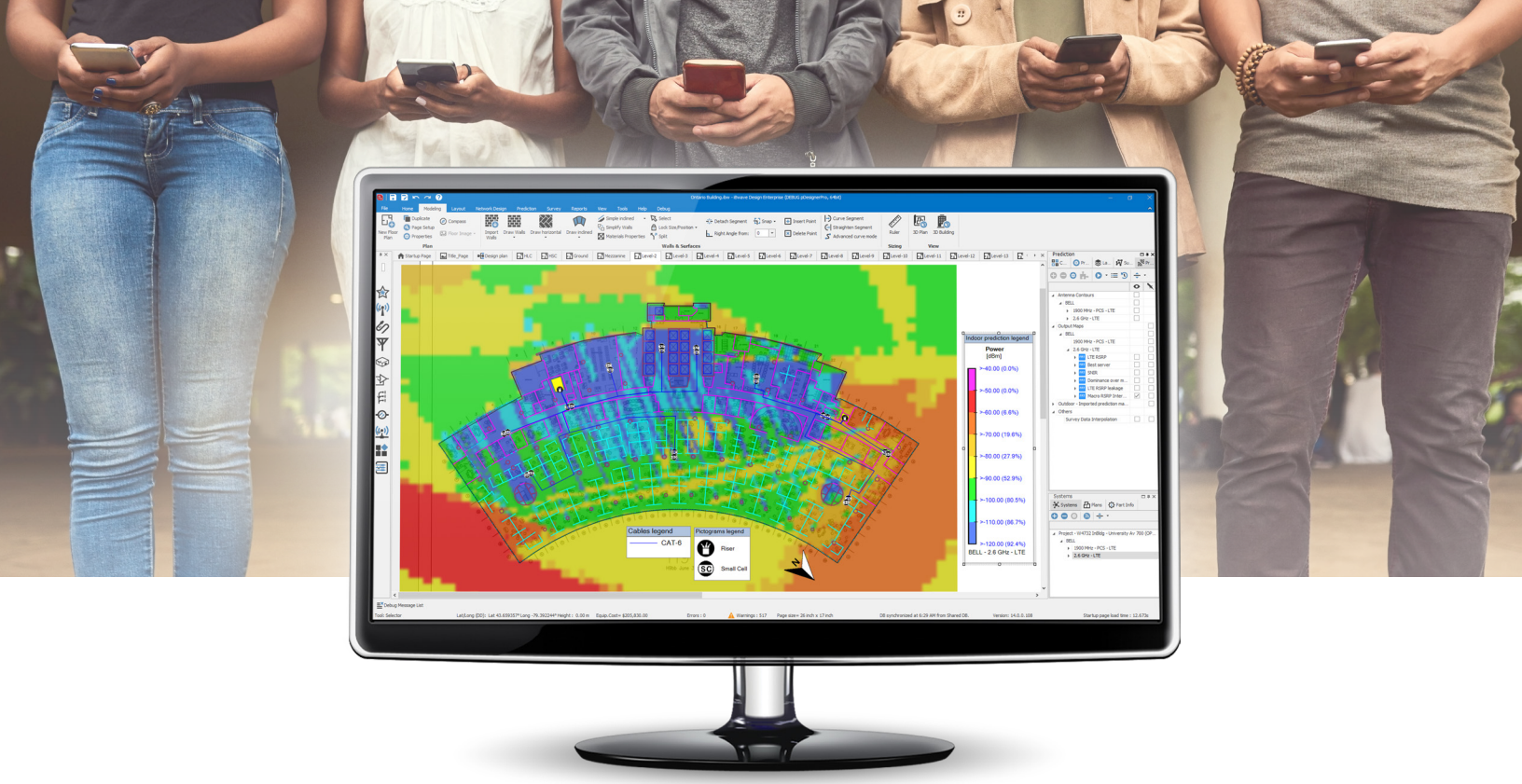


iBwave Reach

Bridging the Gap Between Indoor and Outdoor Wireless

Accelerate the design and deployment of your wireless campus network designs.

With the acceleration towards the inevitable network densification and capacity challenges ahead, a holistic view of your wireless network design is critical in order maximize connectivity and minimize interference.

iBwave Reach seamlessly integrates with your macro design tool and our flagship solution iBwave Design, enabling you to design and deploy campus networks by taking into consideration the macro signal penetrating inside the building and the leakage of the indoor signal on the surrounding area of the venue.

With proven prediction accuracy and streamlined approach to wireless design, combined with its ever growing component database of over 35,000 parts, iBwave Reach combined with iBwave Design will speed up your project lifecycle while saving costs and ensuring an optimal end user experience.

