LEMMA

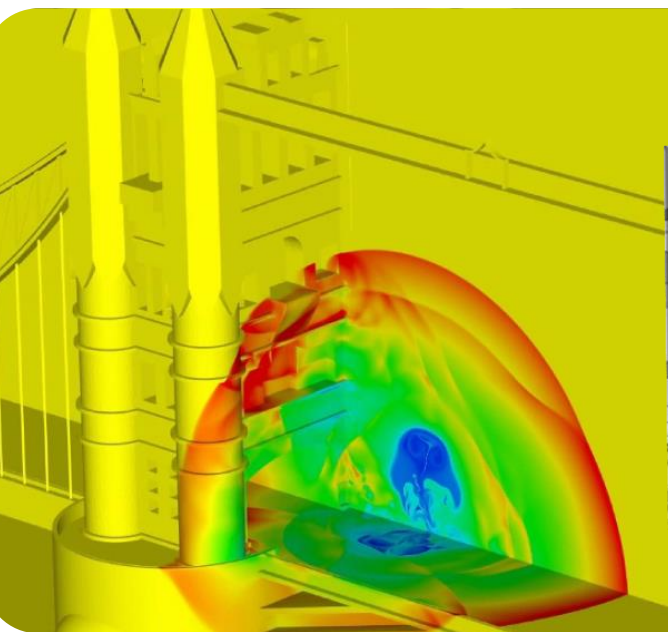# BLAST SIMULATIONS
Compute different !

Blast simulations: what's new ?

ANANAS is today the only commercial software on the market using the unsteady intelligent mesh approach for blast calculation. This approach combines the benefits of our high order Tet based general Navier-Stokes equations solver ANANAS and intelligent mesh algorithm, controling the space-time numerical errors. It enables us to realize simulations 10 times faster than usual direct methods without any loss of accuracy.

Key facts

10 times faster than classical approaches for unsteady simulations

Extensively validated for both civil and defense applications (blast, gas leaks...)

Grid is generated automatically during the simulation

No limitation on geometry details

# Blast simulations with ANANAS: key facts

CPU time

- *Our first goal was to develop and introduce in the safety and defense market a new tool that allows to* **reduce the CPU cost by 5-10 times vs traditional available approaches while improving accuracy in blast propagation/interactions***.*

Accuracy

- *We solved once for all the problem of mesh generation and blast propagation with a new strategy without any limitations on the geometry and BC descriptions (multiple blasts, equivalent TNT BC, complex geometries in confined or open space environments)*
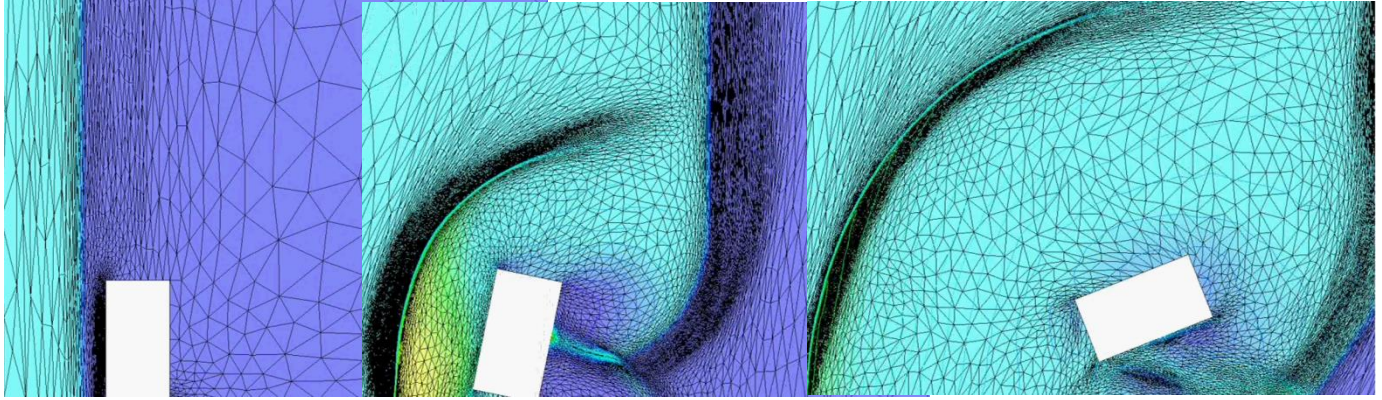
Validation

