



## ReallIR™ API for IR Sensor Simulation

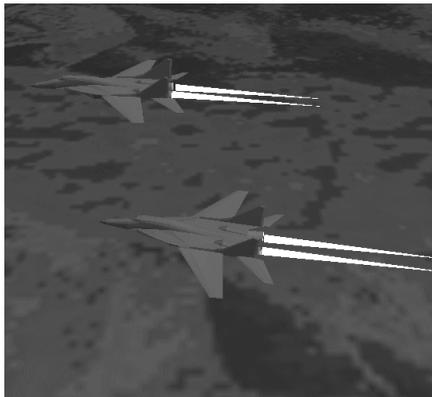
Technology Service Corporation (TSC) developed the ReallIR™ application programming interface (API) to provide a toolkit for real-time sensor simulation developers. The ReallIR API implements physics-based models for thermal IR sensor simulation, compatible with standard scene database formats and real-time simulation engines. The API has been incorporated in simulations for both man-in-the-loop training systems and hardware-in-the-loop simulation systems.

### PRODUCT DESCRIPTION

The ReallIR API meets the needs of users who require a dynamic IR simulation that can be rapidly reconfigured during the simulation run. The API provides complete functionality for incorporating a physics-based IR model into a real-time simulation. Using the API, a simulation application can continuously update the simulated IR sensor imagery. The ReallIR API functions include sensor specification, real-time modification of environment and atmosphere, physics-based computation of scene temperatures and radiances, atmospheric propagation using LOWTRAN or MODTRAN, and real-time visualization with 8, 12, or 16-bit image depths. The API also provides automatic conversion of terrain and target textures to physically correct IR textures.



In addition to the IR physics library, the API contains functions for loading OpenFlight™ target and terrain models and performing real-time visualization using the OpenSceneGraph API. TSC recently (2013) added additional functions to provide an option for real-time conversion of visual terrain databases to IR intensities using GPU technology, eliminating the time and storage required for material mapping and off-line conversion.



### WHY REAL-TIME IR SIMULATION?

Use of thermal IR imaging sensors is increasing in both military and commercial sectors for day/night surveillance, navigation, and fire control. IR simulation is essential for the development of these sensors, and for operator training. Thermal IR imagery is highly dependent on local conditions, and can change dramatically within a few hours. Only a physics-based simulation system such as ReallIR can provide realistic simulated IR imagery under all operating conditions.

### ABOUT TSC

TSC has extensive experience in IR and radar sensor simulation. The ReallIR API is used by many companies and government agencies for training and simulation. Our numerous customer applications include UAV operator training, enhanced vision flight simulation, and hardware-in-the-loop seeker testing. We can provide support or deliver a turnkey simulation with ReallIR to fit your specific needs and applications.

### CONTACT INFORMATION

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