

OKTAL SYNTHETIC ENVIRONMENT

Infrared signature computation of aircrafts in their environment

A winning partnership

OKTAL-SE and DLR won, end of 2007, a public tender from the French MoD (DGA) aiming at simulating and modeling aircraft infrared signature of including plumes of jet engines. OKTAL-SE in cooperation with its subcontractor DLR in Germany and in coordination with ONERA in France, has the mission to build a coherent simulation set of software that enables the generation of the infrared signature of different type of aircrafts: body + plume + environment. Then, the French MoD shall be able to use this set of software, with its own data to compute as accurate as possible signatures of any given military or civilian aircraft.

A technical innovation

On the right, an illustration of the preliminary results of the project is shown. The goal of the project can be clearly seen.

- The temperature of the aircraft body as well the temperature and physical properties of the plumes are computed with a fluid-dynamic software and imported on the 3D geometry.
- A specific volumic model is used to support the geometry of the plume.
- The computation is inserted in a SE-Workbench environment and used with 3D terrain background, with appropriate atmospheric conditions and time of the day.

The software SE-SCENARIO is used to assemble all the different pieces of the computation made of one or several aircrafts, the environment and one or several sensors. The SE-RAY-IR software is used to compute the final spectral radiance map of the image.



Preliminary results of the research project. The physical realism of the plume and background terrain are degraded on purpose.

About DLR

DLR is Germany's national research centre for aeronautics and space. Its extensive research and development work in aeronautics, space, transportation and energy is integrated into national and international cooperative ventures.

DLR's research portfolio ranges from fundamental research to innovative development of the applications and products of tomorrow. In this way, DLR contributes the scientific and technical know-how that it has gained, thus enhancing Germany's industrial and technological reputation.

Approximately 5600 people work for DLR; the center has 28 institutes and facilities at 13 locations in Germany. DLR also has offices in Brussels, Paris and Washington, D.C.