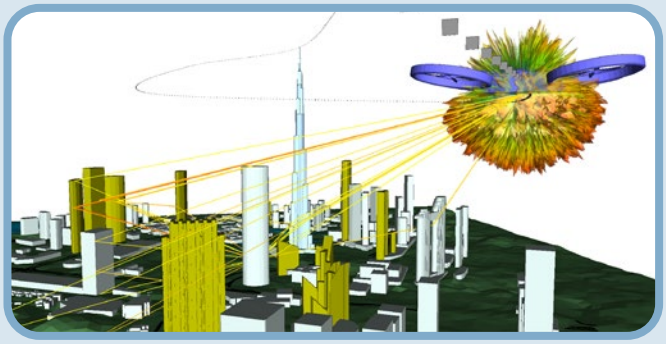
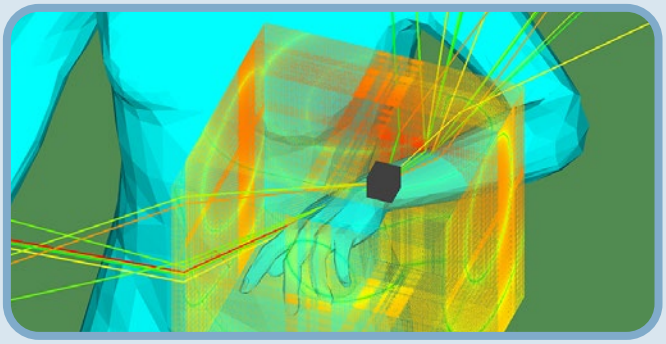
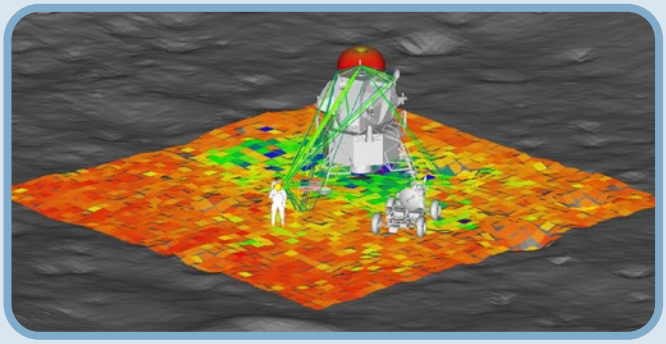
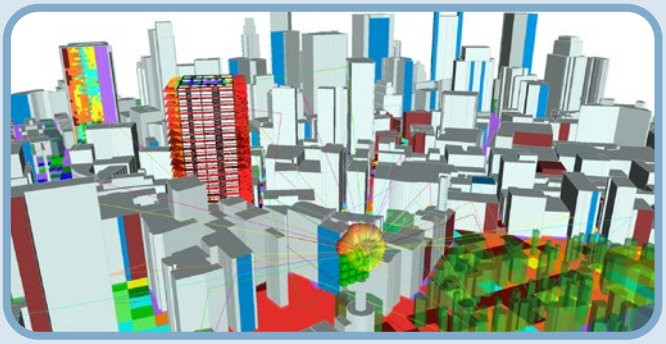
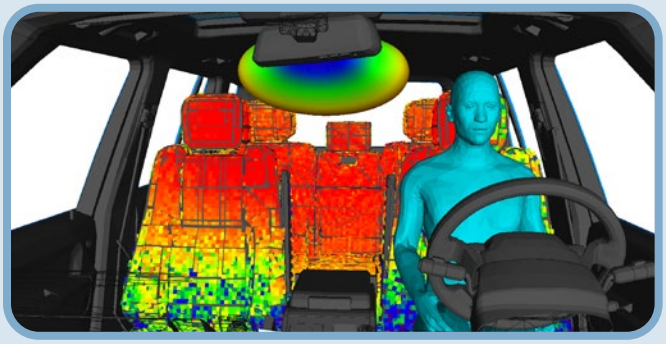
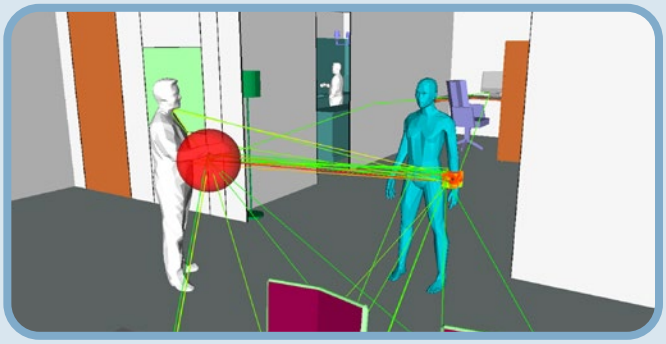
Wireless InSite® 3D Wireless Prediction Software

Wireless InSite is site-specific radio propagation software for the analysis and design of wireless systems for communication, networking, and other applications in urban, outdoor, rural, or non-terrestrial environments. It provides accurate full 3D simulations to predict detailed channel information that is critical for 5G, 6G, and WiFi, while applying innovative optimizations to ensure reasonable runtimes.