- **ANANAS is validated on both academic and industrial cases (civil and defense applications)**
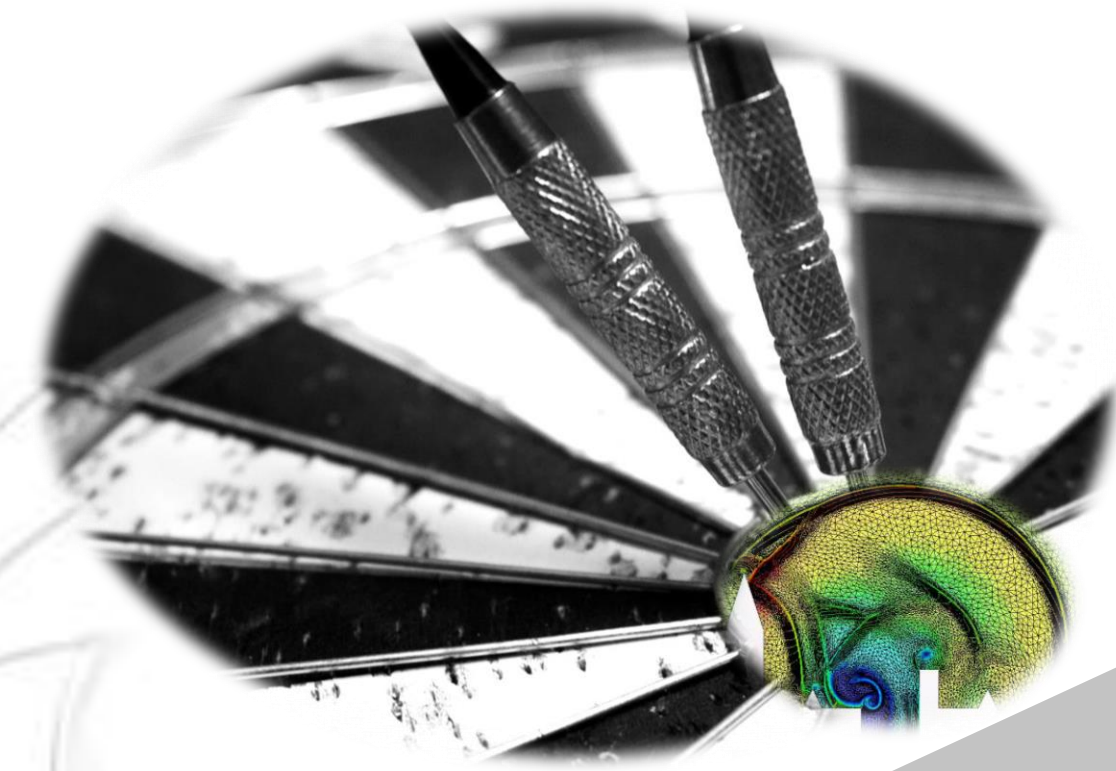