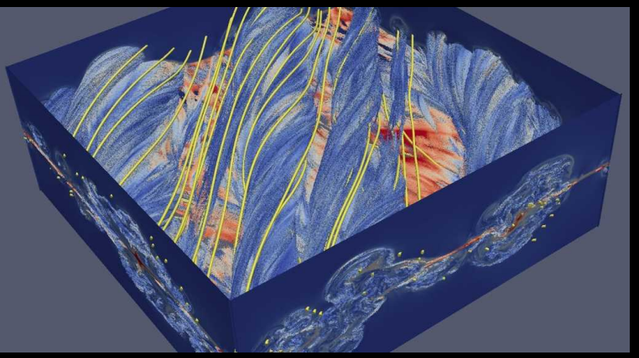
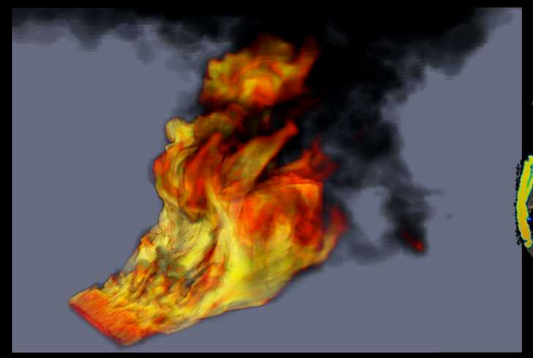
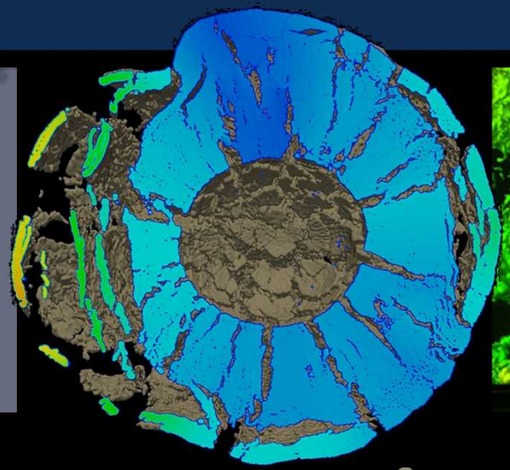
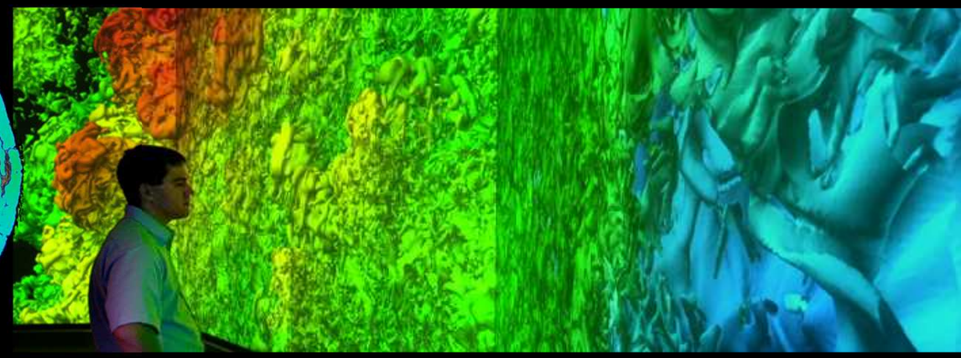
Exceptional service in the national interest

Sandia National Laboratories

SAND2014-19519PE

HPC Processing in ParaView

Kenneth Moreland Sandia National Laboratories

November 18, 2014

U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

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ParaView 3.8.0

Momentum | Magnitude | Surface | Time: 0 0

Pipeline Browser

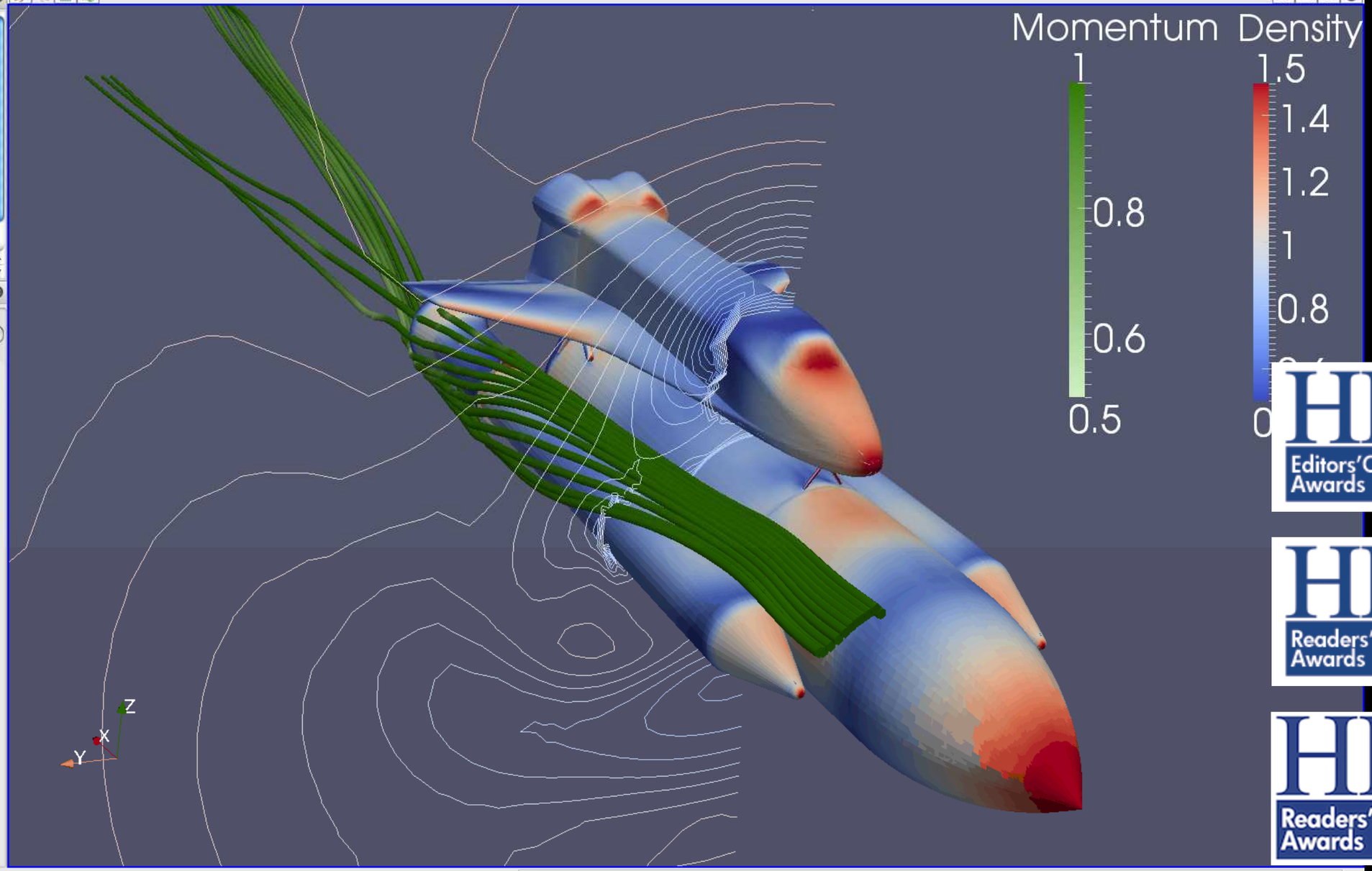
- builtin:
- shuttle_body.vtp
- Reflect1
- sslv_*
- Slice2
- StreamTracer1
- Clip1
- ExtractSurface2
- Tube1
- sslv.pvd
- Threshold4
- GroupDatasets1
- Threshold5
- GroupDatasets1

