NUCLEAR REACTOR SIMULATION

FP6 INTEGRATED PROJECT (2005-2008)

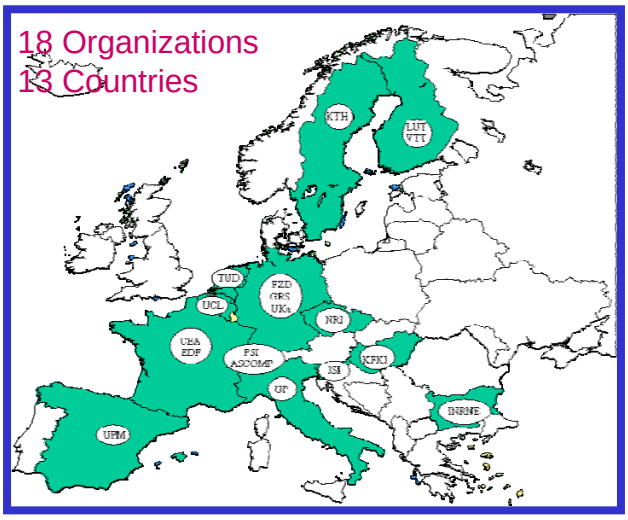
www.nuresim.com

Objectives of the NURESIM project

- To build a European software platform for advanced Core Physics, Thermal-Hydraulics and Multi-Physics coupling
- To implement a first set of Sensitivity and Uncertainty tools
- To validate the platform through comparison to experiments and benchmarking

The NURESIM Roadmap : A single platform, 3 successive projects

- NURESIM (2005-2008): Basis of the platform with first significant possibilities
- NURISP (2009-2011): Consolidation + extension
- NURENEXT (>2011): Confirmation + rationalization + further extension



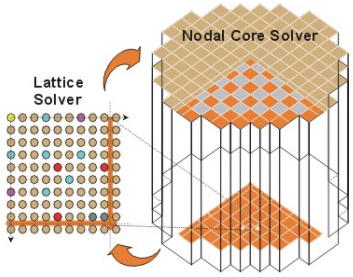
+ 6 Users' Group members :

AREVA-NP, FORTUM, FZK, IRSN, TÜV-SÜD, TRACTEBEL Eng.

Target of the NURESIM Roadmap

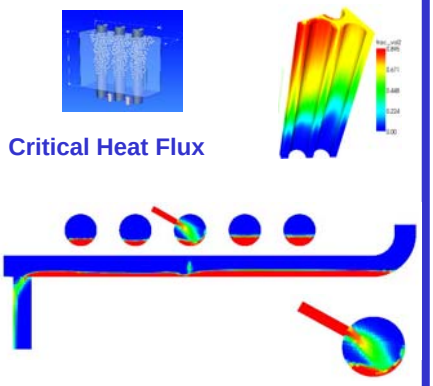
- An Integrated Platform
  - ✓Common functions, multiscale, multiphysics, user friendly
- A Reference Platform
  - ✓An optimized set of codes, beyond SOA, well validated, standardized, capacity to connect external codes
- A European Platform
  - ✓A joint European effort, a European product
- For Simulation of Nuclear Reactors
  - ✓Gen-II to Gen-IV, Users' Group with the Industry

Core Physics



Advanced Monte-Carlo Methods
Advanced Deterministic Methods
Advanced Neutron Kinetics
Benchmarking

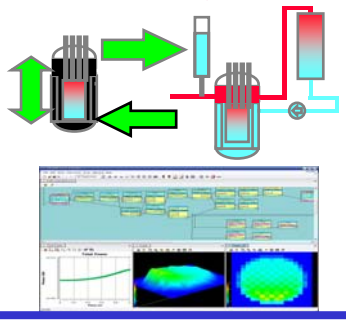
Thermal-Hydraulics

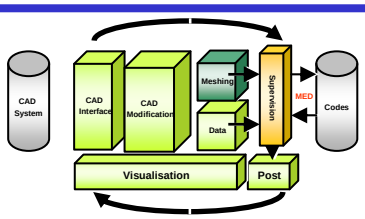


Critical Heat Flux

Pressurized Thermal Shock

Multi-Physics





Integration with the SALOME Platform

Sensitivity and Uncertainty tools

Deterministic and statistical methods for multiphysics modules
Implementation within the NURESIM platform of procedures for propagation of uncertainties