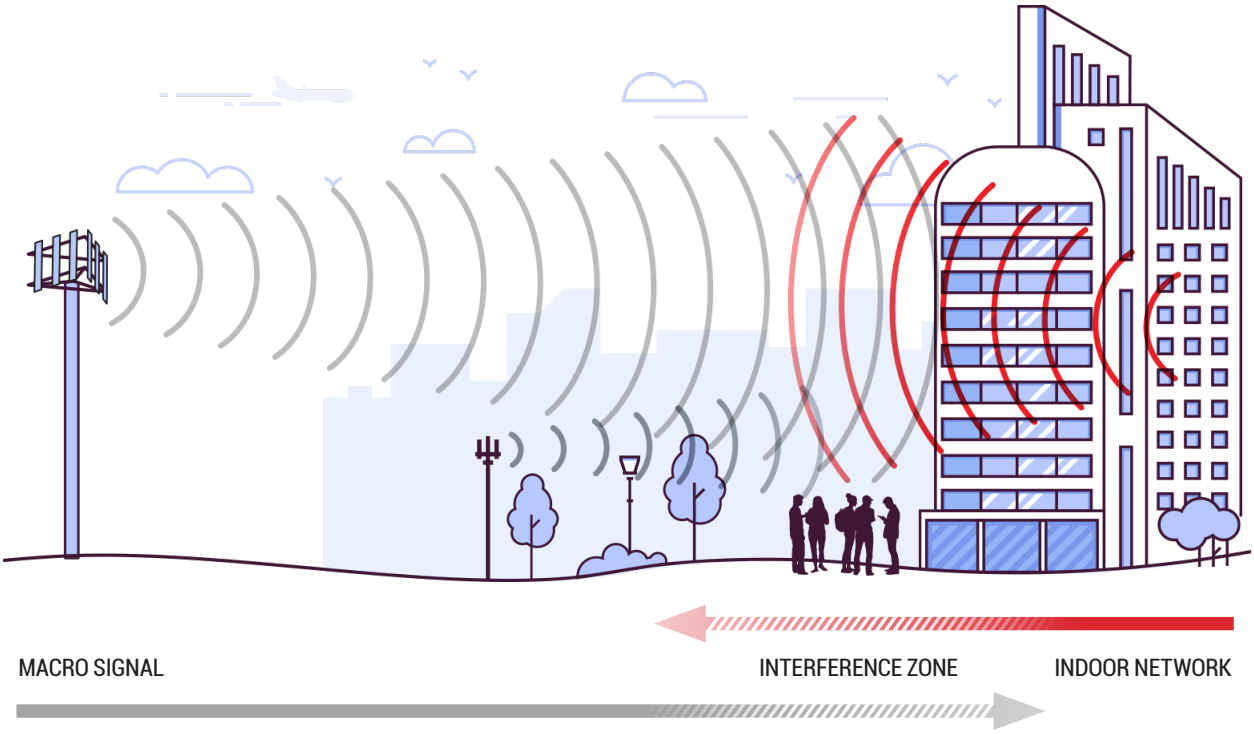
iBwave

we keep the world connected

iBwave Reach

Faster and more accurate campus network design and deployment

Accelerate the design of large multi-technology campus wireless networks with an integrated solution that bridges the gap between indoor & outdoor design, minimizes site surveys and has a proven track record of accurate prediction that delivers flawless user connectivity.



Why is this good for you?

- **Supports multi-technology networks**
- **Integrates with iBwave Design and your macro tool**
- **Seamless outdoor and indoor design for accurate predictions**
- **Reduce the number of site walks needed**
- **Optimize design with maximum user connectivity**

iBwave Reach

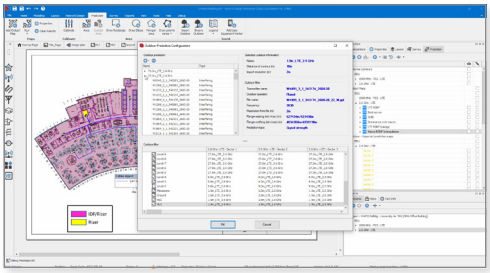
Integrated Solution

iBwave Reach integrates with your macro tool and iBwave Design providing an all-in-one solution for campus network design.

Designing a Campus Network using iBwave Reach and iBwave Design

Import Macro Data

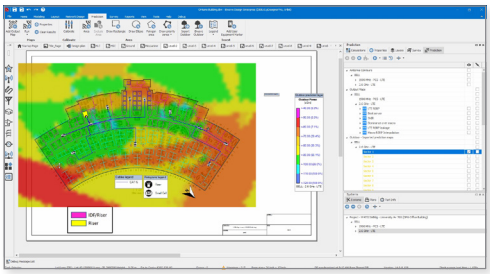
Avoid time-consuming and costly site surveys by simply importing the macro data from any third-source macro tool into iBwave Reach so it can be seamlessly integrated into iBwave Design and give you and end-to-end view of both the macro and indoor data as you design.



Import macro data from your outdoor planning tool

Accurately Predict Network Performance

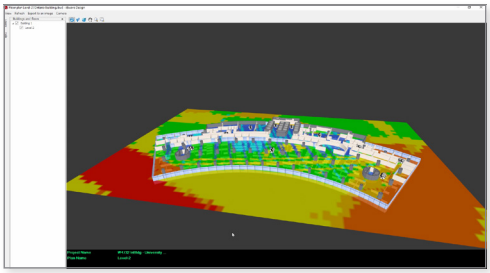
With the macro data imported, and your campus buildings modeled, design your network and simulate the network performance accurately in iBwave Design. Visualize prediction in impressive 3D format, giving you and your customer a detailed look at how the network will perform across the entire campus environment.