Object Inspector

Properties | Display | Information

Apply | Reset | Delete

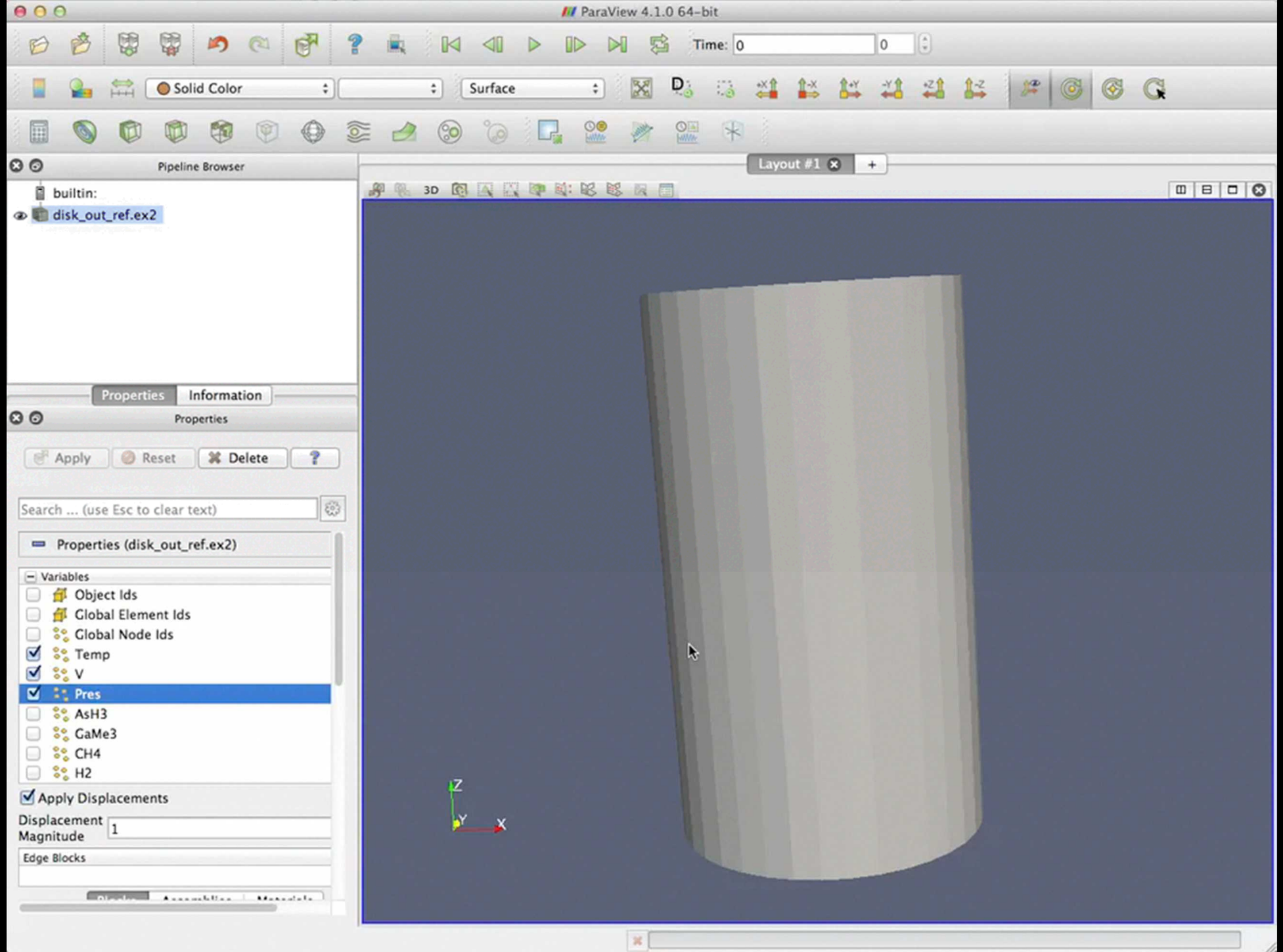
Scalars: Density
Vectors: Normals
Number of Sides: 6
Capping
Radius: 0.01
Vary Radius: Off
Radius Factor: 1
Use Default Normal
Default Normal: 0 0 1

