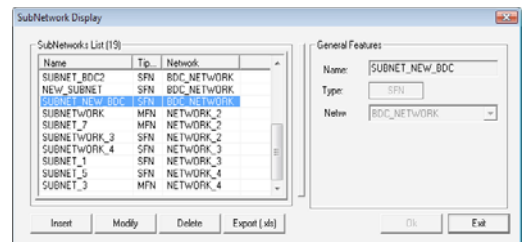
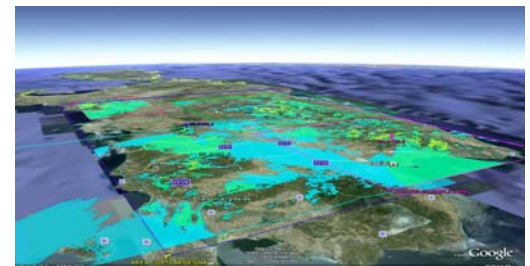
Thanks to the latest release of WinBDC is now possible to characterize DVB technology, SFN and gap filler systems. Introduction of new networks elements such as sub-networks and gap filler, have brought a more accurate capabilities for analysis related to those technologies.

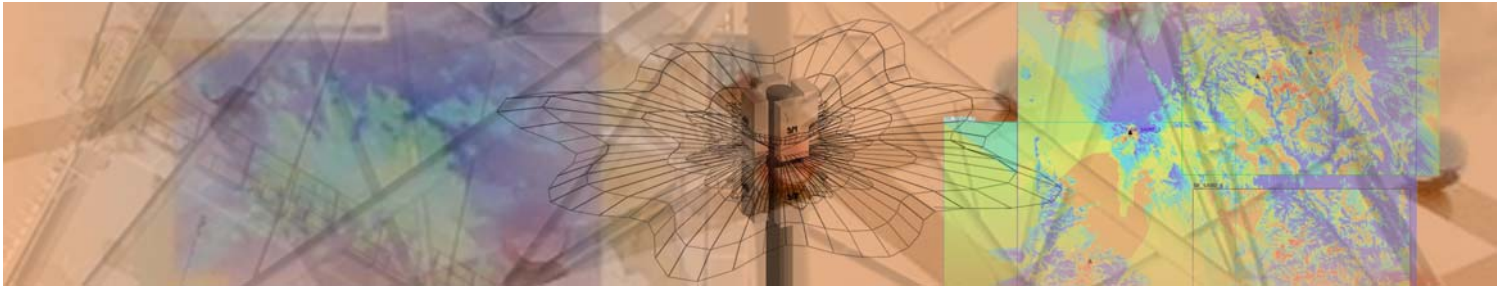
### Antenna Systems Design

WinBDC allows user to **build radiating systems from single antenna** and manage full and simplified antenna system (i.e. H, V diagram only) by easily importing/exporting supported antenna formats. Moreover, it helps you during antenna system optimization, as well as null filling and beam tilt calculation.

### DVB-T/DVB-H

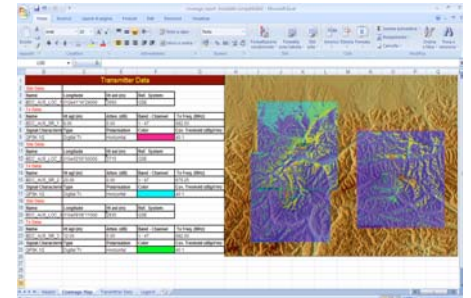
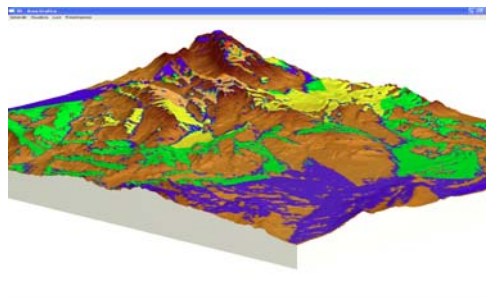
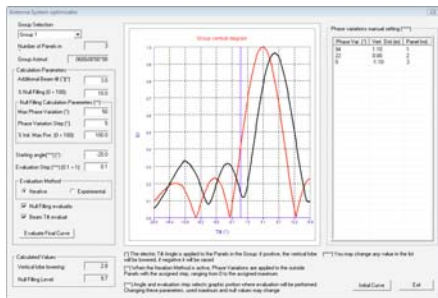
With the introduction of **hierarchical systems** it is possible to integrate DVB-H services in a DVB-T network. In addition, the introduction of features characterizing physical and link levels, completely define a DVB-H system.





## Network Analysis & Design

- Coverage/interference analysis both for analog and digital technologies according to the following propagation models: ITU-R P.1546-3, ITU-R P.526, Deygout, Okumura-Hata, Cost-231, ITU-R P.1812... and joined parameters;
- New coverage thresholds and protection ratios management for each technology according to the most recent ITU and ETSI regulations (ITU-R BT.417, ITU-R BS.412, Final draft ETSI EN 300 744, Chester 97, Rec. ITU-R BT.1368, ETSI TR 102 377, Rec. ITU-R BT.655);
- Saving of a single SFN coverage file. Antenna systems can be selected/deselected just recombining their contributes;
- Land use clutter management inside coverage thresholds for a more accurate characterization of the working environment;
- Receiver window opening criteria: First Server, First Server with threshold, Best Server. Useful signals combination method: Power Sum, K-LNM;
- Read/save functionality for each evaluation file and for the overall project;
- Coverage/interference analysis either on area or on a chosen points list;
- External interferences management for SFN networks using or not antenna discrimination;
- Interference evaluation from combination of interferential components (nuisance field) for each technology. Interference evaluation on whole area or intersected zone;
- Hierarchical systems management for DVB-H. Possibility to choose service class: fixed, portable indoor/outdoor, mobile inside/outdoor and joined parameters (i.e. coverage percentage) for DVB-T and DVB-H analysis according to ITU/ETSI regulations;
- Covered/served population analysis both for MFN and SFN networks, with the possibility to take into account interferential results, too.



## Antenna Engineering

- 3D solid interpolation starting from maximum, horizon and elevation diagrams (TA0, TD1 format);
- Composition of Antenna System starting from single panels;
- Antenna diagram management (H-V phase and amplitude diagram);
- Electromagnetic characterization: band and channel, tx frequency, tx power, attenuation, polarization, etc...;
- Panel groups engineering;
- Simultaneous display and real time update of H, V diagrams;
- Solid radiation pattern calculation according to (ITU-R BS.1195);
- 2D/3D radiation pattern display;
- Antenna system optimization (additional tilt, null filling).

## General features

- Full compliance with AGCOM and ITU record formats (TA0, TD1, TVA, TVD);
- Site position management;
- Signal characterization for analog and digital systems (DVB-T/H, FM Radio);
- General information (name, panels/groups number, orientation, ...);
- Full description of antenna system: antenna model, orientation, position, cabling, etc...;
- General and diagrams data (amplitude, phase, gain, electric fields, return loss, reflected phase field);
- Service area management with user-definable dimension and position;
- 2D/3D representations of coverage/interference calculation;
- Coverage and interference maps export on Google Earth (.kml).

## Reports

- Coverage map report (alpha-numeric report in .xls format including all transmitter data);
- Complete antenna systems report (including network data, antenna data and H-V diagrams and 3D solid representation);
- Detailed population report (in accordance with available population clutter) enriched with geographical location;
- Covered/served population and area report for each radiating system and SFN subnet (.csv, .xls format);
- Coverage/interference map report for each radiating system and SFN subnet (.xls format).