EHPOC

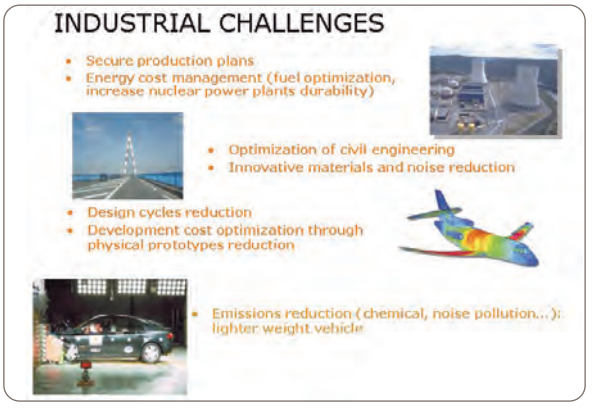
High Performance Environment for Optimization and Design

COMPLETED PROJECT

The main goal of EHPOC consits in delivering industrial platforms, multiscale and multiphysics software dedicated to global design in order to produce best in class numerical design tools, especially in the materials field, enabling robust multidisciplinary optimization of complex products and systems. These platforms and software suite are a corner stone for industrial innovation and competitiveness, design and development cycles reduction, productivity improvement.

PROGRESS BEYOND THE STATE OF THE ART

EHPOC has enabled the following developments: HPC environment for numerical design (solvers coupling, visualization algorithms for multiphysics simulations analysis, large-scale automatic meshing tools), a complete suite of numerical design tools including multi-disciplinary optimization capabilities, models pre-processing automation and taking into account uncertainties. Large-acale simulation demonstators were run by optimizing software on massively parallel multi-cores supercomputers. In the materials fields, challenging simulations were conducted for predicting materials behaviors and fatigue in severe conditions. Specific tools and calculation procedures were developed for designing artificial materials within specific optical and acoustial properties.



MAJOR PROJECT OUTCOMES

Products:
- Delamination models for composite materials (integrated into SAMCEF);
- Multi-physics models for welding (integrated into PROCESS);
- DISTENE module for parallel meshing & remeshing.

Services:
Open source grid generator for hexahedral meshing (available in SALOME platform).

Business creation:
To be measured in details later with the exploitation of software platforms integrating tools and algorithms developped within EHPOC (CSDL, OPENHPC,...) and with the impact of new advanced technologies coming from EHPOC and embedded into ISVs software (ESI Group, Distene, Samtech,...).

CONTACT

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PARTNERS

Large companies:
AIRBUS, DASSAULT AVIATION, EADS, EURIWARE, MESSIER DOWTY, RENAULT, SNECMA, THALES

Intermediate size enterprise:
BERTIN, ESI GROUP, LMS IMAGINE

SMEs:
DISTENE, SAMTECH

Research institutes, universities:
CEA, CSTB, ECOLE CENTRALE DE PARIS, ENS, ENSMP, IFP, INRIA-SCILAB, LABORATOIRE JACQUES-LOUIS LIONS PARIS VI, ONERA, PARIS XI

PROJECT DATA

Coordinator:
CS

Call:
FUI3

Start date:
June 2008

Duration:
24 months

Global budget (M€):
16

Funding (M€):
6.3

Related Systematic project(s):
IOLS, FAME2, POPS, OpenHPC, CSDL