NURESAFE WP1.4
HIGHER-RESOLUTION VVER MSLB

Status of KIT Contributions to WP1.4

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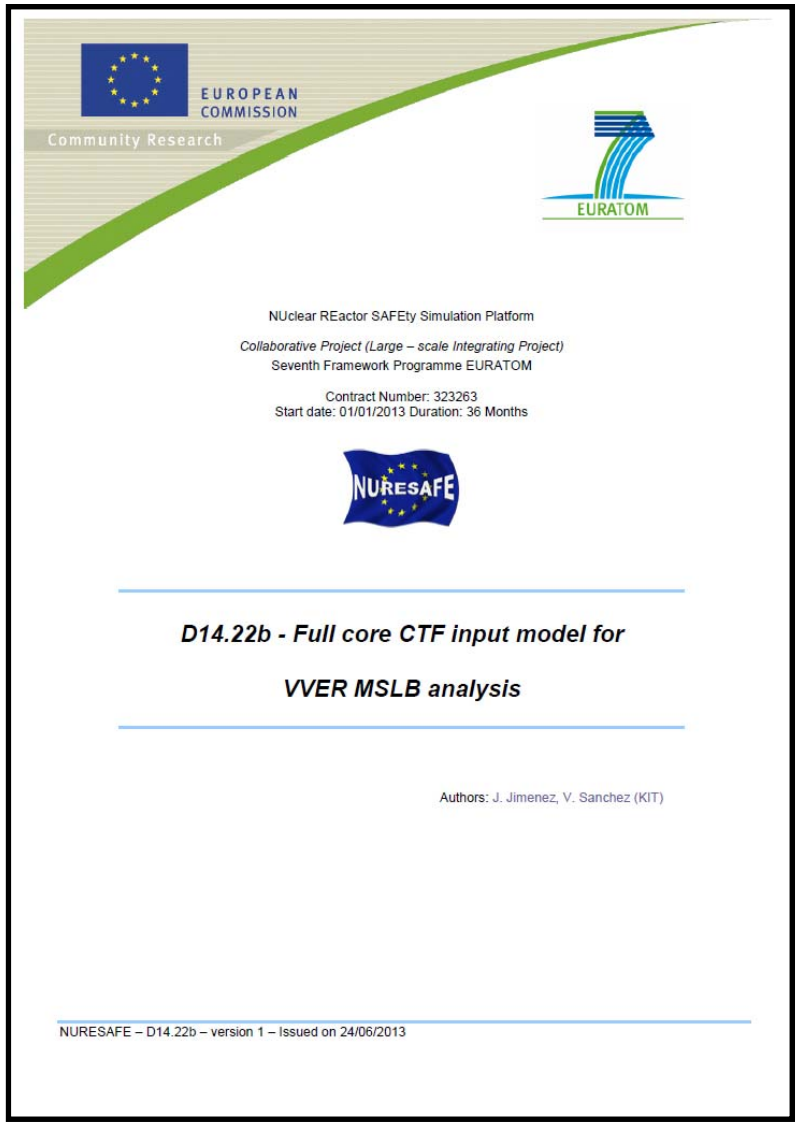
Outline

- **Channel analysis with CTF**
- **Sub-channel analysis with CTF**
- **SUBCHANFLOW API for SALOME 6 Series**
- **Conclusions**

Channel analyses with CTF

- **Reviewed version of D14.22b Released: Full core CTF input model for VVER MSLB analysis**
  - CTF input deck
  - SUBCHANFLOW input deck
  - Comparison of results at HZP and HFP
- **A full-core CTF input model for VVER-1000 MSLB analysis has been developed and tested standalone.**


EUROPEAN COMMISSION
Community Research
EURATOM

NUclear REactor SAFEty Simulation Platform

Collaborative Project (Large – scale Integrating Project)
Seventh Framework Programme EURATOM