- Assess the performance of new device designs in realistic environments
- Analyze key channel and signal characteristics for RF and millimeter wave frequency bands
- Simulate MIMO and massive MIMO
- Capture the effects of motion on connectivity

Wireless InSite®

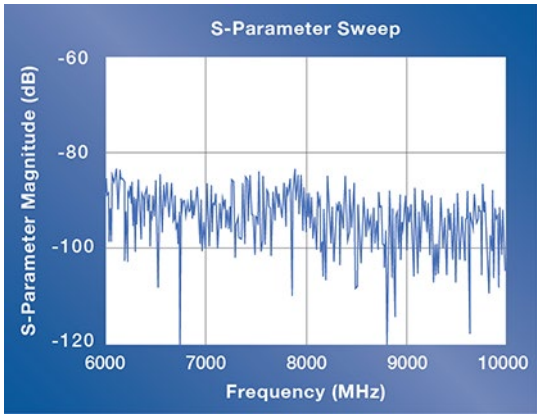
REMCOM®

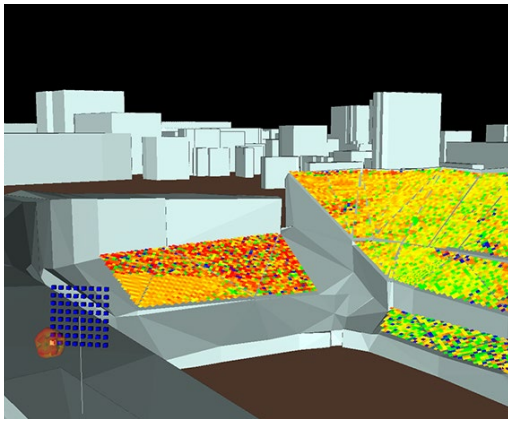
Wireless InSite MIMO

Wireless InSite offers a unique capability for optimized simulation of 5G and 6G MIMO systems.

Analytic or Imported MIMO Antennas

- Build MIMO arrays with arbitrary patterns, rotations and spacings
- Import from measurements or a full-wave solver, such as Remcom's XFdtd®
- Accurately model S-parameter coupling



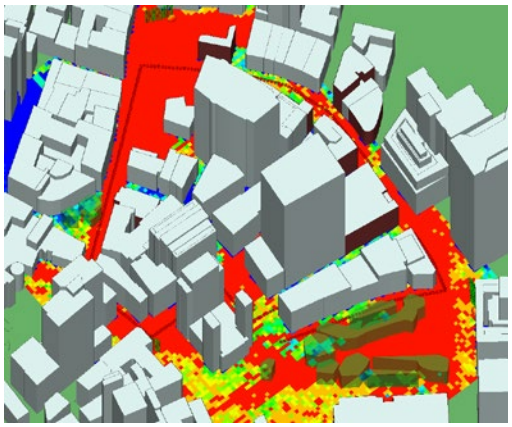


Accurate, Optimized MIMO Channel Prediction

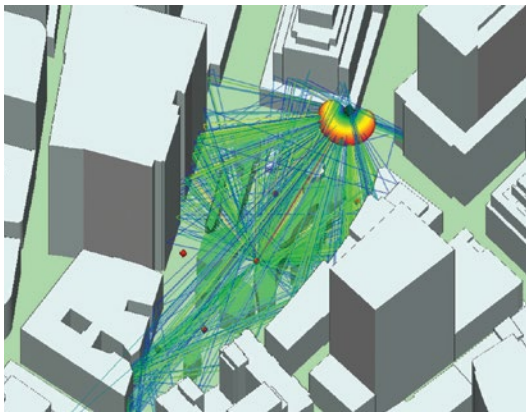
- Optimized GPU ray-tracing with MIMO rapidly predicts precise element-to-element paths
- Calculates complex response, H-matrix, time and direction of arrival/departure, RMS delay spread, and angle spread
- Maintains relative positions of antenna elements along routes

MIMO Beamforming, Spatial Multiplexing, and Comms Analysis

- MIMO beamforming, spatial multiplexing, and diversity techniques applied to compute enhancements to channel and characteristics of MIMO data streams
- Predict throughput, capacity, and bit error rate for various wireless access methods
- Export results for custom post-processing



