



Declaration of interest Code_Aster and Salome-Meca

Our profile

Alter Ego Engineering is a company specializing in digital simulation in advanced mechanics and civil engineering. We also have strong computer and automation skills, which enables us to act effectively in complex contexts with a complete vision.

Current activity deals with services and contracts in Europe (France and Italy) but also internationally (Japan), with major clients and projects (EDF, IRT, ...) and partners in the field of simulation. In association with another company in the sector, Alter Ego obtained and completed in 2018 a public tender for the CEA (Center for Atomic Energy).

The activities focus mainly on simulation based on the finite element method, comparison with experimental results, mathematical models (material constitutive laws, ...), development of advanced software for the industry, supervision of research projects and support for startups.

Research investments made directly by the company are currently in three main areas:

- research in advanced computer science (mathematical analysis of software), based on original methods and developed within the company
- applications of digital simulation to continuous media and with the interaction of multiphase fluids, which have a potential application in several areas
- statistical models based on simulation and experimental results

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Our company and Code_Aster

We have been using Code_Aster for professional studies since 2009. Our company is involved in a lot of activities around this software:

- Development and diffusion of the Windows version, in the SimulEase group
- Organisation and animation of Code_Aster italian community
- Diffusing Code_Aster and Salome-Meca knowledge by writing internet articles
- Support and training to companies willing to switch to these technologies
- Translation tools to help non-french speaking communities

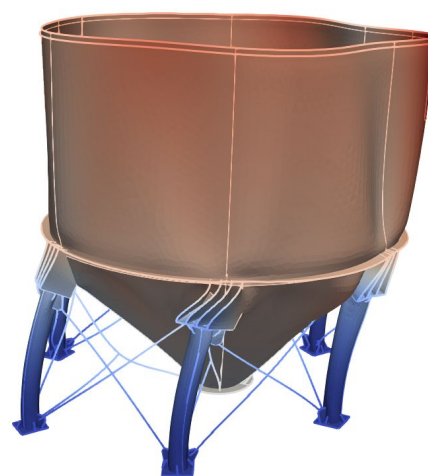
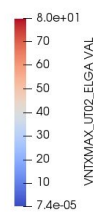
The vast majority of our simulations have been realized in Code_Aster, we have recently started using the Aster Study module in our support proposal.

Verification according to the NTU 2018 (italian civil engineering standards) of a physicochemical steel reactor

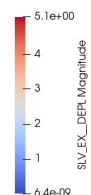
Tank containing water and its supporting structure, verification and sizing (Italy). Buckling analysis of the complete structure.



Local values of the dimensioning stresses

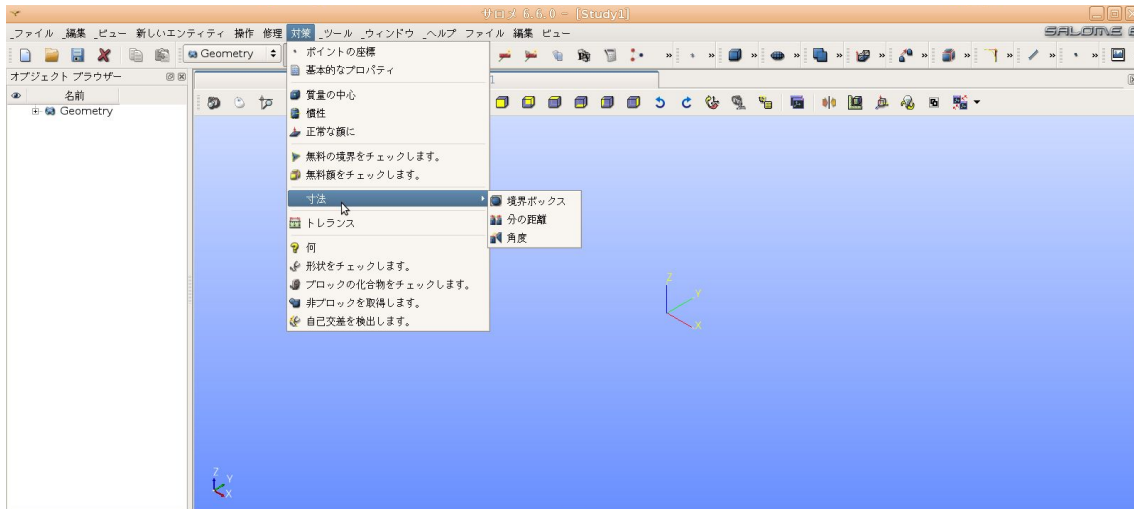


Deformed shape (amplified) of the structure for the earthquake in the x direction



Internationalisation of Salome

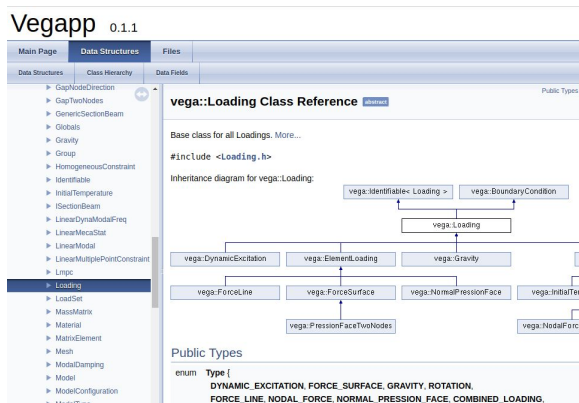
By using crowdsourcing methods, we are actively working for a better user experience in non-french speaking communities.



Salome in japanese

Automatic translation of finite element studies

As part of the [TOP](#) project (developed at the IRT-SystemX, Saclay center), we are developing an open software component (based on C++ language) for automatic translation of finite element studies.



Example of diagrams and documentation

Status	Percentage	Lines not covered
Satisfactory	40.32%	37/62
Medium	40.56%	1231/2071
Satisfactory	49.01%	1488/2918
Satisfactory	63.81%	1953/5397
Satisfactory	70.18%	102/342
Satisfactory	70.48%	98/332
Satisfactory	71.38%	395/1380
Satisfactory	82.08%	38/212
Complete	99.86%	1/718
Complete	100.00%	0/112
Complete	100.00%	0/250

Analysis of software test coverage

This software, developed for several years by the contribution of several companies (Aneos, ESI, Alter Ego Engineering) and distributed in open source under GPL license, is a key element of the project.