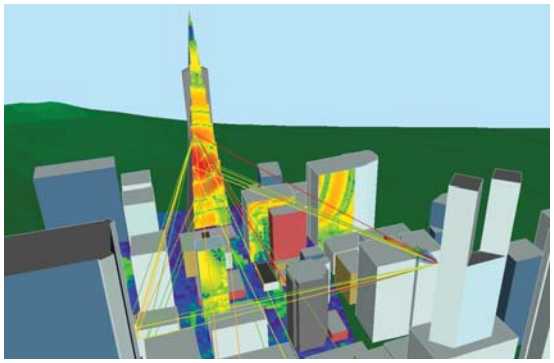
Wireless InSite®

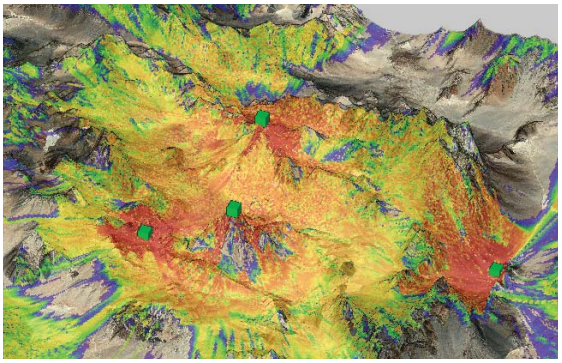
Wireless EM Propagation Software from the Leaders in High-Fidelity Propagation

Wireless InSite is site-specific radio propagation software for the analysis and design of wireless systems for communication, networking, sensors and numerous other applications. It provides efficient and accurate predictions of propagation and channel characteristics in complex urban, indoor, rural and mixed path environments, and includes high-fidelity and real time options.

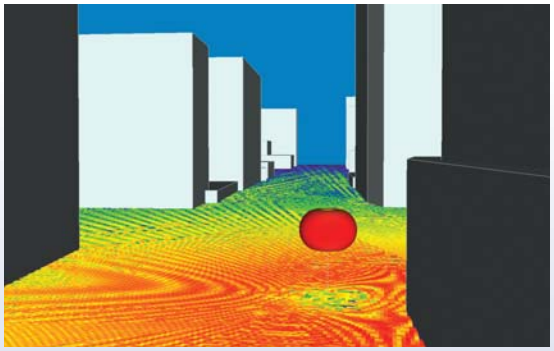
Wireless InSite provides RF engineers with the tools to design wireless links, optimize antenna coverage, and assess key channel and signal characteristics. Applications include predicting coverage from base stations and access points; determining shadowing and multipath effects from buildings, indoor floorplans, and terrain; assessing wireless backhaul solutions; evaluating channel characteristics for communication links; assessing radar propagation; and many other types of analysis.



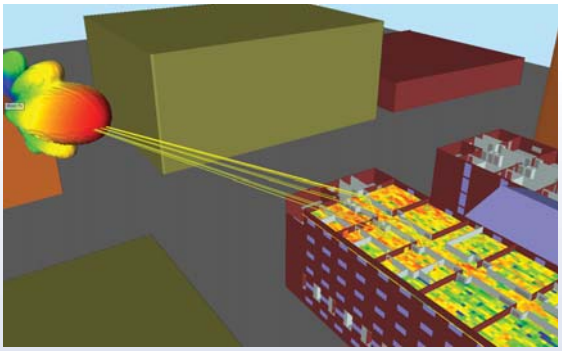
Signal coverage, multipath, and channel characteristics for wireless communications in complex urban environments.



Coverage in rugged mountainous region over 12,000 km² area using Vertical Plane Ray Model. (Terrain image provided by Harris Global 15 m.)



Complex multipath in a dense urban environment for an antenna near street level.



Predict indoor coverage from nearby small cell base station.

Visit **www.remcom.com/wireless-insite** for a detailed feature list, system requirements and licensing information.

REMCOM®

wireless insite

Multiple Versions for Various Needs

Wireless InSite Standard

Suite of high-fidelity propagation models based on ray-tracing, finite difference time domain, and empirical techniques. Site-specific models can provide detailed predictions including E and H fields, received power, and propagation loss and gain. Signal and channel characteristic outputs include delay spread, direction of arrival and departure, and mean time of arrival. Capabilities include detailed urban (indoor and outdoor) and longer-range propagation over rough terrain.

