

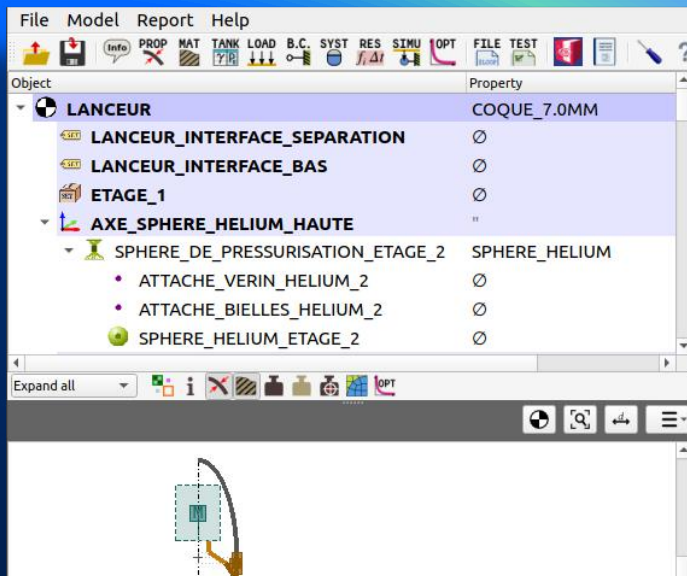
PERMAS

The Finite Element solver

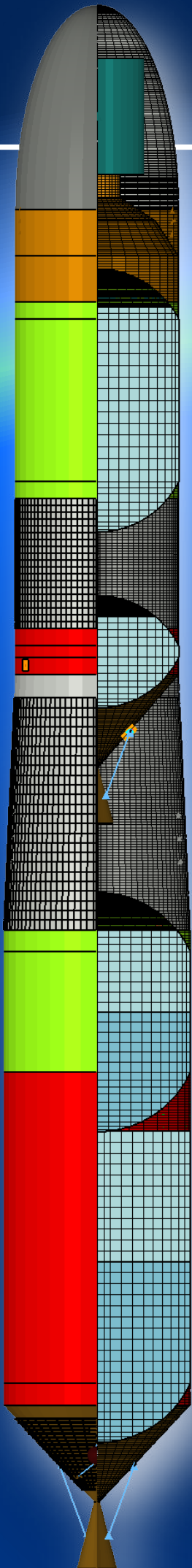


PCGen

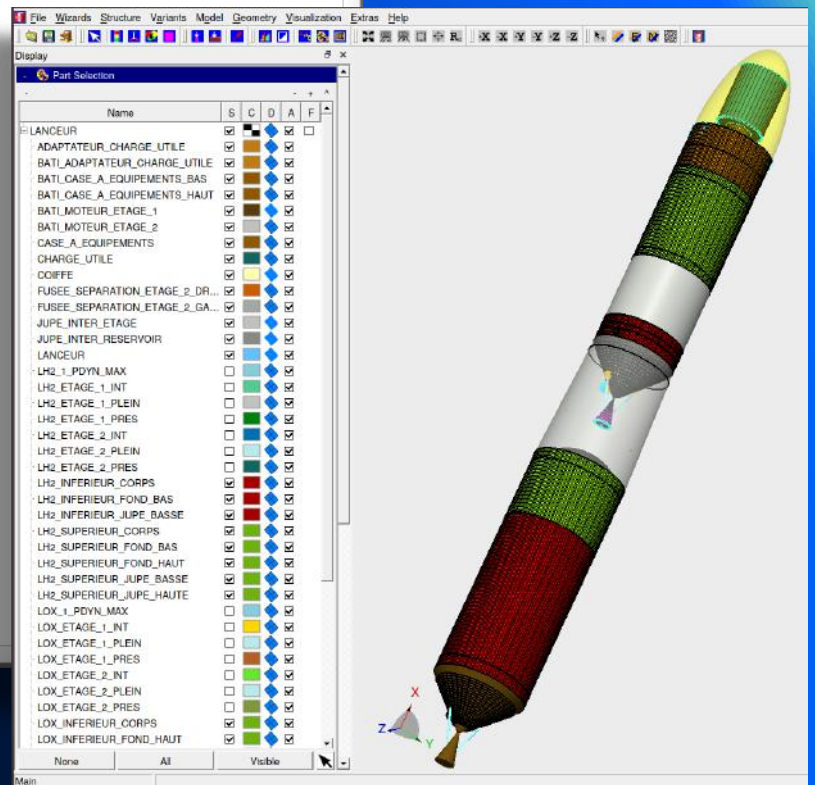
The F.E. Launcher Modeler



**Fast
Launcher
Simulation**

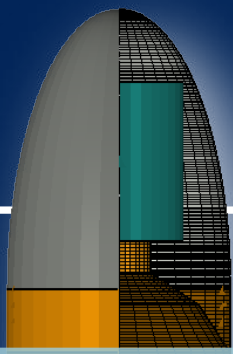


Easy Creation of
Rocket Models with
liquid-filled Tanks



VisPER

The F.E. Visualizer



PERMAS

The Finite Element solver



A **full set** of modeling/analysis **capabilities** for fast and **efficient launcher** simulations

Modeling

Fluid-Structure Coupling

Substructuring

Dynamic Reduction

Incompatible Meshes

Fast **Variants Setup** :

- Loads
- Boundaries
- Fluid Levels
- Flight Time
- Temperature Dependence
- ... and much more !

Laminates, **Sandwiches**

Pressurized Structures