Contract Number: 323263
Start date: 01/01/2013 Duration: 36 Months

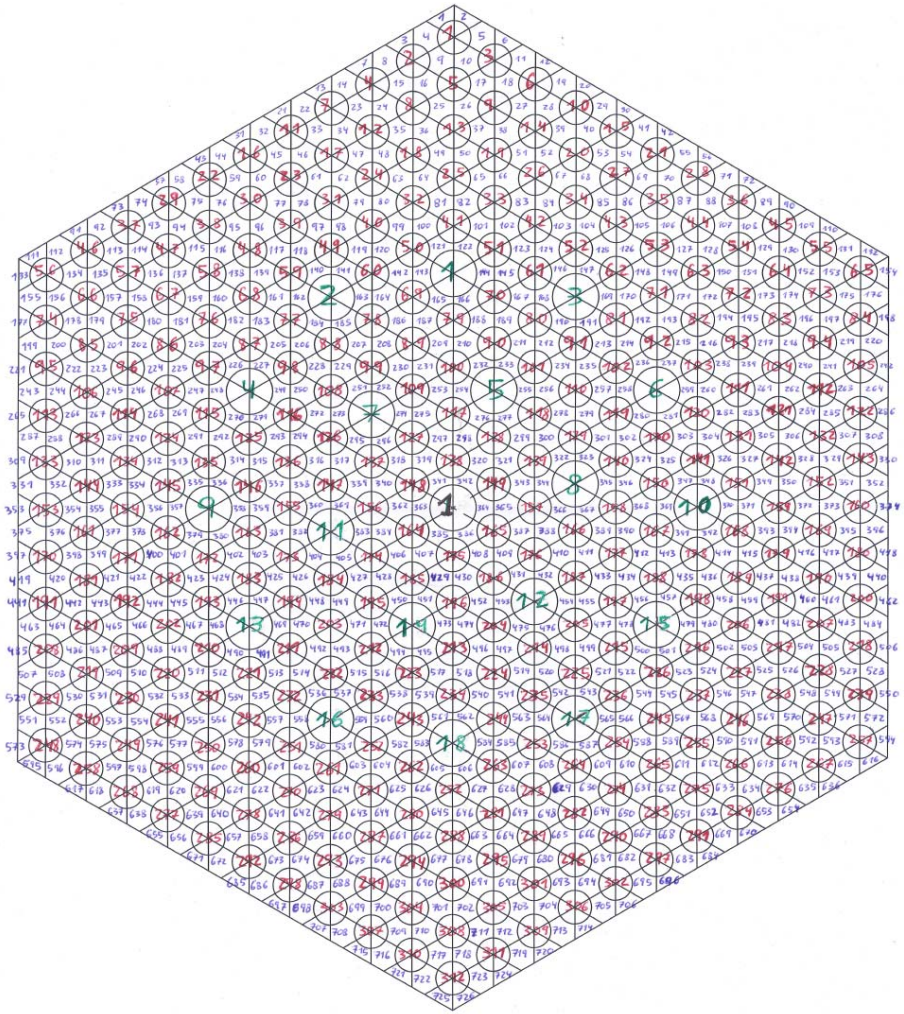
D14.22b - Full core CTF input model for VVER MSLB analysis

Authors: J. Jimenez, V. Sanchez (KIT)

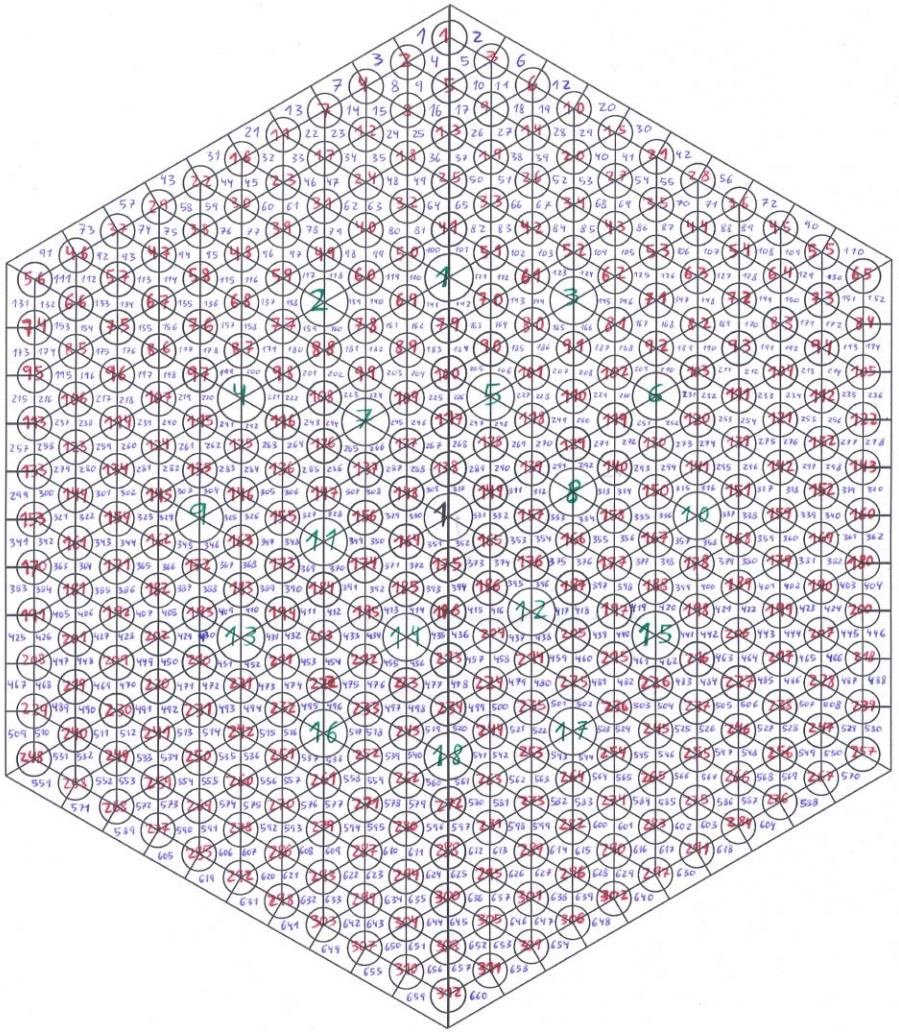
NURESAFE – D14.22b – version 1 – Issued on 24/06/2013

