

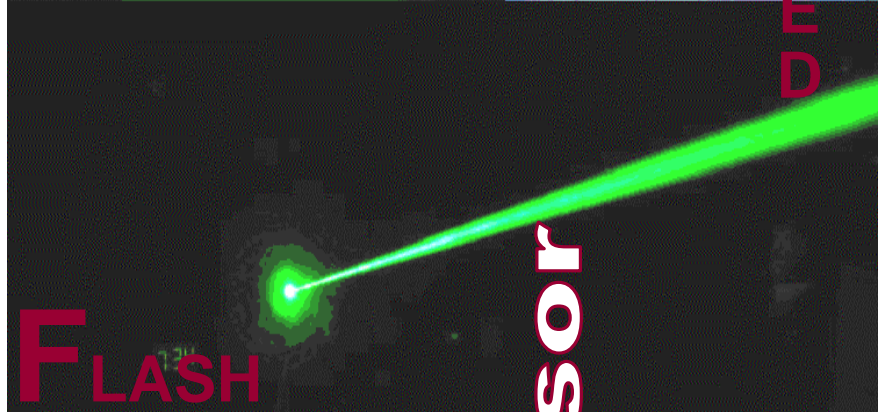
# SE-Workbench-AD

Laser



INFRARED

L<sub>RF</sub>



FLASH

Sensor

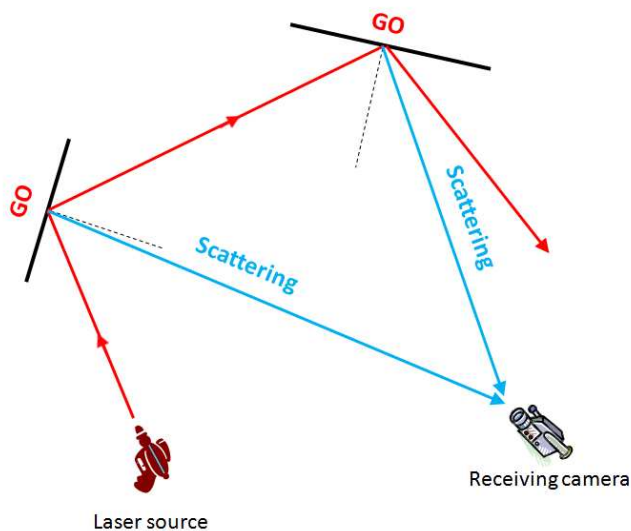
**Simulate laser applications**

**SE Workbench-AD (Active Domain) is dedicated to the rendering of a synthetic environment in the active domain i.e. illuminated by a laser source.**

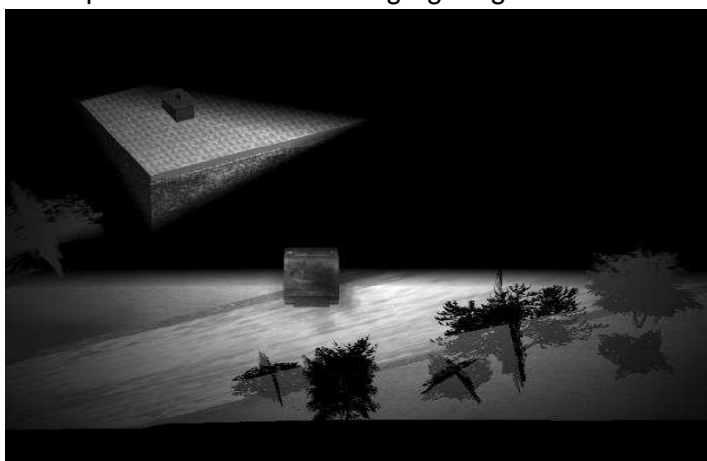
### Pulsed LASER context, specular Architecture predominant

- Computation of the total path length related to each contribution taken into account at the receiving camera.
- **Flash Laser Imaging System:** Simulation of the range gating capacities of a system.
- **LRF - Laser Range Finder:** Focused application on the detection - Identification of a metallic or dielectric target.

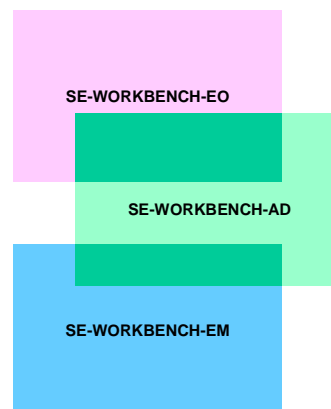
SE-Workbench-AD computation inherits from the ray tracing core that is implemented in SE RAY-EM as illustrated hereafter.



1. Each path from the laser source to the receiving camera is composed of several straight paths.
2. Computation of the total length of the path associated to each contribution received by the camera.
3. Implementation of the range gating.



SE-Workbench-AD functions relies on the already validated suites SE-Workbench-OE and SE-Workbench-RF:



The core tool SE-RAY-AD directly inherits from SE-RAY-IR and of SE-RAY-EM. It is the ray tracing kernel that also relies on SE-PHOTON-MAP modules for diffuse surface situations.

#### SE-WORKBENCH-OE functions implemented:

- The passive infrared rendering based on ray tracing: SE-RAY-IR
- The global illumination modules based on Photon Map: SE-RAY-PHOTON-MAP
- The IR sensor modeling: SE-IR-SENSOR
- The physical modeling: SE-PHYSICAL-MODELER
- The classification tool: SE-CLASSIFICATION
- The API to control the rendering process: SE-TOOLKIT
- The set of converters and plug-in for external modeling tools: SE-FFT

#### SE-WORKBENCH-RF functions implemented:

- Antialiasing process from the source: SE-RAY-EM
- Management of the incoming energy to the receiving camera for each interaction to surface: SE-RAY-EM
- Computation of the distance (phase) for each ray segments: SE-RAY-EM

#### Benefits:

Unique simulation tool for laser simulation

#### System requirements:

Windows™ XP and 7  
Linux Red Hat Enterprise 4