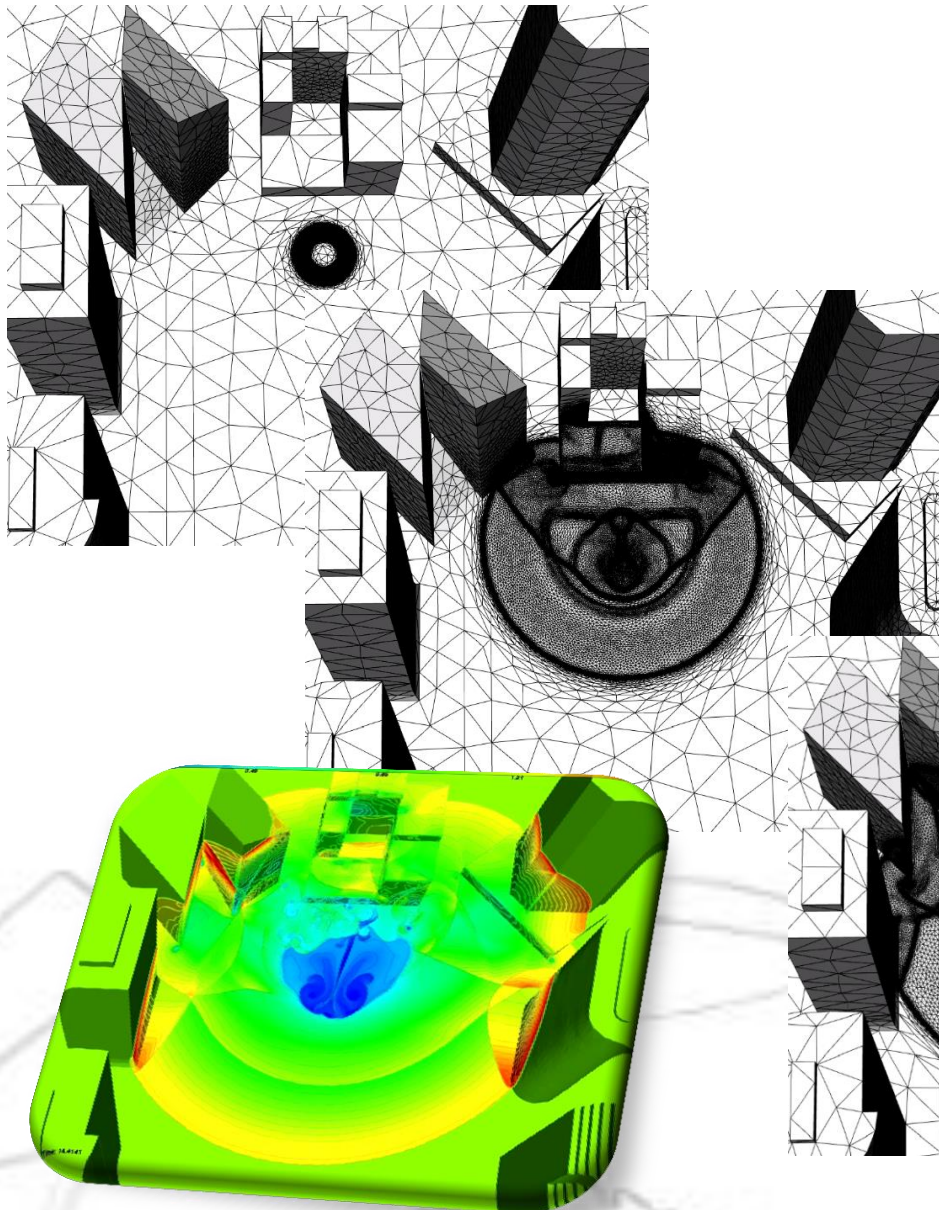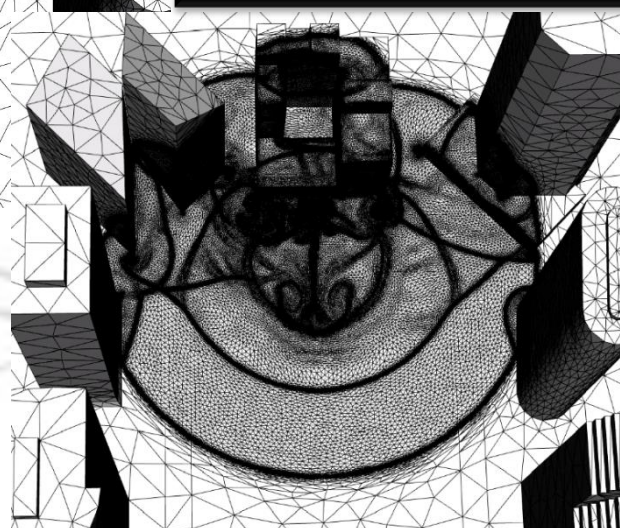
Background and references