CTF sub-channel modeling of the FA

- **Geometry model 1 (726)**



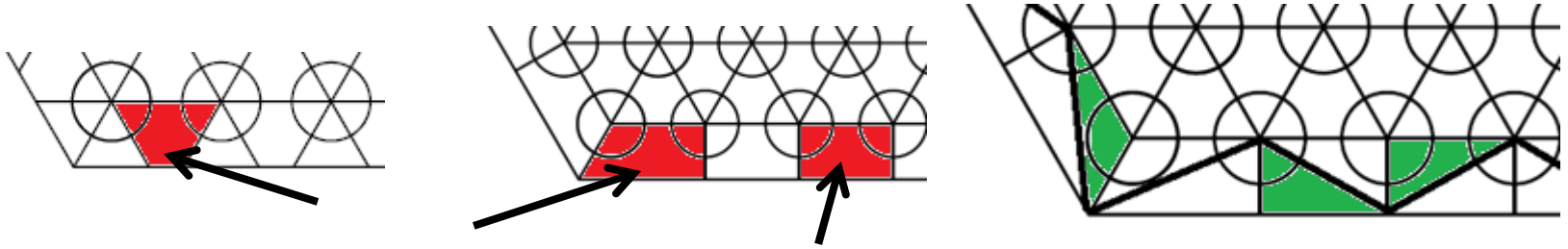
- **Geometry model 2 (660)**



CTF sub-channel modeling of the FA

- **There are complex geometries to be modelled with MED structures for the geometries proposed by INRNE**
  - Geometry model 1 has 726 sub-channels, 312 pins and 18 water tubes
  - Geometry model 2 has 660 sub-channels, 312 pins and 18 water tubes
- **Open questions in the preparation of the sub-channel model for CTF that need to be clarified.**
  - Which is the better aproach for the meshing in the periphery?

