

[www.wavecall.com](http://www.wavecall.com)

# WaveSight



The propagation model for TDMA, GSM, GPRS, HSDPA, CDMA, UMTS and WiMax planning and optimization of micro- and macrocells



Accurate Wireless Predictions

## Accurate propagation predictions

### Radio planning is a chain

All Radio planning starts from the cell footprints, that is radio propagation coverage. Cell coverage is computed according to terrain, clutter and building data, base station location, antenna type, azimuth and tilt. Frequency or power assignment must be found to support expected traffic. This chain is as weak as its weakest element. Inaccurate propagation is very damaging as all design efforts are based on it. Mistakes at early stages can only be corrected at great cost.

### Results

Poor knowledge of cell footprints leads to:

- unreliable connections for GSM/GPRS/TDMA/WiMax networks due to interference or lack of coverage.
- a loss of traffic for UMTS/CDMA/WiMax. This is due to excess of overlap between cells leading to increased soft handover at the expense of capacity. This also renders some sites useless as they cause more interference than they do serving expected traffic.

### Reasons

In the mid 1990's, our technology, ray tracing similar to many innovations, was confined to academia. With intensive development effort our technology matured and Wavecall made it available commercially.

Speed, accuracy and robustness are not conflicting any more. WaveSight is used widely by leading operators (40 operators in 4 continents). WaveSight's is thus a proven technology.

## Fully integrated in planning tools

### Only a Key

WaveSight is already fully integrated in leading radio network planning tools, such as Planet, Atoll, Asset, Planet EV, Odyssey, Ellipse, Wizard, ArcView and Astrix.

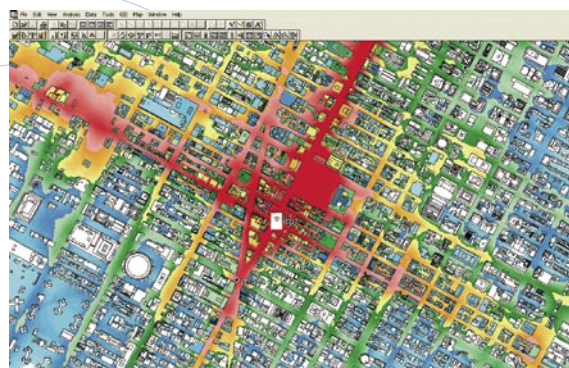
### 3D Building Data

Wavecall in collaboration with our geographical data base partners deliver you WaveSight compliant data: Data needed as input for WaveSight is available at fair low prices.

### The Complete Solution

Wavecall's strong and established partnerships ensures the delivery of a complete solution with all the required components for radio network planning. Our partners include both planning tool vendors, building data-base providers, drive test companies the world over.

A WaveSight prediction in Manhattan / New York





A classical model



Same configuration, WaveSight

## Added value

### Accuracy

Accuracy comes from more than 50 years of combined research efforts. It stems from the use of ray-tracing and diffraction theory as the core for our computation algorithm.

### Usability

Sophisticated algorithms deliver the added value of accuracy and are robust and fast. This has been proven by extensive usage of WaveSight by well-recognized customers.

WaveSight has been proven in the world's largest deployment of ray tracing.

### Modularity

WaveSight can be customized to your existing planning tools environment. WaveSight's software architecture has been carefully designed to comply with your software environment.

WaveSight software runs on all widely used operating systems.

### Fine Tuning

For fine tuning of footprint predictions we have developed an easy to use but highly accurate tuning module called WaveTune.

WaveTune uses multiple iterations of comparisons against field test measurements to achieve highly accurate planning in any environment.

## Key features

### Realistic Coverage

Macrocell or microcell, indoor or outdoor – WaveSight's coverage maps depict physical radio wave behavior. Street canyons and shadow effects due to buildings and terrain are both captured. A realistic coverage shape is key for interference accuracy.