Civil applications

Blast wave impacting a box

Homeland security – blast loads on buildings and structures

And more than 20 scientific international papers

Solver features & performances

Physics

- Blast initiation (equivalent TNT charge mass)
- 6 DOF multi-bodies (vehicules) simulation
- Blast/structure FSI simulations
- Confined/open environments
- Safety analysis, damage assessment
- Multiple blasts simulations
- Gas leak explosion

Numerics

- High order schemes (3-5) for unstructured tet meshes
- MPI parallelized solvers
- Unique adaptive mesh technology
- Post-processing: Tecplot, Paraview and virtual reality software distributed by LEMMA
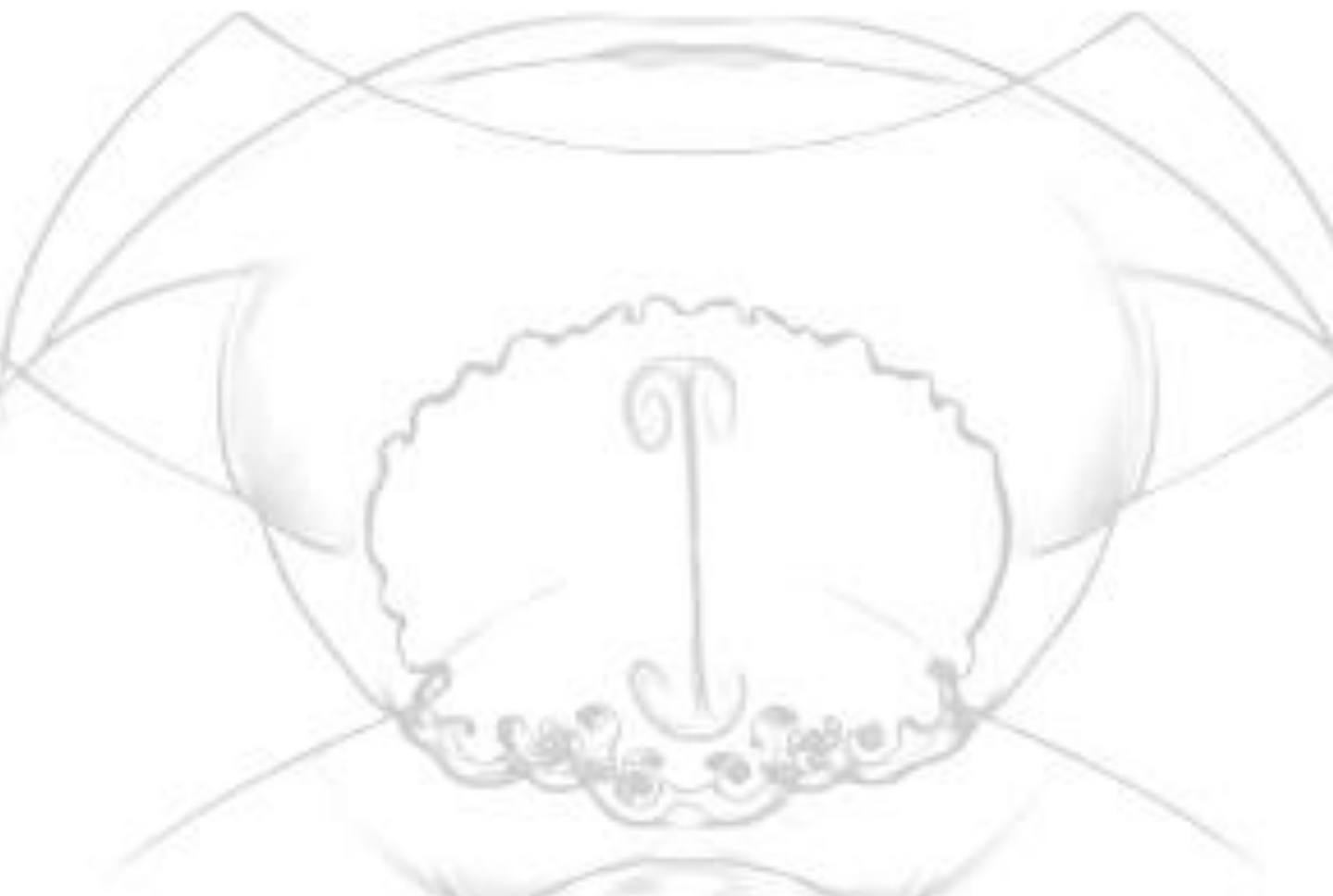
Contact us !

LEMMA Sophia-Antipolis
2000 Route des Lucioles Les Algorithmes – Thales A 06480 Biot FRANCE
Tel : +33 (0)4 93 90 53 90 Fax : +33 (0)4 93 90 53 91

Sophia-Antipolis is a technopolis located in the south of France, this office is the headquarter and main center for technical studies

LEMMA USA
1235 North Loop West – Suite 716 – Houston Texas 77008 USA
Tel : 00 1 (713) 333 9940 Fax : 00 1 (713) 333 9939