Geometry model 1 Geometry model 2 Geometry model 3

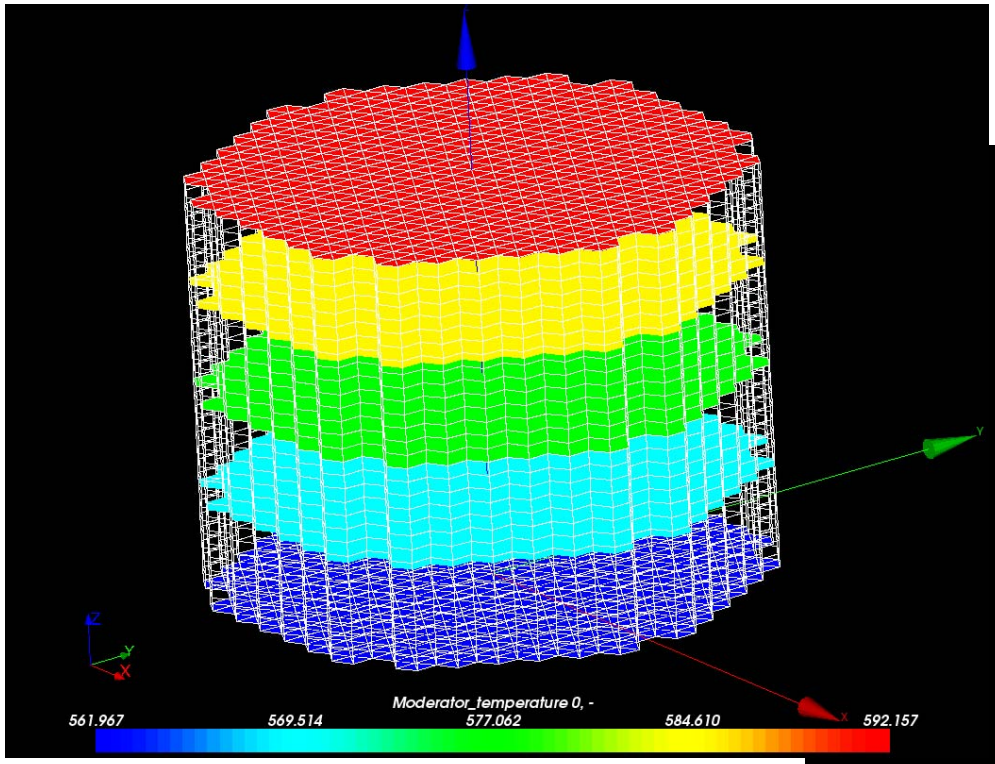


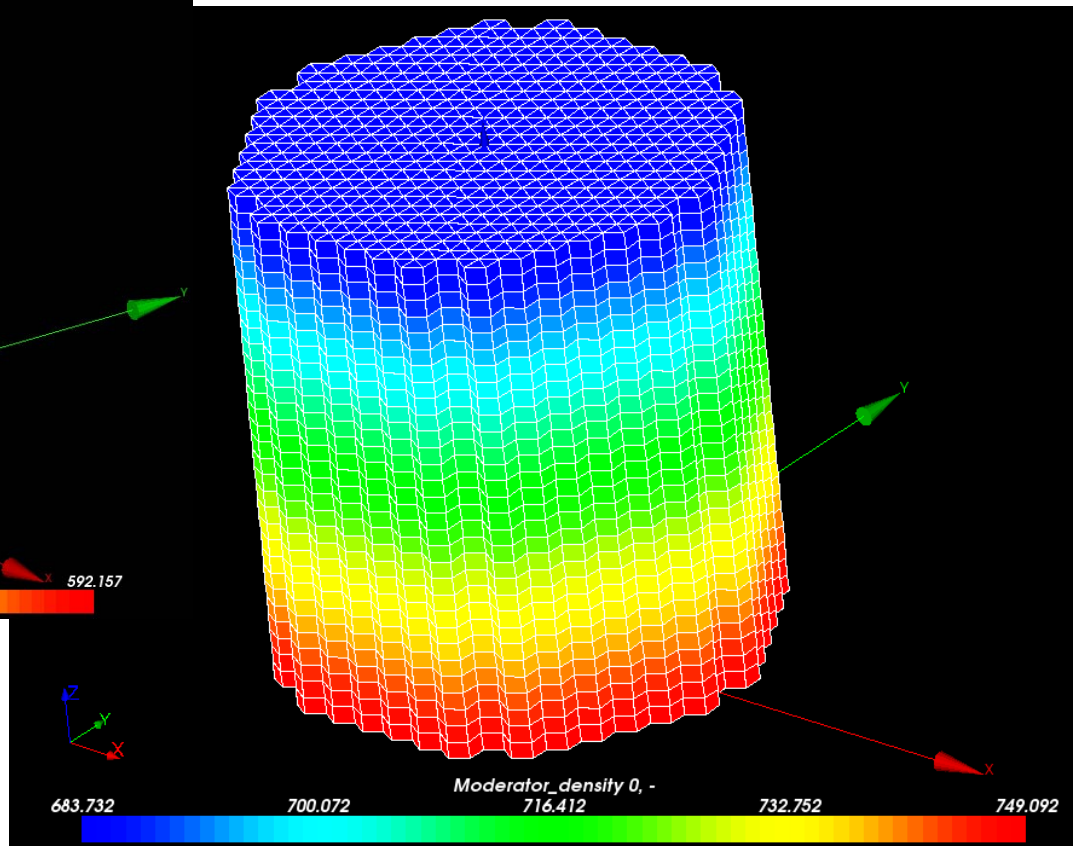
Those are not regular triangles, one need to use MED_POLYHEDRA

- Is the CTF C++ API able to handle such meshes?
- Is it possible to use the preproccesor?

