

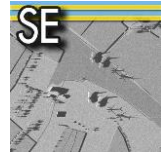


# OKTAL-SE

Synthetic Environment

- EO ✘
- AEO ✘
- RF ✔
- GNSS ✘
- RAY ✘

## SE-FAST-SAR



FAST ✔

### A rapid SAR image generator based on ray-tracing technology

SE-FAST-SAR is an easy-to-use application that computes Synthetic Aperture Radar images on large scenes in an efficient way. This tool is well adapted to man in the loop application or massive SAR image generation. The physics models come from the OKTAL-SE electromagnetic computation kernel (SE-RAY-EM) that has been fully validated by the scientific laboratories.

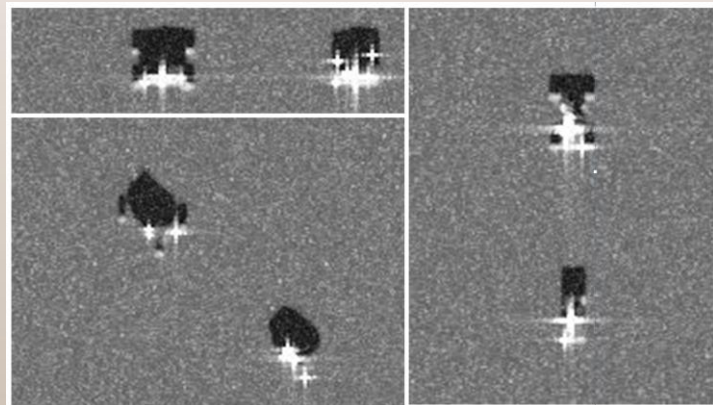
#### Features

- Synthetic Aperture radar image generator
- Well adapted for large scenes (several km<sup>2</sup>)
- Based on the validated ray-tracing algorithm of SE-RAY-EM
- Easy control of SAR carrier trajectory
- Includes the major EM interaction models: Geometrical Optics and Physical Optics.
- Can be controlled by CIGI commands

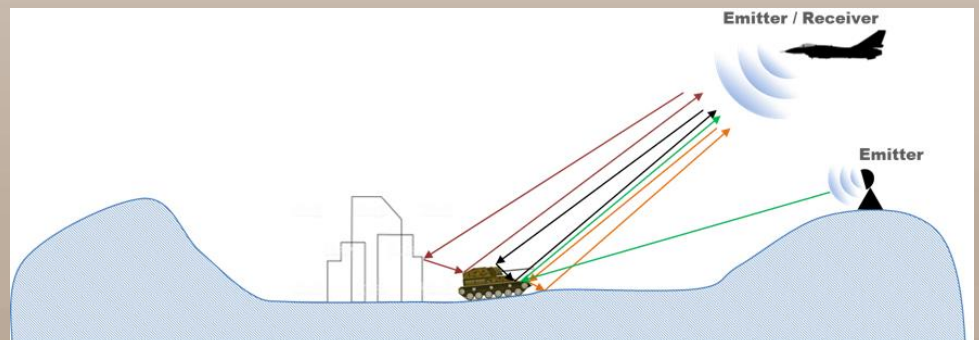


#### Challenges of the RADAR simulation

Large scenes with millions of polygons and small details for target signature. This leads to millions of rays launched in the scene to take into account electromagnetic interactions in the complex 3D scene using Geometrical Optics and Physical Optics. SE-FAST-SAR uses the GP-GPU capabilities of high-end NVIDIA graphic boards to carry out such massive computation in real-time.



Objects, 3D structures and terrain are all considered as 3D elements and possible contributors.



## Benefits

- Easy to use
- Rapid image generator (80Hz for HD SAR images on RTX 3070ti)

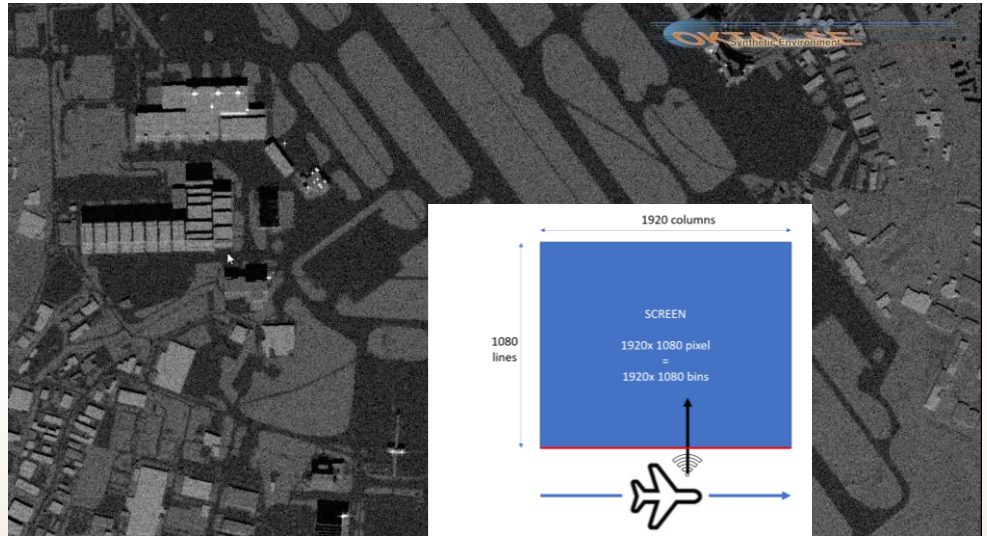


- Can be integrated in a Man in the loop application through CIGI protocol

## System requirements



## Large scene echo acquisition

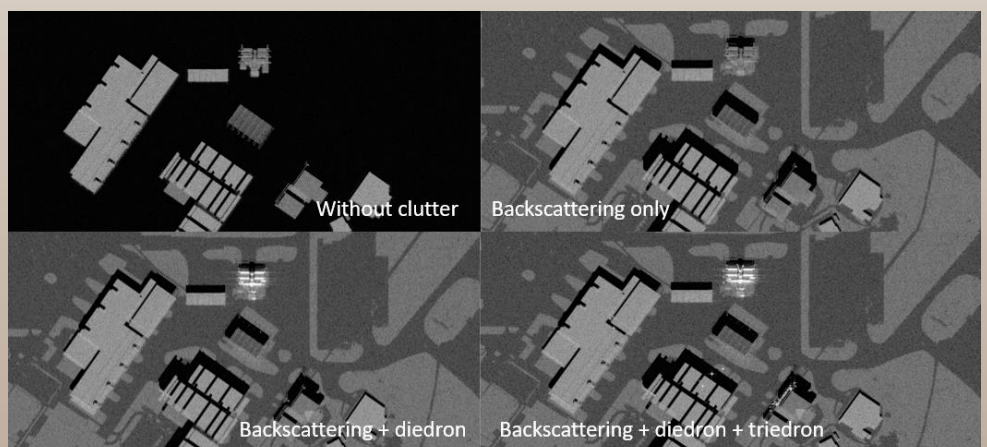


## Advanced radar image features



Lay over effect

## Parametric analysis of radar image



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