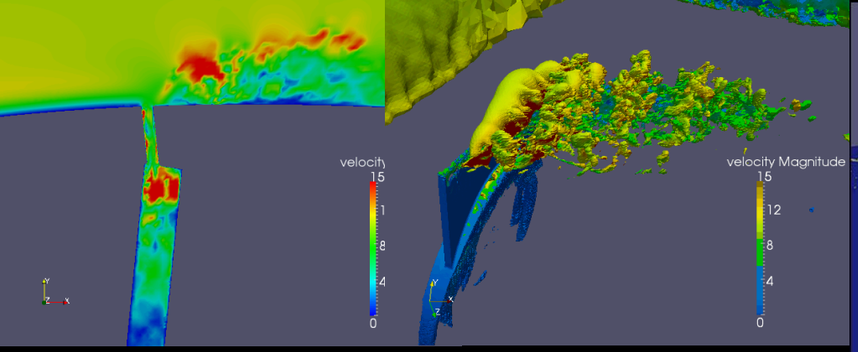


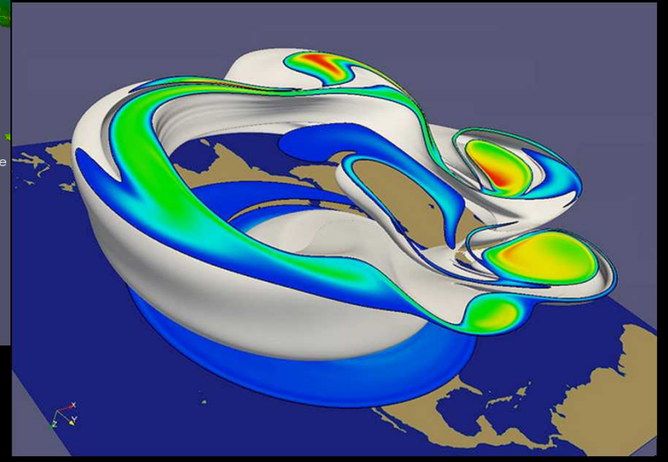
HPC wire Editors' Choice Awards 2010

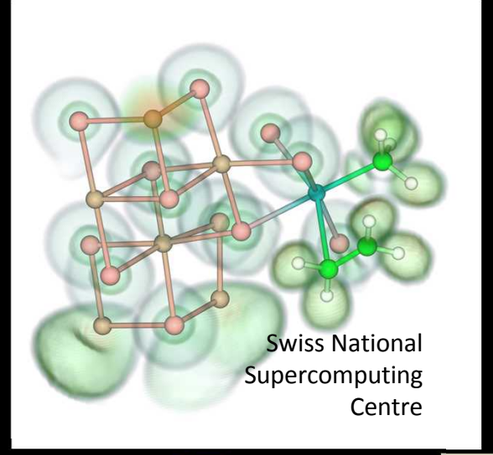
HPC wire Readers' Choice Awards 2010

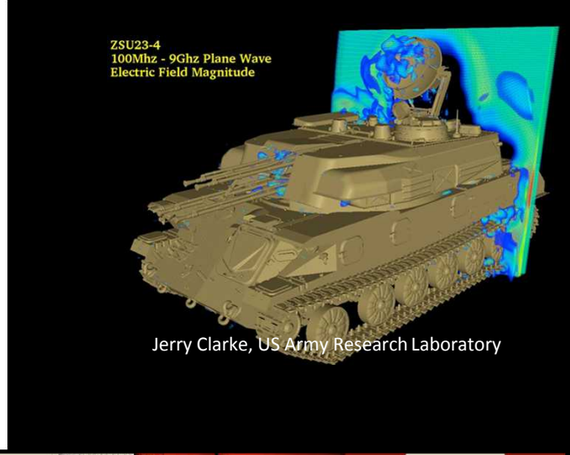
HPC wire Readers' Choice Awards 2012

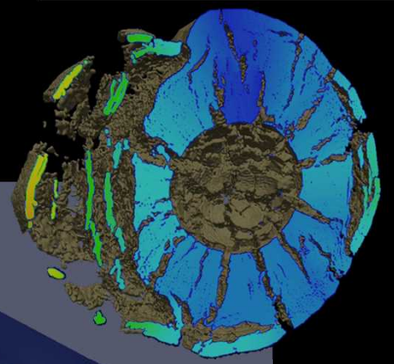

ParaView 4.1.0 64-bit
Time: 0
0
Solid Color
Surface
Pipeline Browser
builtin:
disk_out_ref.ex2
Properties
Information
Properties
Apply
Reset
Delete
Search ... (use Esc to clear text)
Properties (disk_out_ref.ex2)
Variables
Object Ids
Global Element Ids
Global Node Ids
Temp
V
Pres
AsH3
GaMe3
CH4
H2
Apply Displacements
Displacement Magnitude
1
Edge Blocks
Layout #1
3D
Z
Y
X