Advanced Features

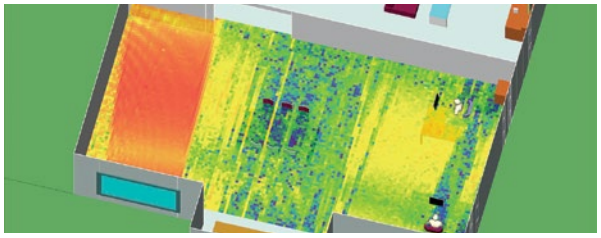


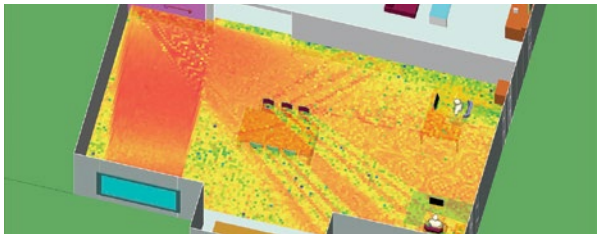
mmWave: Absorption and Diffuse Scatter

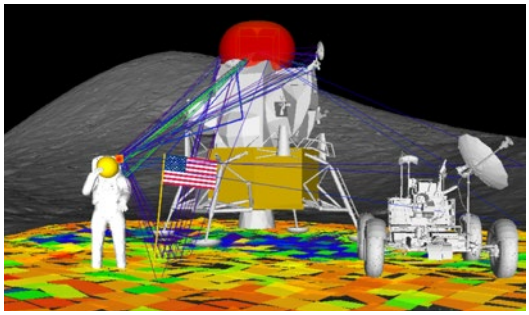
- Model oxygen and water vapor absorption using user-specified temperature, pressure, and humidity
- Multiple diffuse scattering models allow scattering to be omnidirectional or to have directive and backscattered lobes
- Surface roughness increases delay, angle spreads, and cross-polarized power

Engineered Electromagnetic Surfaces (EES)

- Model passive metasurfaces designed to optimize wireless communication by manipulating how signals propagate through an environment
- Analyze improvements to coverage from either a static EES or a single configuration of a metasurface-based Reconfigurable Intelligent Surface (RIS)





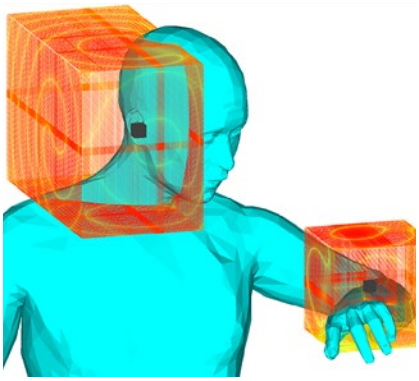


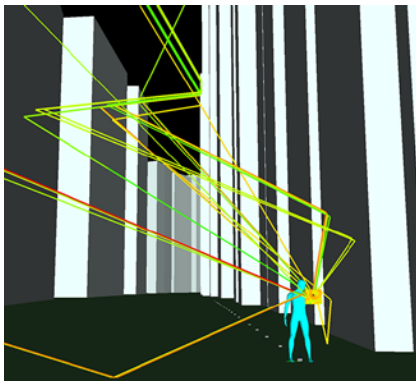
Support for LunaNet and Artemis Project

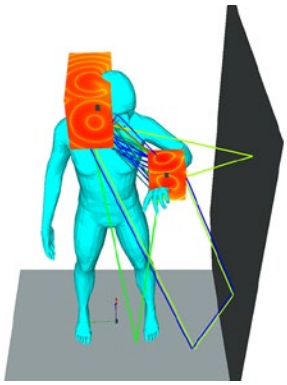
- Import lunar terrain
- Lunar regolith materials database to accurately model lunar dust and sub-surface scattering

Near-Field Huygens Antenna

- Interoperability between XFdtd and Wireless InSite
- Incorporates near-field antenna effects into simulations of antenna performance so that mobility, multipath, and interactions with body-worn devices may be analyzed in realistic environments

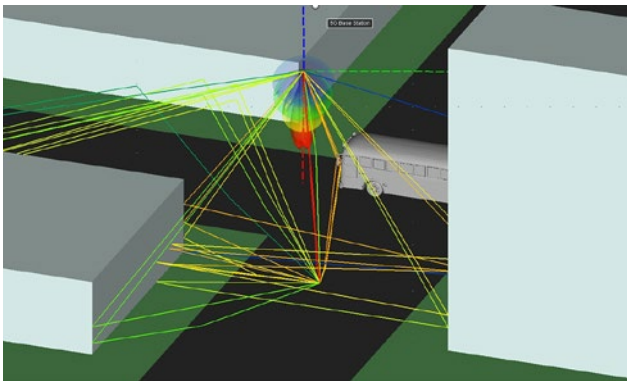


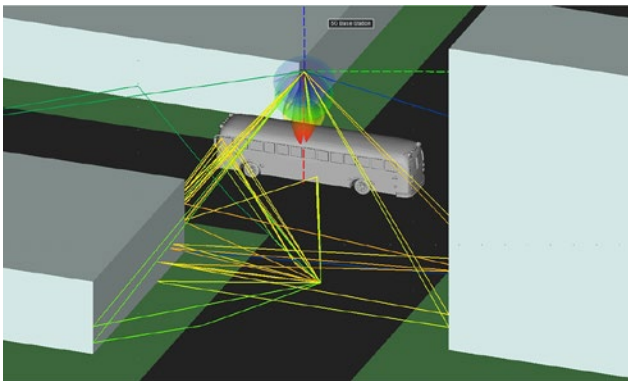




Mobile Platforms for Moving Objects and Transceivers

- Capture motion of humans, cars, and UE in complex indoor or outdoor environments
- Maintain the relationship between moving geometry and associated transceivers
- Calculate time-based outputs





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