

## OKTAL SYNTHETIC ENVIRONMENT

### The highest French SCIENCE AND DEFENSE distinction

The OKTAL-SE company, together with ONERA and the Toulouse University of Science, won the price "SCIENCE AND DEFENSE" for the project FERMAT/SE-RAY-EM. The price was given by Mr. François LUREAU, General Deputy for the Armament in France, in the name of Mrs. Michèle ALLIOT-MARIE, French Minister of Defense. The price "SCIENCE AND DEFENSE", created in September 1983, rewards each year the most eminent scientific contributions for science and technology, interesting national defense.

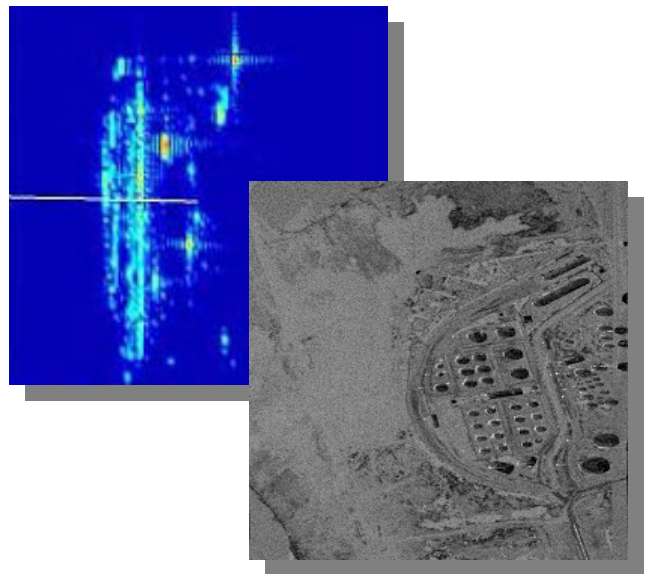
#### FERMAT/SE-RAY-EM objectives:

The scientific ambition of the FERMAT/SE-RAY-EM project is to provide an EM simulation software, based on the association of asymptotic formulations of Maxwell's equations and shooting and bouncing rays technique, allowing :

- 1- To compute Near field or Far field high frequency scattering from metallic and dielectric materials including reflection, transmission and diffraction of EM wave.
- 2- To compute the EM interactions with the targets and the environment in the same way.
- 3- To take into account the statistical surface roughness (natural or artificial).

#### An operational software solution:

The SE-RAY-EM tool is well adapted to RCS or ISAR image computations down to millimeter wavelength for high realistic targets described using detailed CAD files. Moreover, this tool is efficiently used to compute the same RCS of targets, taking into account the close environment, i.e. the clutter of the target, in the same run. Besides, it is possible to use the same tool in order to compute a complete reflectivity map of a 3D virtual terrain, including targets, representing a valuable input for SAR treatment models.



*ISAR signature of a tank and pseudo-SAR image of a 3D virtual terrain generated with SE-RAY-EM*



*Allocation of François LUREAU, French General Deputy of Armament.*



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