velocity
15
1
8
4
0
velocity Magnitude
15
12
8
4
0



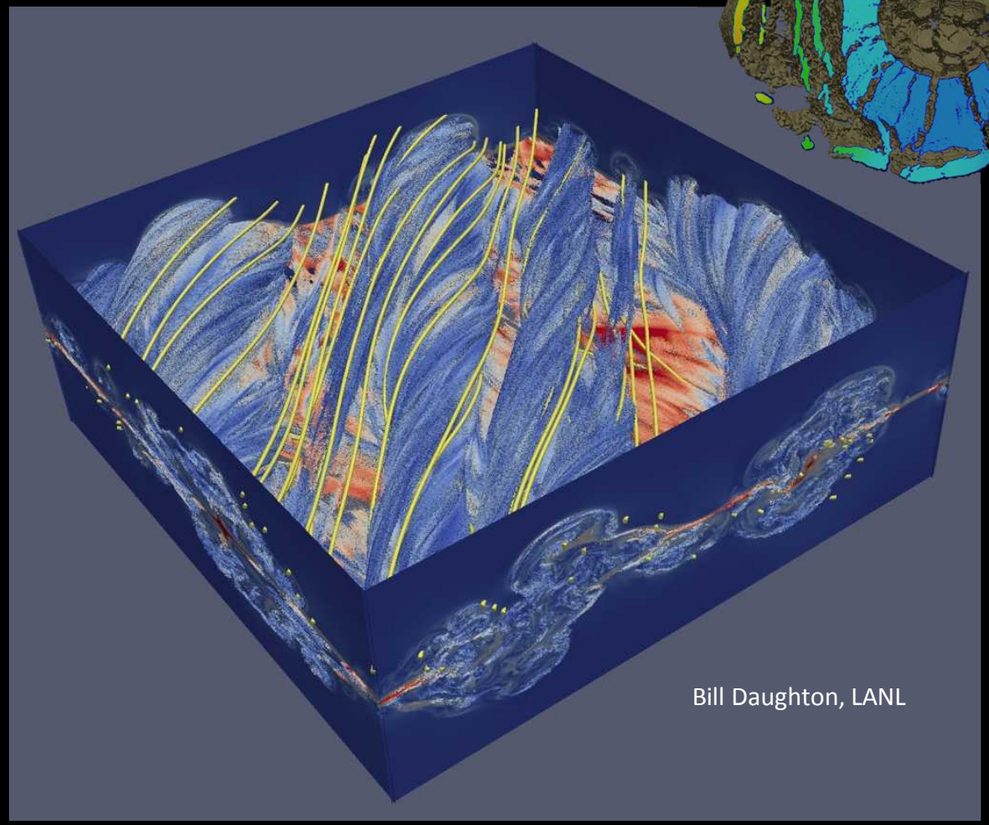

Swiss National
Supercomputing
Centre

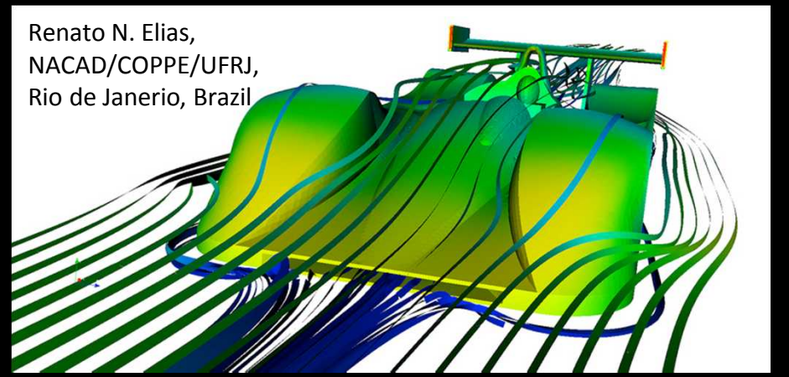

ZSU23-4
100Mhz - 9Ghz Plane Wave
Electric Field Magnitude
Jerry Clarke, US Army Research Laboratory




