

**New in Wireless InSite Release 2.5***Performance Enhancements*

- New Optimized Ray Engine enables run times with Full 3D Ray Model up to 18x faster for large urban scenes
- 64-bit version supports larger, more complex problems
- Real-Time run times nearly instantaneous, generally independent of overall scene size and complexity

*New API and Licensing Options*

- New API to Wireless InSite's High-Fidelity Full 3D Ray Model
- Wireless InSite Real-Time now available as standard product
- MW-FDTD and UC-FDTD now included in Wireless InSite Standard Edition
- API Dynamic DLL Loading
- Multiprocessor token licenses: up to eight cores included in base price

*New Modeling Capabilities*

- Spherical and Trajectory-based Transmitter and Receiver Sets
- Support for Antenna Arrays
- Biophysical Grass Material
- User-Specified Materials for Real-Time API

*New Import, Setup and Display Capabilities*

- Capability to Import Hydrography VMAP Layer
- Digital Soil Map of the World Import and New Soil Material
- Cropping Terrain and Geometry to Reduce Computation Time
- Miscellaneous Plotting and Display Improvements

**Standard Features:**

- Output includes received power, electric field, delay spread, bit error rate, C/I, and power delay profile
- Calculations use 3D antenna patterns with full polarization and phase information
- Models wideband and narrowband pulses
- Generates time and frequency domain output
- Identifies outages in coverage using the communication channel analysis tool
- Supports import of urban building data, floor plans, terrain, and soil and vegetation from standard formats
- Overlays output on maps, aerial photographs, and 3D displays of buildings and terrain



## Wireless InSite® Features & Capabilities

### Application Programming Interfaces (APIs)

- Wireless InSite Full 3D Ray Model API (standard with Wireless InSite SE or Pro license, or available as run-time library)
- Wireless InSite Real-Time API (standard with Wireless InSite Real-Time or Pro license, or available as run-time library)

### Propagation Models

- Wireless InSite Standard Edition
  - Full-3D UTD Ray Model
  - Urban Canyon UTD Ray Model
  - Vertical Plane UTD Ray Model for Irregular Terrain
  - Moving-Window FDTD Module
  - Urban Canyon FDTD Module
  - Hata and COST-Hata Empirical Models
  - Free Space Model
- Wireless InSite Real-Time
  - Triple-Path Geodesic Ray Model
  - Vertical Plane Urban Propagation Model
  - Walfisch-Ikegami semi-empirical model
  - OPAR semi-empirical model
  - Hata and COST-Hata Empirical Models
  - Free Space Model

### Output (partial list)

- Received power
- Path loss
- Delay spread
- Bit error rate
- Propagation paths
- Carrier/interferer ratio
- Strongest base to mobile
- Electric field magnitude and phase
- Power delay profile
- Direction-of-arrival
- Time-of-arrival
- Doppler shift
- Electric field vs. time and frequency
- Animated electric field movies

**Antenna Modeling**

- Transmitter/receiver sets defined through individual points, trajectories (routes), arcs, planar surfaces (vertical or horizontal), cylindrical surfaces, or spherical surfaces
- Plane wave sources for modeling airborne and satellite based transmitters
- Numerous built-in antenna types
- Linearly and circularly polarized source antennas
- Phased arrays, constructed from individual elements
- Far zone patterns imported from XFtd<sup>®</sup>
- User-defined two-cut plane antenna radiation patterns
- NSMA, Odyssey and MSI Planet formats

**Geometrical Data Types**

- Cities
- Terrain
- Foliage
- Floor plans
- Objects

**Geometry Generation**

- DXF building data
- Automated CAD model simplification and error checking
- Graphical city, indoor, terrain, and foliage editors
- Translate, scale, rotate operations
- Assignment of material properties
- Scene cropping of unnecessary terrain and urban features

**Data Import**

- Floor plans from DXF files
- Building data from DXF and shape files
- TIFF and GeoTIFF images
- Odyssey (vec)
- Terrain elevation data (DEM and DTED)
- Vegetation land cover from Global Land Cover Characteristics Database
- Digital Soil Map of the World material data
- Raster-to-vector conversion
- Support for NGA Vector Map (VMAP) layers
- Transmitter or receiver routes from VMAP database
- Antenna radiation patterns (NSMA, Odyssey and MSI Planet formats)

**Materials and Environmental Effects**

- Soil material properties, including built-in models based on sand, silt, and clay percentages
- Biophysical grass and vegetation materials
- Modeling areas of water through material properties
- Multiple dielectric layers
- Tabulated reflection and transmission coefficients
- Frequency-dependent foliage material
- Thin coatings
- Modeling of atmospheric ducting effects

**Input/Output Visualization**

- Color displays of most output
- Line plotting tools
- Polar plots and 3D displays of antenna patterns
- Plots of reflection and transmission coefficients by material
- Color display of transient electric fields
- "Movie Sequence" of transient fields vs. time
- Export "Movie Sequence" to MPEG file
- Export views and graphs to JPEG and TIFF files

**Miscellaneous**

- Communication channel analysis tool
- Dispersive channel modeling
- Advanced building pre-processor
- Conform vegetation land cover to terrain
- Customizable output filters
- Create libraries of antennas, materials and waveforms

**Special Capabilities/Options**

- Run Wireless InSite Real-Time calculations on multiple threads
- Run Wireless InSite Standard calculations on multiple processors
- Support for Linux clusters