

SIMULATION

ONDULUS IR

MATERIALIZE. CUSTOMIZE. SIMULATE.

Ondulus IR gives simulations and training scenarios a critical component: physics-based infrared sensors. By adding real-time, high-quality materials-based infrared sensors and sensor views to a simulation environment, you can truly approach the realism needed for research and design, and the immersion required for mission training.

PRESAGIS
\\ MAKE IT REAL

HOW ONDULUS IR HELPS

BENEFITS



REAL-TIME AND PHYSICS-BASED

Radiation, cooling, complex and composite materials, and other calculations are built-in, realistic, and high-fidelity. Our unique physics-based approach allows for affordable, real-time simulations which are dynamic and changeable, which is perfect for research and design.



FULLY CUSTOMIZABLE

Open architecture allows users to customize sensors to meet their specific requirements. Sensors models can also be extracted from manufacturer data sheets. Ondulus IR is compliant with the EMVA (European Machine Visual Association) 1288 standard.



SUPPORTS OGC CDB FORMAT

To maximize reusability interoperability, Ondulus IR supports OGC CDB.



WIDE EXPORT CAPABILITIES

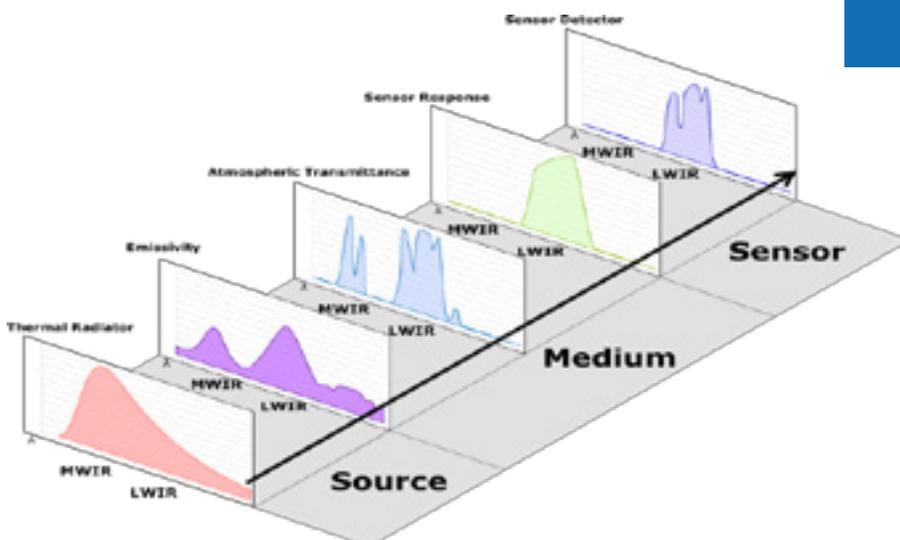
Developed in Canada, Ondulus IR is a product that can be integrated in any solution, allowing it to be deployed and supported almost anywhere in the world.

Ondulus IR dynamically takes into account radiation loading, cooling, conduction, and convection. Computation is available for any time of day, any time of year, under any atmospheric conditions and at any location on the planet and takes into account the energy exchanged between the sun and different materials as well as atmospheric conditions.

In addition, complex composite and layered materials are supported. For example, ground surfaces (e.g.: concrete) and sub-layers (e.g.: sand) can be defined for terrains, building materials (walls, insulation, fiberboard), vegetation and water surfaces (ocean, lake, river).

Part of the Presagis M&S Suite, Ondulus IR is designed to reduce costly integration time and streamline the development process. Additionally, Ondulus IR can easily be mounted on virtual vehicles, ships, aircraft, helicopters, or UAVs.

Built on a modular, open architecture, simulation developers can easily replace default models with their own or even write their own GPU shaders.





VISUAL DAY VIEW



VISUAL NIGHT VIEW



THERMAL VIEW



INFRARED VIEW

ONDULUS IR FEATURES

Real-time high-quality materials-based infrared sensor simulation.

- \ Materials & environment aware.
- \ User controllable Hot Spots to simulate real-time temperature.
- \ Unified database & material-classification workflow.
- \ Single correlated database for Visuals, Sensors & CGF with CDB.
- \ Unlimited area coverage.
- \ Dynamically control sensor parameters through user interface or via API.



Ondulus IR offers support for complex composite materials usually comprised of several layers of different base materials and are categorized as:

- \ **Terrain:** for all terrain materials, includes surface layers (e.g. concrete road, grass field, mountain rocks) and sub-layers (e.g. soil, sand, limestone).
- \ **Culture:** for all building materials, includes surface layers (e.g. asphalt, roof, brick wall, glass window), insulation layers (e.g. fiberglass, glasswool, air), and inner layers (e.g., wood, fiberboard).
- \ **Water:** for all water surfaces (e.g., ocean, lake, river) the thickness represents the water depth which is taken from the bathymetry data of a database.

DUAL SENSORS: PHOTON & THERMAL

TWO DETECTORS. ONE SIMULATOR

Ondulus IR refined its sensor into two distinct detectors:

- \ Photon for long wavelength IR and lower operating temperatures
- \ Thermal for very long wavelength spectral range

This was done to accommodate the different types of noise and dependencies encountered at different wavelengths and temperatures.

USE DATASHEETS OR SPECS

Because Ondulus IR is built on a modular architecture, each detector can be specifically configured using datasheet information, or actual product specifications.

ACCURATE PHYSICS-BASED MODELING

Ondulus IR sensor models have been validated with the National Optics Institute (INO) to ensure the sensors' accurate physics-based modeling.

SENSOR SUBSYSTEM

Ondulus IR users have full control of a sensors subsystems including:

- \ Lens
- \ Detector
- \ Electronics
- \ Displays

FULLY CONFIGURABLE

- \ Both the photon and thermal detectors can simulate and configure the following attributes:
- \ Blurring, noise, NEP, NETD
- \ Dark current (photon)
- \ Adjust temperature range
- \ Non-uniformity effects
- \ Cooled and uncooled detectors

Ondulus IR performance has increased significantly.

Visual Studio 2015 (VC 14) Support

API developers can now use a more recent version of Microsoft Visual Studio tools.

LEVERAGING OGC CDB

Through OGC CDB, Ondulus IR users develop rich ground material databases that can cover the whole earth, and offer multi-user and multi-resolution points of view to enable even the most stringent IR applications.

OUTSTANDING PERFORMANCE

Ondulus IR was designed with computational performance in mind. This translates to higher-density scenes and wider field of view than most other solutions on the market.



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