Swiss National
Supercomputing
Centre


nature
The trajectory, origin and airburst behaviour
of the Chelyabinsk fireball


Bill Daughton, LANL

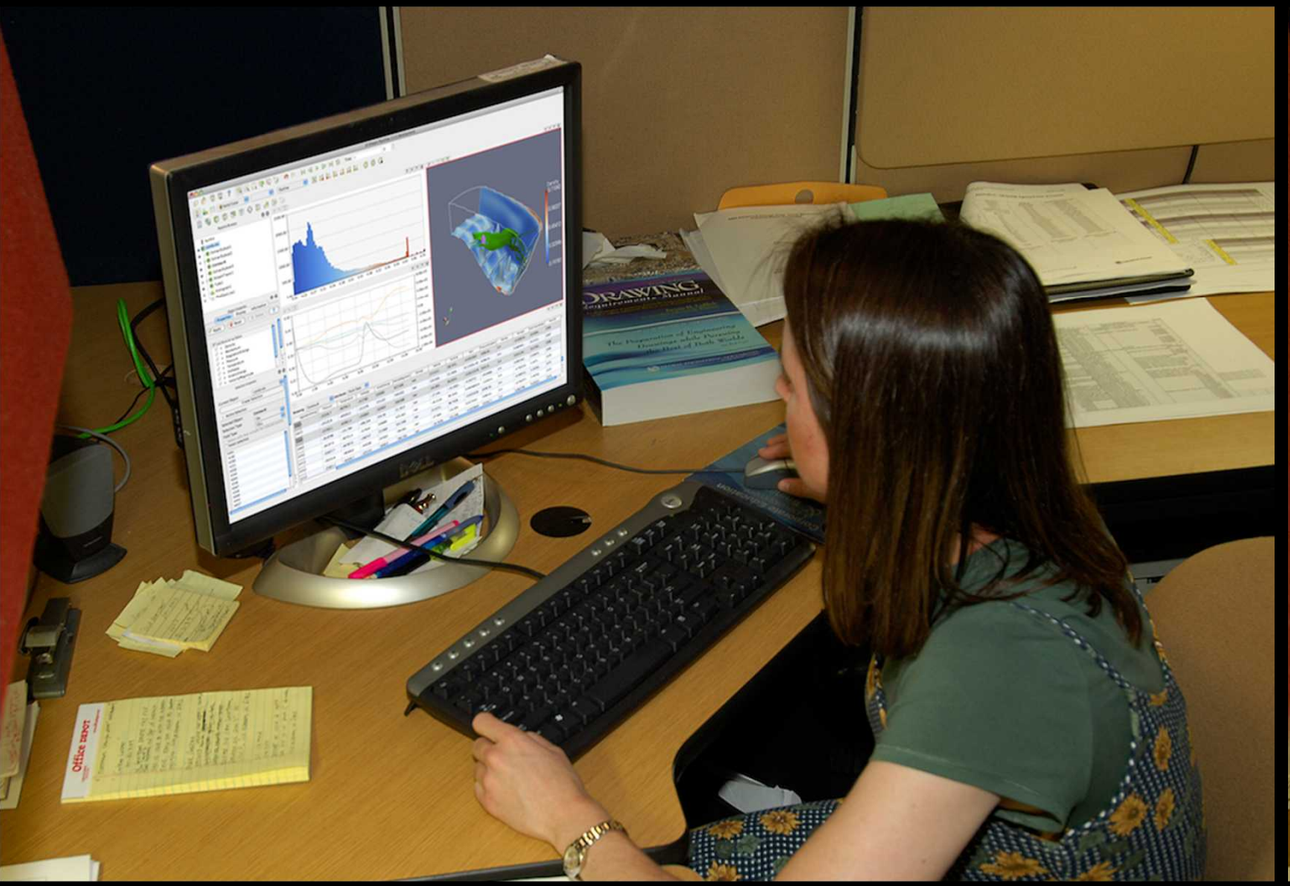

Renato N. Elias,
NACAD/COPPE/UFRJ,
Rio de Janerio, Brazil


Sun
microsystems
Sun
microsystems
Sun
microsystems
Making HPC
Accessible

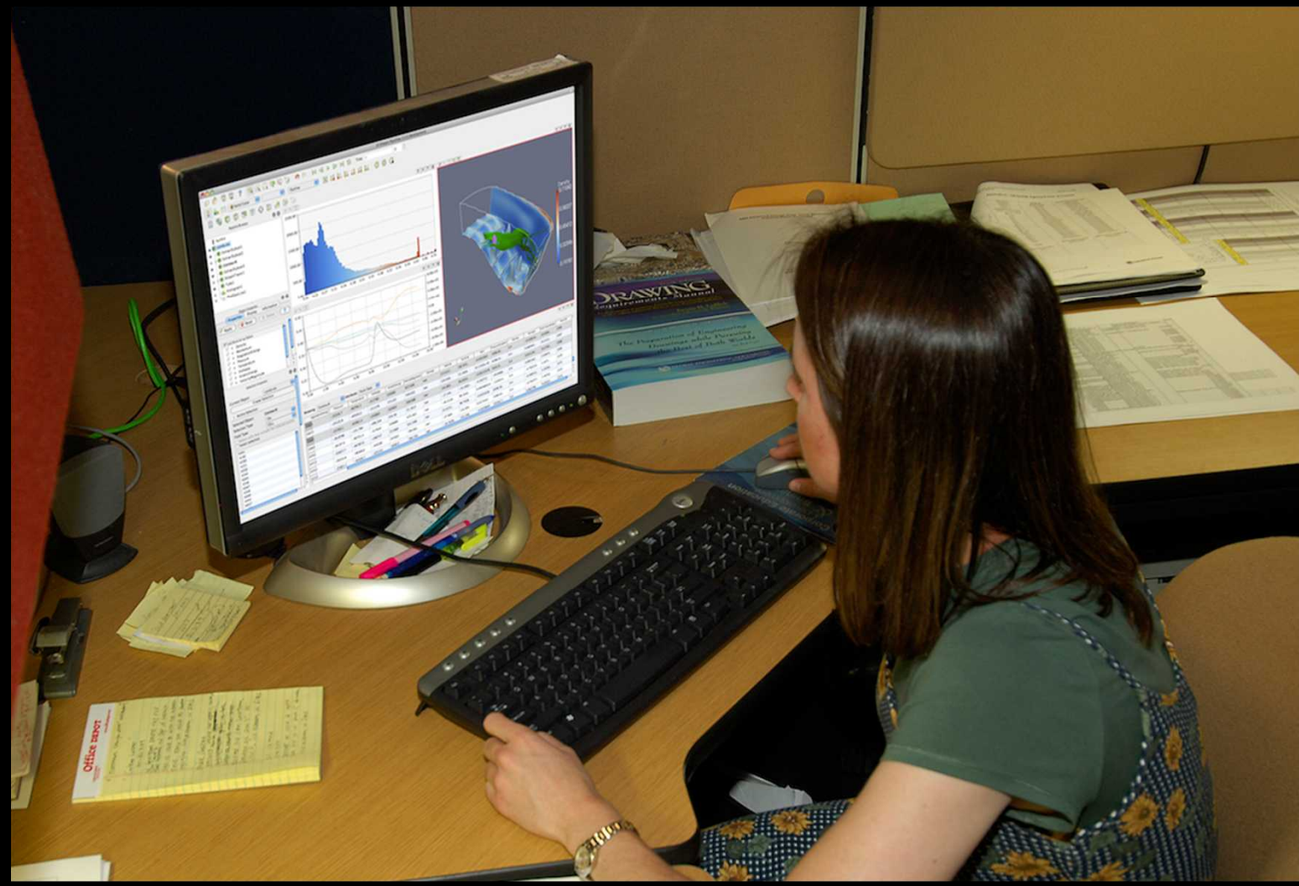
Sitting in an HPC facility is not accessible

The ParaView HPC User Experience

Sandia National Laboratories



Using ParaView on a small dataset run locally on your desktop or laptop.



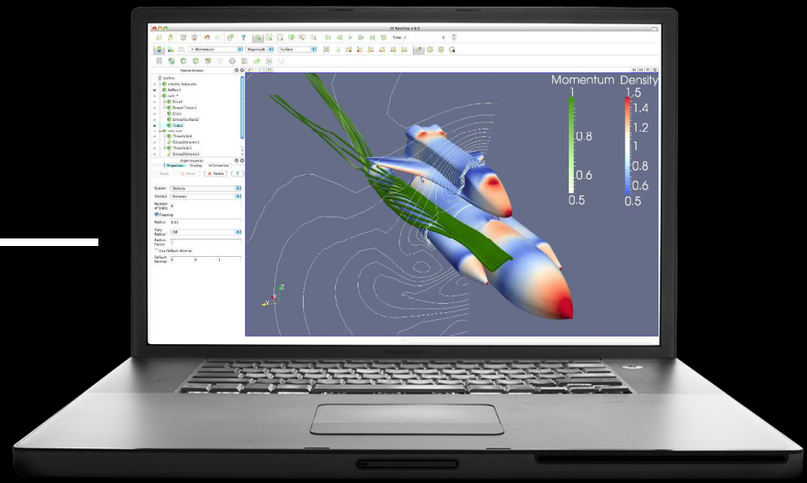
Using ParaView on a large dataset of billions of cells run on thousands of cores at a remote leadership class facility.