Wireless InSite Real Time

Suite of propagation models intended to balance fidelity and speed, providing site-specific urban propagation models, but with rapid calculation capability. Models provide point-to-point link predictions in milliseconds.

Wireless InSite Professional

Bundles the full suite of models from Wireless InSite Standard and Real Time versions.

Wireless InSite APIs

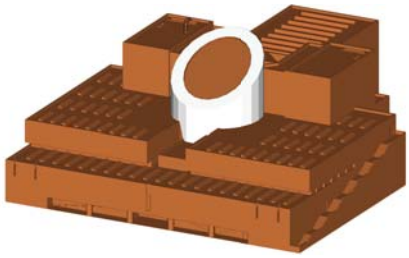
Application Programming Interfaces (APIs) allow users to develop their own custom applications and call Remcom's powerful propagation models through plug-in DLLs. Flexible licensing terms can be provided for partners interested in reselling products that use Wireless InSite plug-in models (contact Remcom for more information).

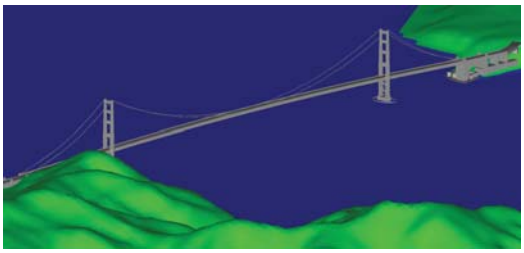
Wireless InSite Capability	Standard Version	Real Time Version	Professional Version	Available APIs
X3D Ray Model	•		•	*
Urban Canyon Ray Model (2D)	•		•	
Vertical Plane Ray Model (2D)	•		•	
Moving Window FDTD	•		•	
Urban Canyon FDTD	•		•	
Full 3D Propagation Model	•		•	•
Hata	•	•	•	•
COST Hata	•	•	•	•
Free Space	•	•	•	•
Vertical Plane Urban Propagation		•	•	•
Triple Path Geodesic		•	•	•
Walfisch-Ikegami		•	•	•
OPAR		•	•	•

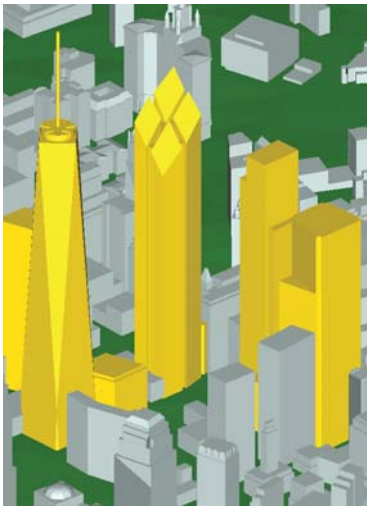
* Beta version of new API to X3D available upon request.

New in Wireless InSite

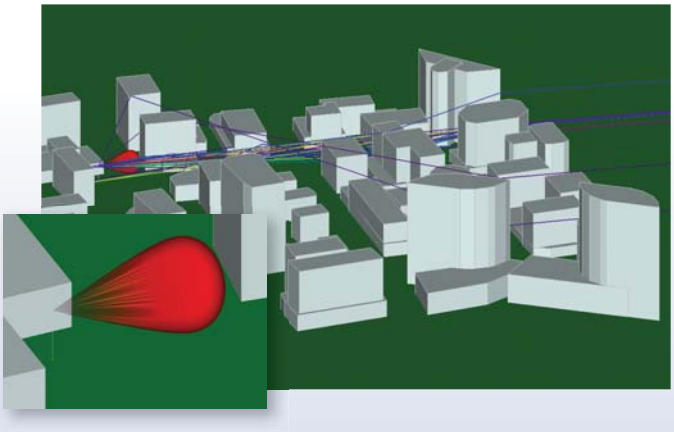
- Wireless InSite 2.8 offers improved geometry importing options including COLLADA (.dae files) and KMZ.
  - Convenient for the addition of single structures to a scene:
    - Bridges
    - New construction
    - Buildings with intricate details
  - Geo-located KMZ files properly align with other scene elements