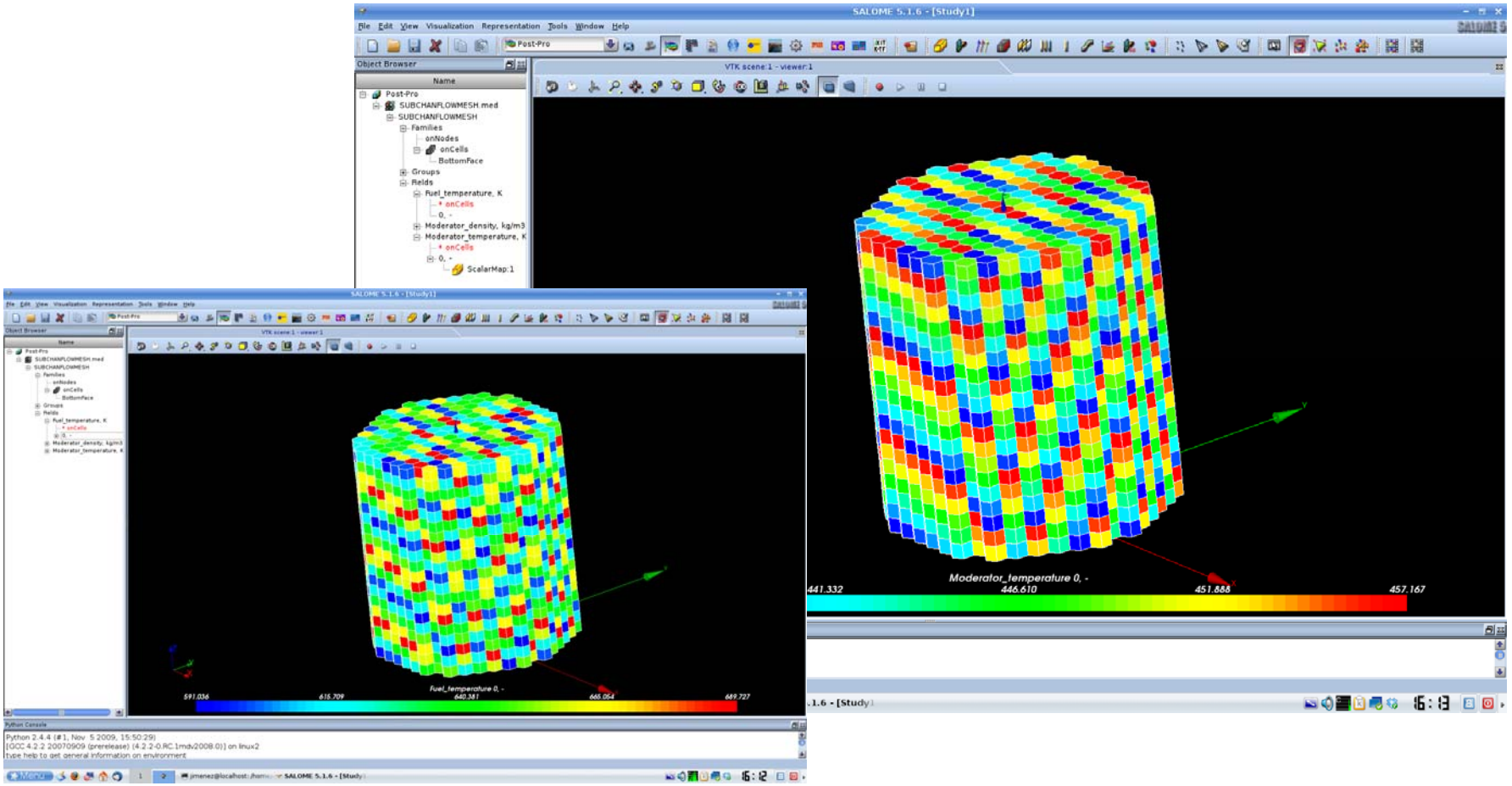
DISCUSSION

- **Post-processing of SCF results within SALOME 5**





- **Post-processing of SCF results within SALOME 6 still need to be improved (CXX translation to MEDCoupling)**



Conclusions and Outlook

- **D14.22b reviewed version released (to+5): Full core CTF input model for VVER MSLB analysis**
  - A full-core CTF input model for VVER-1000 MSLB analysis has been developed and tested standalone.
  - Bug in material properties specification was found and solved.
- **Further work in the subchannel analysis will be very difficult without knowing the capabilities of the CTF C++ API.**
  - Hopefully it will be clarified in this meeting (Looking forward to SP1.1 presentations)

FUTURE WORK

- **Further testing is on-going in the course of planned VVER core calculations.**
- **Next will follow coupled neutronics computations to this models.**

THANKS FOR YOUR ATTENTION