Aeroelastic Loads

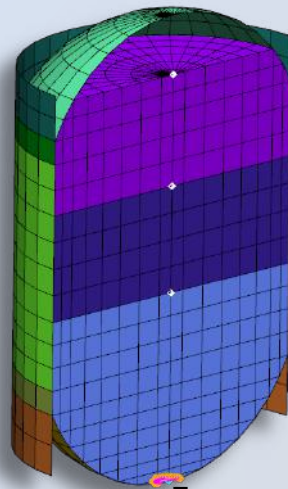
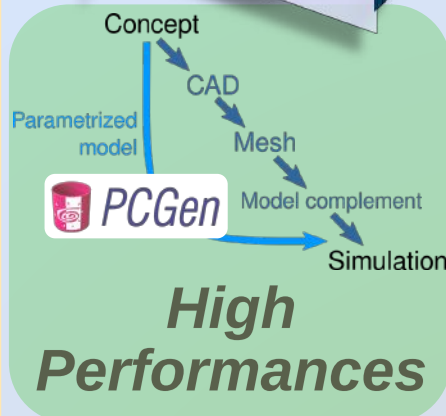
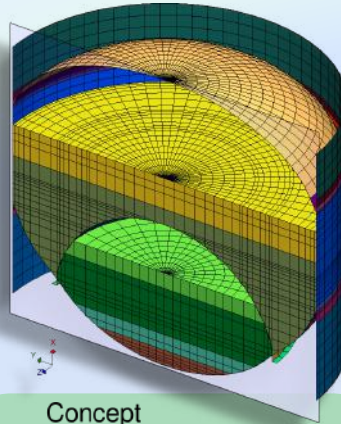
Bolted Flanges, Contacts

Non-Linear Elements

Payload Isolation Device

Active Control Device

Submodeling



Analysis

Heat transfer, **Radiation**

Thermomechanics

Buckling

Inertia Relief

Non-Linear Analysis

Dynamics

- Eigenvalues Analysis
- Sloshing
- Stability
- Harmonic (LF-HF)
- Acoustics
- Time-history & Shock
- Random
- Harmonic Balance Method

Combined Optimization

- Topology
- Sizing
- Shape
- Robust & Stochastics

Sampling

"Making realistic simulations practical"

For more information about launcher simulation with PERMAS, visit our website www.intes.fr or send us an email at point-contact@intes.fr

