

## CFD Basic Module

*How to Run Various Test Cases  
on Shaheen?*

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# CFD Services

- Software: Maintaining and Upgrading Software and Test Cases
- Training: Basic, Intermediate and Advanced
- Helpline: [cfd-helpline@hpc.kaust.edu.sa](mailto:cfd-helpline@hpc.kaust.edu.sa)
- CFD Consulting Projects
- ANSYS Workshop Series
- CFD User Group Meetings
- Student Certification
- 1-week Summer & Winter CFD School

# Basic CFD Module

- Quick Overview of Applications on Shaheen
- Typical CFD workflow
- CFD Example Cases
  - Ansys/Fluent
  - CONVERGE
  - OpenFOAM
  - Paraview
  - Tecplot
  - Strong Scalability
  - Interactive Computing in Batch Mode
- Shaheen users can find all material here:

***/sw/ex111genoa/openfoam/cfd\_module***

# Applications on Shaheen

## CFD Applications:

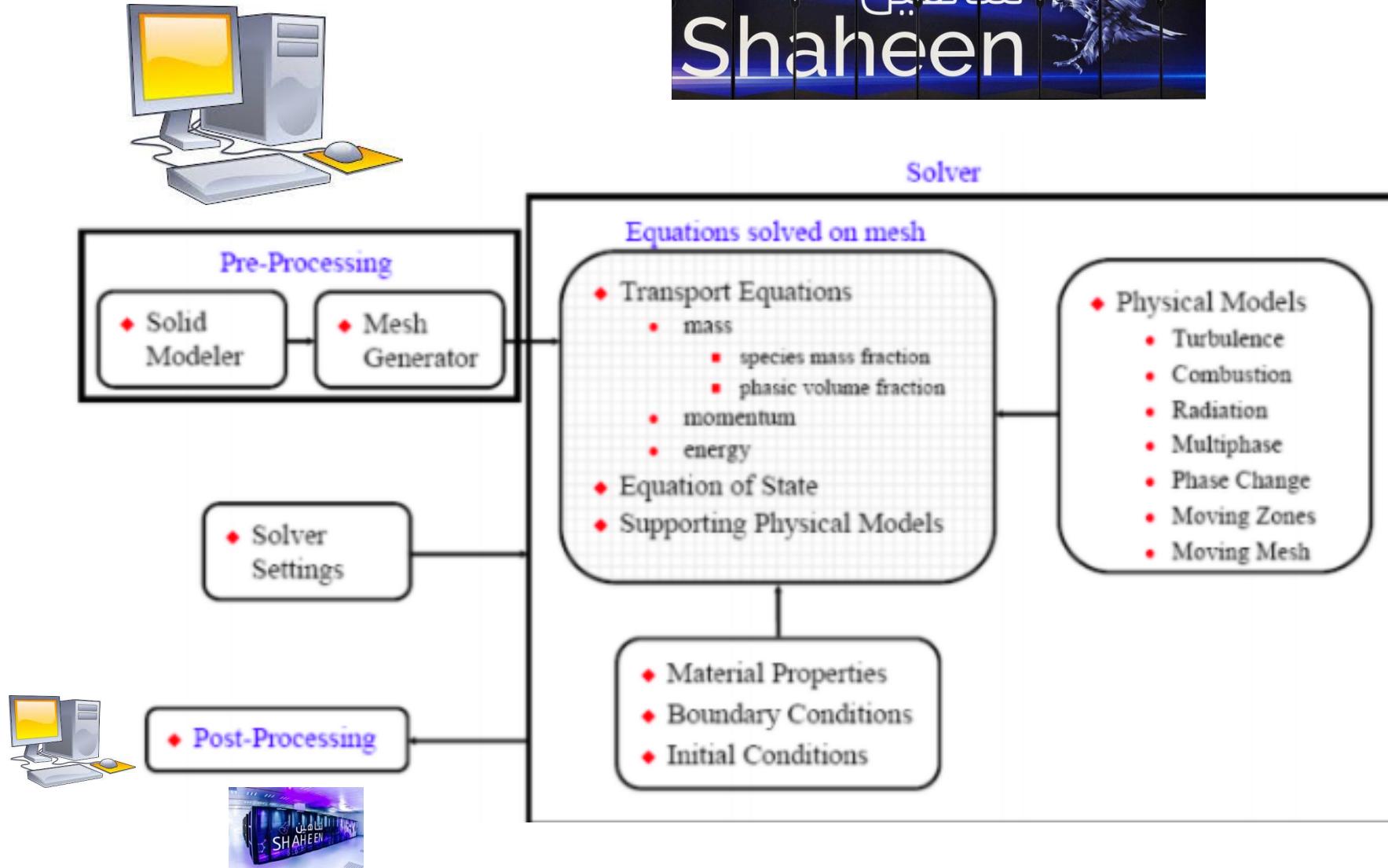
- Commercial codes (Fluent, CONVERGE)
- Open source codes (OpenFOAM)
- Code development tools (dealii, FEniCS, OpenFOAM)
- Mesh generation (ANSYS)
- Post processing (Tecplot, visit, paraview, Ensight)

show all
Analysis
Computational Biology
Computational Fluid Dynamics
Computational Materials Science
Libraries
Molecular dynamics
Program Dev
Quantum Chemistry
Science Apps
Seismic
Software Environment
Tools
Tools Performance

## Applications installed on Shaheen II

sort by name	sort by category		
ncdo	F Analysis	octave	mpipeg
gnuplot	grade	grb2	ncsl
nowflow	paraview	visit	vep
blast	internal	ansys	dealii
openfoam	berkeleygw	crystal14	dmftw2k
elk	espresso	fleur	kwant
materstudio	molgw	octopus	siesta
vasp	wannier90	wien2k	yambo
boost	gsi	libint	libunwind
lubxc	amber	cp2k	cpmd
gromacs	lammps	namd	plumed
grb_mpt	adff	atk	gmeess
gaussian09	molcas	molpro	nwchem
psl4	qchem	towhee	turbomole
swipeshell	bigus	veris	wtcham
unida	verdictus	cfd	autotools
chimako	git	decimate	valgrind
chameleon	sharp	ompss	perl
python	breakit	decmate	git
extrae	scalasca	tau	

# Typical CFD Workflow



# Hands-on Demo

- Log into Shaheen
- cd /scratch/\$USER
- cp -r **/sw/ex111genoa/openfoam/cfd\_module** .
- cd cfd\_module