Client-Server Architecture Makes Large Data Computation Accessible

Sandia National Laboratories

pvserver

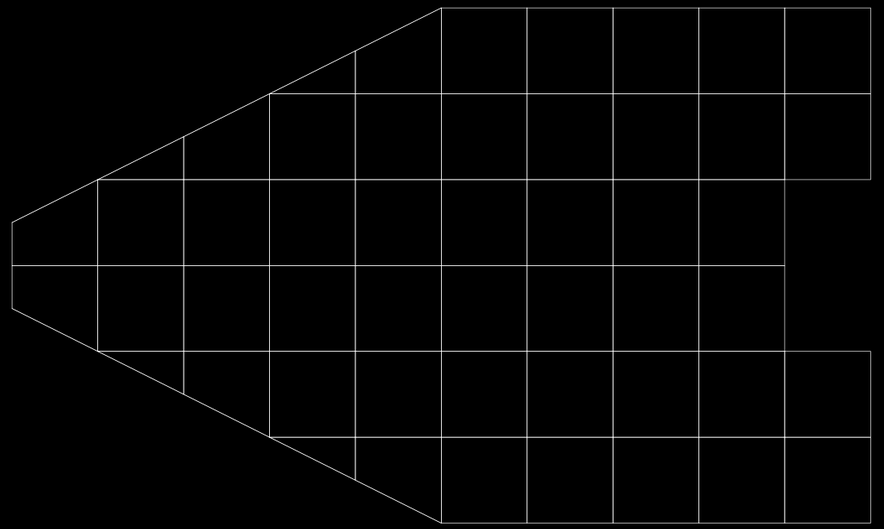
LAN/WAN



ParaView GUI
(client)

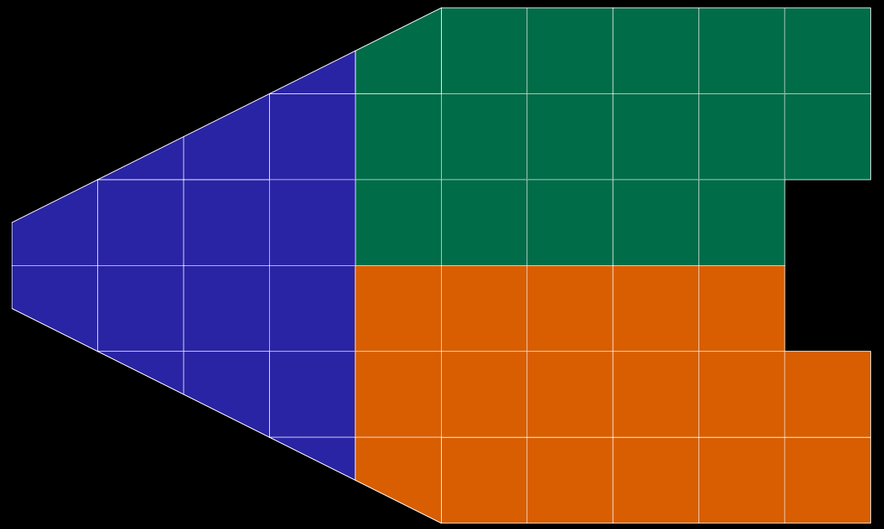
HPC ParaView: Data Parallel Pipelines

Sandia National Laboratories



HPC ParaView: Data Parallel Pipelines

Sandia National Laboratories



HPC ParaView: Data Parallel Pipelines

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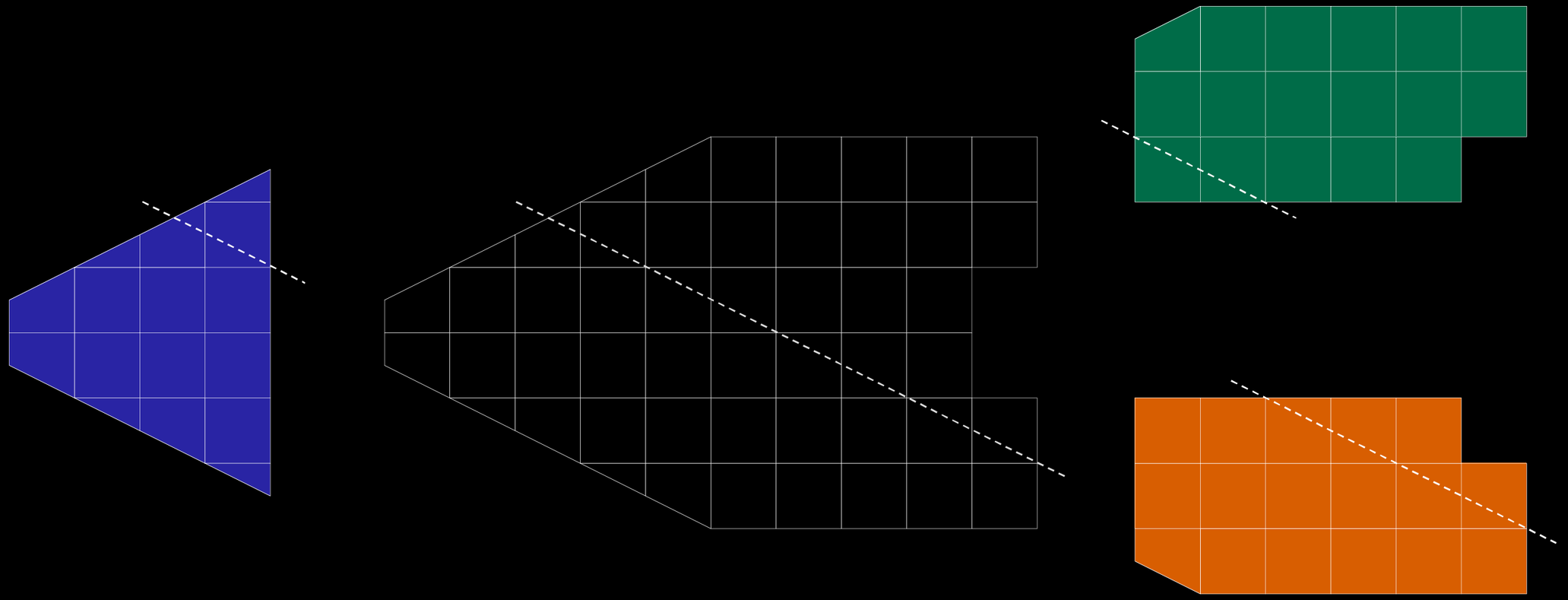
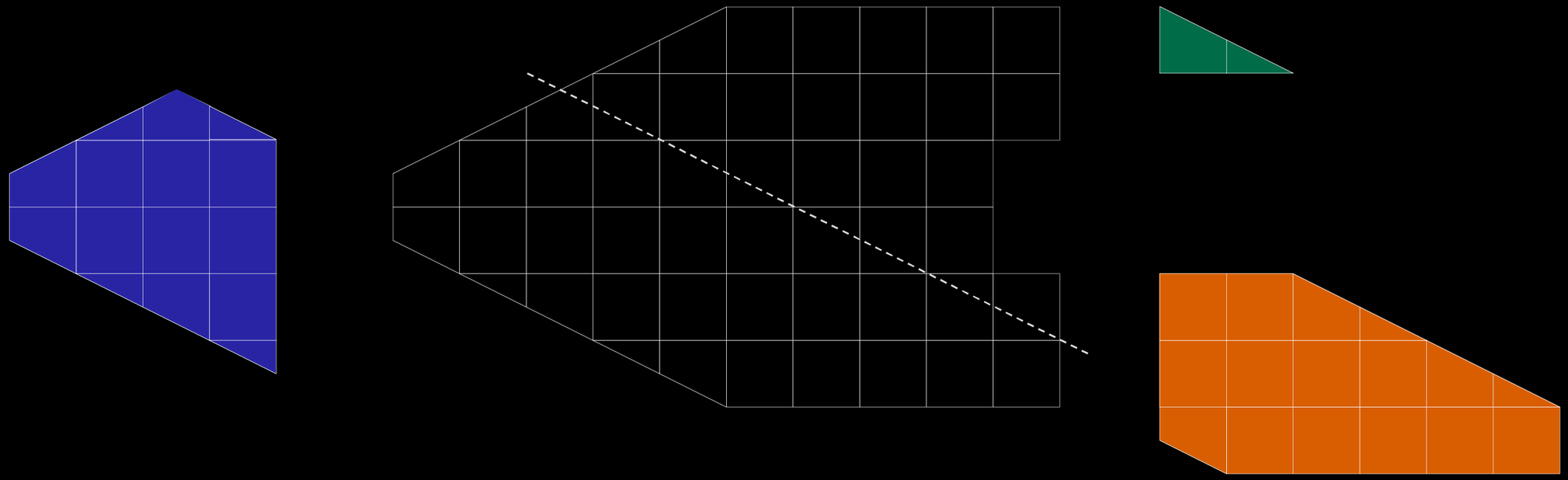