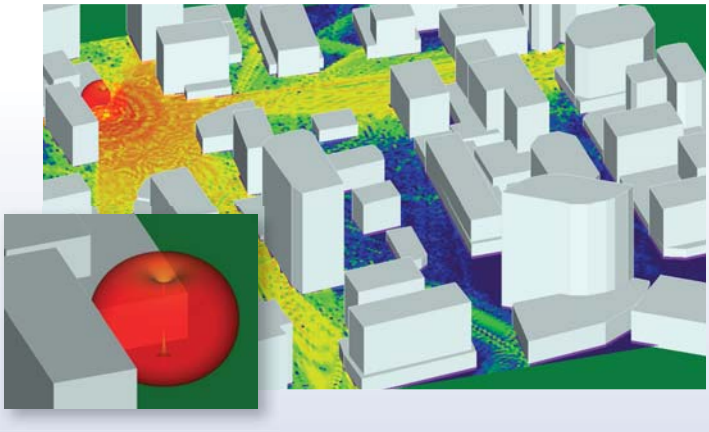




- Transceiver Sets simplify setup of modern wireless networks where points may be ideally simulated as both transmitters and receivers.



Simulate backhaul to small cell.



Predict small cell coverage.

- Improved geometry pre-processing
  - Significant decrease in processing time for large urban scenes
- Improved Triple Path Geodesic and Vertical Plane Urban Models
  - More outputs available including paths, received power

Wireless InSite Key Features and Outputs

Modeling Capabilities

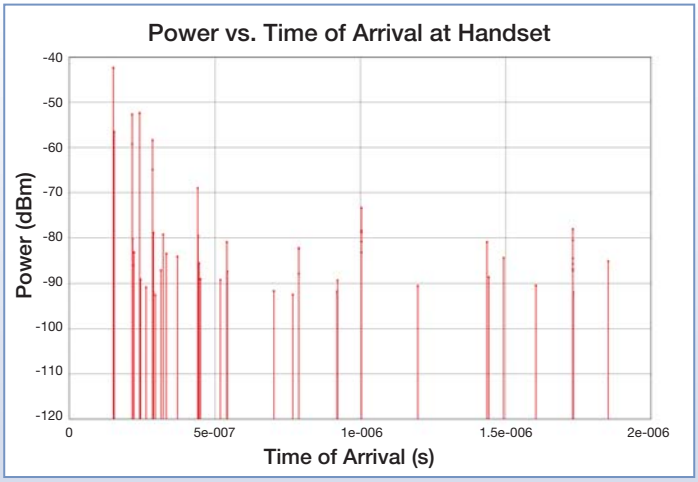
- Urban, indoor, and rough terrain:
  - – High-fidelity ray-tracing
  - – Fast ray-based methods
  - – Empirical propagation models
- Proper handling of antennas, polarization, phase
- Semi-empirical models for indoor and foliage

Imports and Databases

- Terrain data using GDAL importer
- Geometry importers for city structures, floor plans, and objects (COLLADA, DXF, KMZ, SAT, shapefile, STL)
- Antennas: Remcom UAN, Planet, Odyssey
- Maps and aerial photo imagery
- Global soil dielectrics and USGS foliage

Acceleration and Optimization

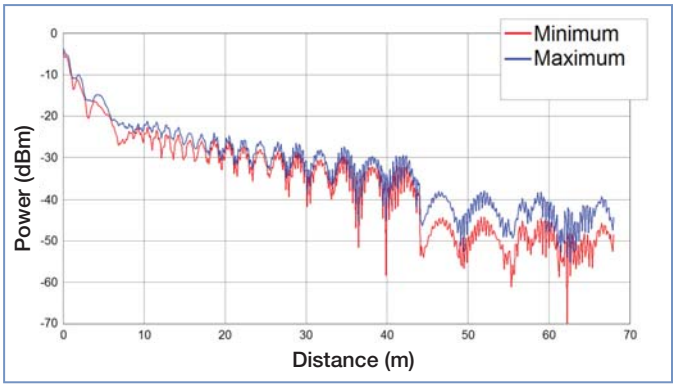
- GPU acceleration and multi-threading
- Improved performance for scenes with complex geometry



Channel complex impulse response.

Post-Processing Features

- Monte Carlo
  - – Parameter uncertainty
- Communication channel analysis
  - – Interference, BER, throughput for LTE and WiMAX



Monte Carlo variation of material properties bounds uncertainty in the received power.

Outputs

- Received power, path loss
- Propagation path displays
- Electric field magnitude and phase
- Power delay profile
- Complex impulse response
- Delay spread
- Time- and Direction-of-Arrival
- Electric field vs. time, frequency
- Carrier/interferer ratio
- Strongest base to mobile
- Animated movies of fields or ray paths vs. time

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