OKTAL-SE
Synthetic Environment

EO
AEO
RF
GNSS
RAY

SE-SCENARIO

SCENARIO EDITION TOOL

FAST

SE-SCENARIO is dedicated to the SE-WORKBENCH scenario edition. It is designed to prepare simulations for different computation kernels such as SE-RAY-IR, SE-RAY-ACTIVE-EO, SE-FAST-IR or SE-RAY-EM

Features

- Scene edition: the scene consists in a hierarchical set of entities (such as conventional 3D objects, sensors, particle systems, etc.)
- Trajectories edition: path is used to simulate the movement of an entity by giving a predefined list of positions and orientations
- Chronogram edition: the chronogram enables the user to define a script for a scenario by creating time and event-based actions
- Scenario preview: after preparing its scenario, the user can preview the scenario using interactive tools for time control
- Visualization of EM field computation results

Scenario Definition

A scenario is made by aggregation of different items necessary to run the simulation. The basic entities to be federated are:
- 3D database including the physical EO and RF extension
- EO and RF sensor definition
- EO and RF source definition
- Properties of moving objects (position and trajectories)
- Properties of moving sources (position and trajectories)

The scenario definition is done using SE-SCENARIO dedicated GUI or can be exploited via programming using the associated APIs: SE-TOOLKIT, SE-TK-FORM or SE-TK-D-SCNX

The Context Concept

One of the most important features of SE-SCENARIO is the ability to prepare multi-domain and multi-rendering simulations. A customer software that reads and exploits a scenario is called a target application. A scenario can be used by a given target application only if it has been prepared for it. To do so, SE-SCENARIO introduces the notion of "context"

Inside a scenario, a context represents a set of data that a target application needs to use. There are two kinds of context data:
- Context definition data: these properties are used to define the context itself and may be used by the target application to initialize specific settings before using the scenario
- Element-level data: these properties are assigned to each element of a scenario, depending on its type, and define specific behaviours related to the target application. These data are named contextual features

A scenario includes one or more contexts and a context can be dynamically added to or removed from a scenario. When a new context is created, its related data are automatically plugged to the existing structure of the scenario. SE-SCENARIO proposes three kinds of contexts:
- SE-RAY-IR for accurate (non real-time) EO simulations
- SE-RAY-ACTIVE-EO for accurate (non real-time) simulations with pulsed laser illumination of the scene

- SE-FAST-IR for real-time EO simulations
- SE-RAY-EM for RF simulations

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Synthetic Environment

Advantages

- Interactive 3D scene visualization: Geometry & Material picking
- Interactive positioning of objects in the scene
- Interactive positioning of sensors applying specific constraints
- Path 3D edition facilities: 3D control points definition / moving and recording
- 3D Path smoothing
- Video tape facilities: play a scenario / generation of a movie
- "Optical representation" of the sensor viewing: LOS, FOV, pixel resolution, parameterisation / source frustum visualisation
- Basic environment effects: fog & visibility range / ambient & directive lights / LOD commutation control
- Command mode available via an API
- Interactive Python scripts edition with 3D visualization

System requirements

Windows

Linux

Manipulated Entities

Six different types of entity exist:

- Object entity: An object entity represents a 3D geometry. Object entities are used to model terrain, infrastructures, superstructures and actors of a scenario like ground and vehicles

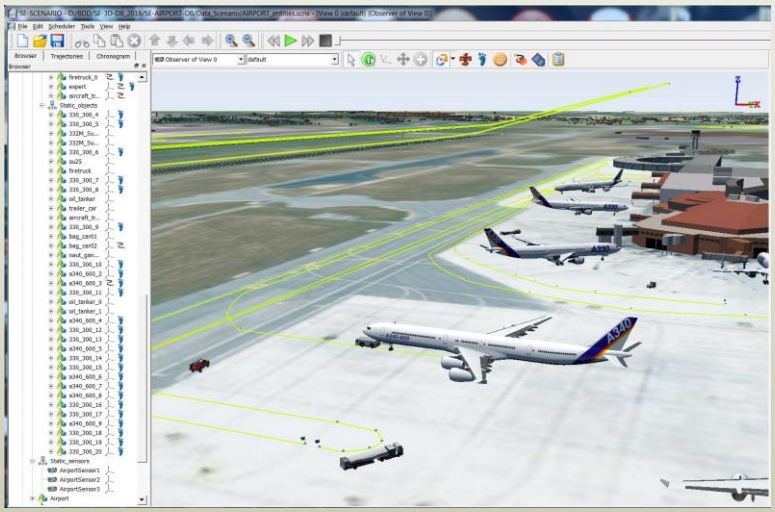
- Group entity: A group entity contains a list of child entities. It allows to define unions of entities such as infantry division

- Optronic sensor entity: An optronic sensor entity represents a point of view of the scene from which images will be computed by the target application with dedicated sensor viewing parameters

- Flare entity: A flare entity represents a self-illuminated geometry like a flare

- Cloud entity: A cloud entity represents a 3D cloud or a cloud layer

- Particle system entity: A particle system entity models a set of unitary particles. The user customizes the motion of the particles through specific parameters. Each particle can be represented by one of the following model: SDM 3D object, Flare, Cloud, Billboard



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