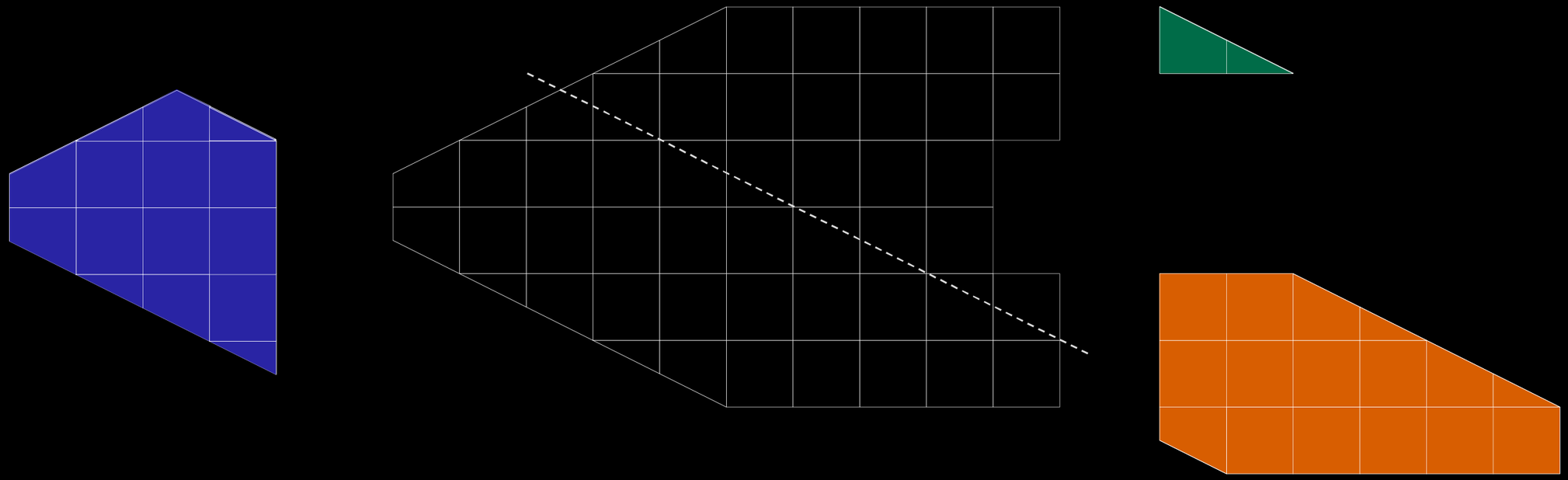
HPC ParaView: Data Parallel Pipelines

Sandia National Laboratories

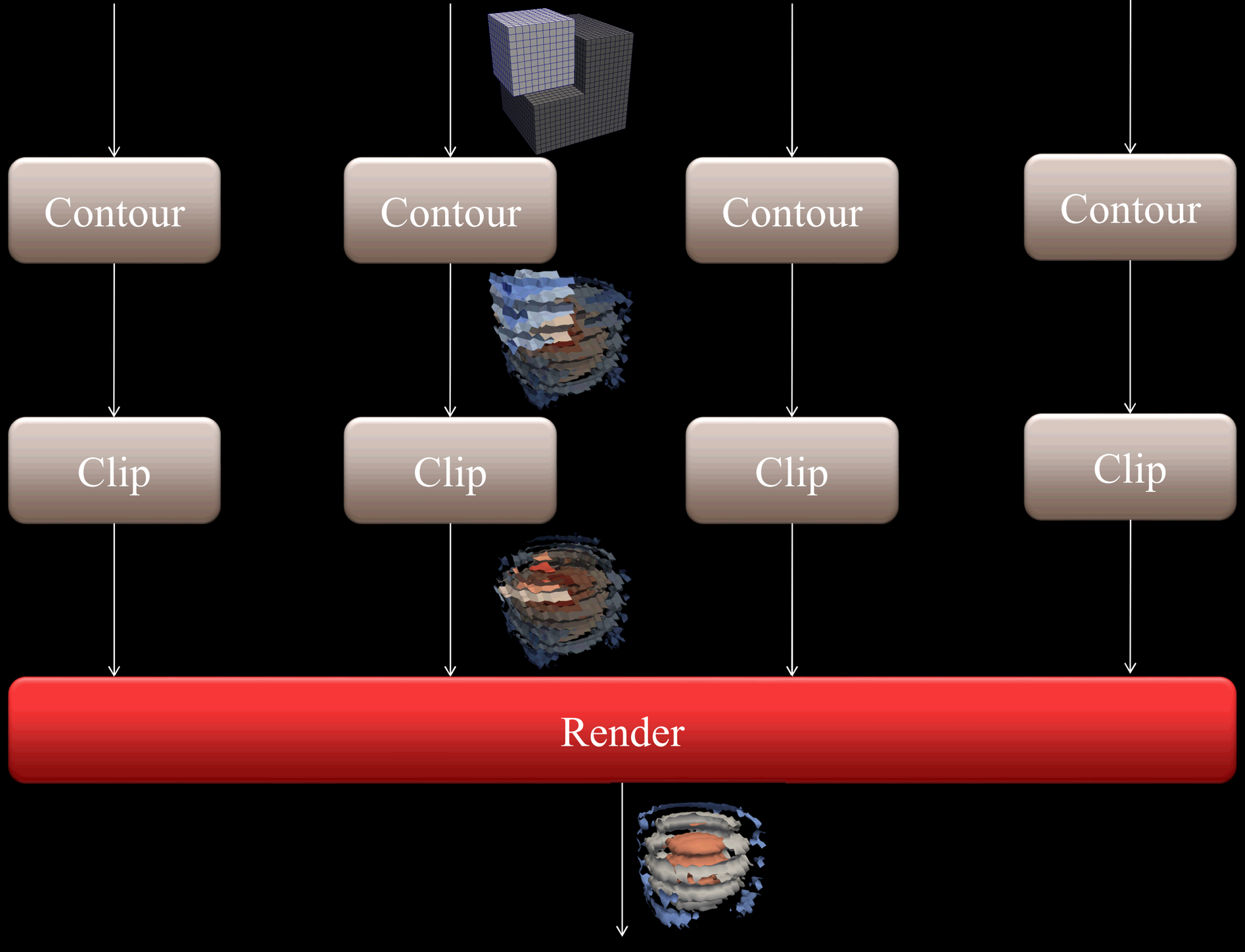


HPC ParaView: Data Parallel Pipelines