Visualize your network performance

Optimize Network Design

With the ability to consider the macro data for your indoor designs and accurately predict network performance, you can now optimize the equipment within the network to avoid over designing, and over spending.



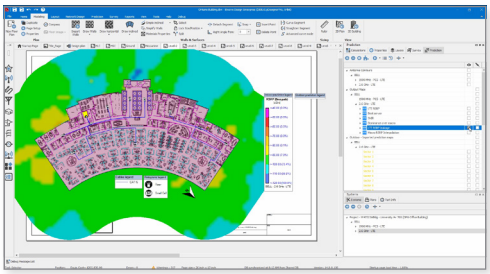
See your network prediction in 3D

Validate Network Design

Once deployed, go on site to validate the design and deployment of your network with one simple site survey walk and have confidence the network will perform as you designed it.

Centralize Project Documentation

Once your campus network has been deployed, easily generate as-built documentation for the project and track it in a centralized location where it can easily be accessed for future maintenance and upgrades.



View your indoor network's signal leakage

iBwave Reach

Applications

iBwave Reach is ideal for a number of uses cases covering indoor and outdoor environments.

High-Rise Building

Greenfield Building

Shopping Mall

Healthcare & Hospitality

Airport & Terminal

Education Campus

Amusement Park

Enterprise Private 4G/5G Networks

Energy (Mining, Power, Oil, Gas)

FEATURE SET

TECHNOLOGIES

- 5G NR / LTE / LTE-A
  - Smart Macro Prediction Mapping to Floors, Frequencies
  - Outdoor-to-Indoor Prediction
  - Indoor-to-Outdoor Interference
  - Outdoor Planning and Analyses
  - PCI and EARFCN Best-Server Visualization
- Wi-Fi, GSM/GPRS/EDGE, LoRa Outdoor Planning and Analyses

3D MODELING

- Predict coverage with a model optimized for 3D propagation
- Visualize a city in 3D
- Visualize indoor and outdoor network coverage
- Visualize multi-floor coverage in 2D or 3D
- Select "Surface" mode for visualization on the building facades and rooftops

IBWAVE REACH 3D VIEWER:

- Display of the environment in full 3D mode, including terrain and buildings
- Navigation inside the 3D environment
- Presentation of any coverage or traffic layer in 3D view
- Display of multi-floor coverage inside buildings
- Control of shading, lighting and transparency between layers/buildings/terrain
- Ability to query coverage layers in 3D
- 64-bit native platform for higher scalability and ability to handle entire metropolitan area

IBWAVE REACH 3D MODEL:

- Designed for urban environments, but can be used everywhere, including in mountainous areas where the receiver is higher than the transmitter
- Supports frequencies between 100 MHz and 60 GHz (which includes mmWave frequency bands)
- Multi-environment model
- Specific modeling of wave propagation through trees
- Supports all cellular layers (including macro cells and small cells)
- Optimized for 3D propagation, in terms of accuracy, performance, and scalability
- Supports all geodata solutions (i.e., height, clutter, clutter height, polygons)
- Multi-resolution support (e.g., height/clutter at 30m resolution and building polygon data), with optional dual-resolution calculation
- User-adaptable in-building penetration algorithm
- Automated model tuner for optimal accuracy
- Supported in the Point-to-Point Profile tool and tools in iBwave Reach that require point-to-point predictions

PROPAGATION MODELING

- State-of-the-art propagation models for all environments and wide range of frequencies
- Support for mmWave frequency bands
- Automated Model tuning using measurement data
- Merging of measurement data with prediction path loss for increased accuracy
- 3D predictions
- Multi-resolution support for all models
- Multi-processed 64-bit propagation
- Open APIs for addition of third-party propagation models
- Unique IBwave Reach 3D Model and Predict propagation models
- Multi-processor (and multi-core) capabilities
- Computation of recommended propagation distance

PREDICTION PREVIEWER

- Quick computation/visualization of propagation
- Support for existing and new sites
- Fast re-computation of predictions when moving sites or adjusting antenna height

POINT-TO-POINT PROFILE

- Availability of point-to-point predictions (as opposed to point-to-area predictions)
- Support for height, clutter, clutter heights, and building data
- Adjustable transmitter/receiver heights

LAYER STATISTICS

- Area and/or traffic based statistics
- Ability to break the statistics down by clutter class or by cell name
- Ability to define "ranges" or to automatically display PDF and CDF curves
- Ability to apply filters (e.g., area filter)

DRIVE TEST MODULE

- Use scanner measurements to validate/analyze propagation model accuracy
- Use test mobile data to analyze specific call events
- Identify and diagnose problem areas on which to focus optimization efforts
- Use measurement data to improve propagation models
- Manage large-scale measurement campaigns (i.e., bulk scanner measurement imports)

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