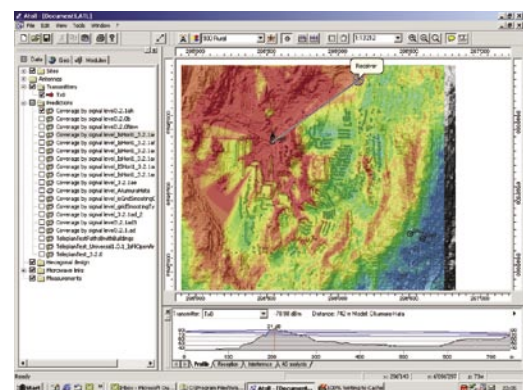
### Multi-resolution Support

WaveSight enables accurate modelling based on the highest resolution of data available. This allows for seamless prediction across the transition zone between urban to non-urban areas and vice versa.

### Getting more from your Network

WaveSight's highly accurate coverage maps deliver all the required input for frequency planning or Monte Carlo simulations.

WaveSight enables you to add capacity more easily, with less re-tuning and obtain a more robust design. With WaveSight you can investigate various radio network scenarios faster and more accurately than ever before.



WaveSight at work in the Atoll planning tool

## For large scale deployment

### Accuracy

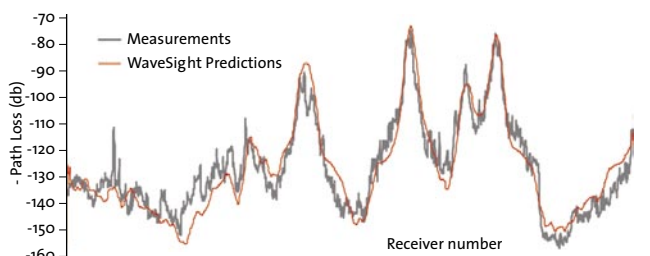
Tested on different cities and more than **ten thousand kilometers** of comparison with measurements on different networks (GSM, CDMA, UMTS and TDMA).

### Proven

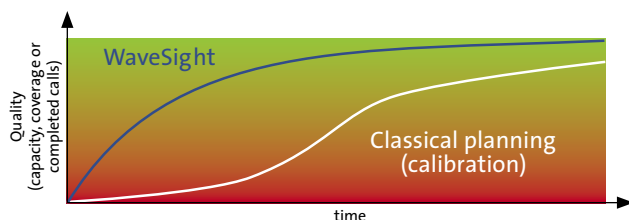
WaveSight has been used and tested in a large number of different kind of cities with different characteristics, including **New York, Chicago, Washington DC, Munich, Bern, San Francisco, Philadelphia, Las Vegas, San Diego, Atlanta, Baltimore, Tampa, Hong Kong, Madrid, Barcelona, Paris, London, The Hague, Amsterdam, Rotterdam, The Hague, Brussels and Turin.**

### High-tech references

World class references like **Bell Labs, EPFL (Swiss MIT), Dutch Telecom and Swisscom.**



Munich, a slightly above-rooftop cell



Competitive advantage by using more sophisticated propagation model

## Intuitive and user friendly

### Training

WaveSight is easy to use thanks to its carefully designed user interface. Half a day of training is sufficient for using WaveSight. WaveSight is typically integrated in your planning tool.

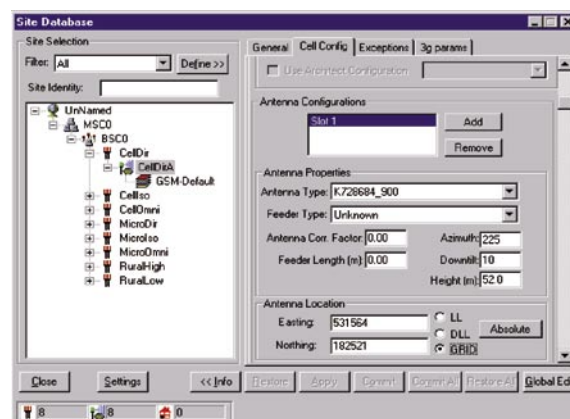
### Intuitive

By using a physical model intuitive and measurable parameters such as frequency and receiver height are automatically taken into account.

### Parameters

The main parameters that must be set are:

- Antenna type and position
- Power
- Tilt
- Azimuth
- Frequency
- Receiver Height
- Indoor Attenuation



Input screen from Enterprise

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