



COMPLETED PROJECT

# IOLS

## Infrastructures and Software Tools for Simulation

The 1st target of IOLS was the design and the development of generic software and platforms for products and process global design and optimisation (coupling, large-scale meshes, visualisation, ...). The 2nd goal was the development of methodologies for multiscale simulations and multi-disciplinary optimisation. Demonstrators were essentially focused on industrial computer-aided solutions for materials applications: aging, multi-materials assemblies, new advanced materials for optics. IOLS was also the first project to deal with Simulation LifeCycle Management and CAD-CAE links applied to crashworthiness analysis.

## PROJECT RESULTS

### Products:

Platform and tools: Integration/Coupling of new "black box software tools" (CNES); New coupling tool integration (applications for CEA, EDF); Large-scale data visualization (filtering/décimation); Meshing tools; Commercial tools (ESI Group, Samtech ...).

### Services:

Crashworthiness analysis of multi-materials assemblies; Injection component optimization (plasturgy); Optics properties (Periodical structured materials design).

### Technologies:

Multi-Scale & Multi-Physics calculation for behaviour and aging of metallic materials and concrete; Welding process simulation tools.

### Publications:

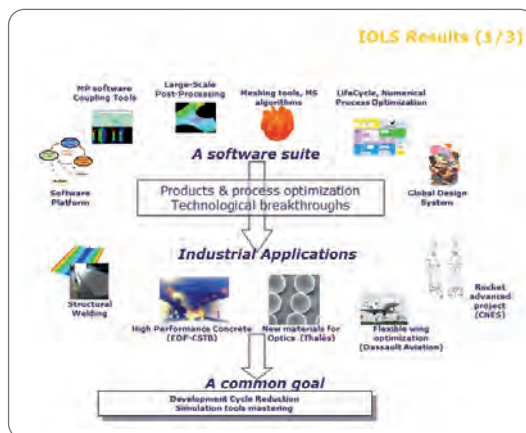
- J. Duysens, "IOLS: A French Initiative for Developing Platforms and Software dedicated to High Performance Multiphysics and Multiscale Global Design Optimization", 7th World Congress on Computational Mechanics, July 16-22, 2006, Los Angeles, CA, USA.
- Duysens J., Langlois St., Nakhlé M., "High Performance Computing Approach for Advanced Polymer Injection Molding Simulation", 9th US National Congress on Computational Mechanics, July 22-26, 2007, San Francisco, CA, USA.

### Job creation:

Global figure estimated to 50 or 60.

### Business creation:

Industrial deployment of Simulation Lifecycle Management technology; new business for commercial software (crashworthiness and welding process fields).



## CONTACT

Jacques DUYSSENS  
CS  
+33 (0)1 41 28 40 26  
jacques.duysens@c-s.fr

## PARTNERS

Large companies:

CS, DASSAULT-AVIATION, DASSAULT-SYSTÈMES, EADS, EDF, RENAULT, SNECMA, THALES

Intermediate size enterprise:

BERTIN TECHNOLOGIES, ESI GROUPE, OPEN-CASCADE

SMEs:

DISTENE, SAMTECH

Research institutes, universities:

CEA, CNES LAMSADE, CSTB, ECP, ENS, ENSMP, IFP, INRIA, ONERA

## PROJECT DATA

Coordinator:

CS

Call:

FUI0

Start date:

November 2006

Duration:

28 months

Global budget (M€):

11.4

Funding (M€):

4.8

Related Systematic project(s):

EHPOC, MACAO (Aerospace Valley)