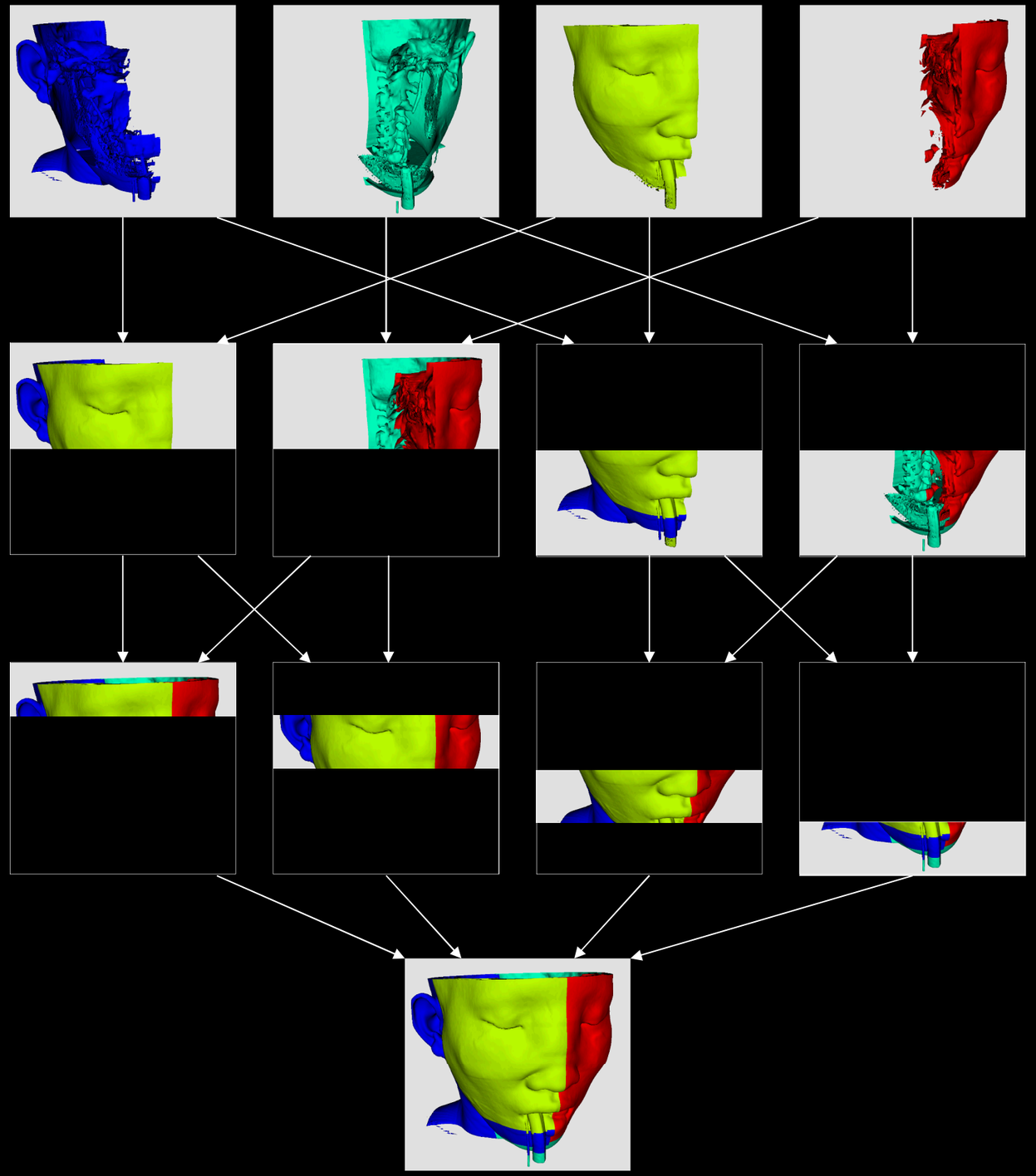
Sandia National Laboratories



Render Pieces from Parallel Pipelines



Parallel Rendering



What's Next in HPC

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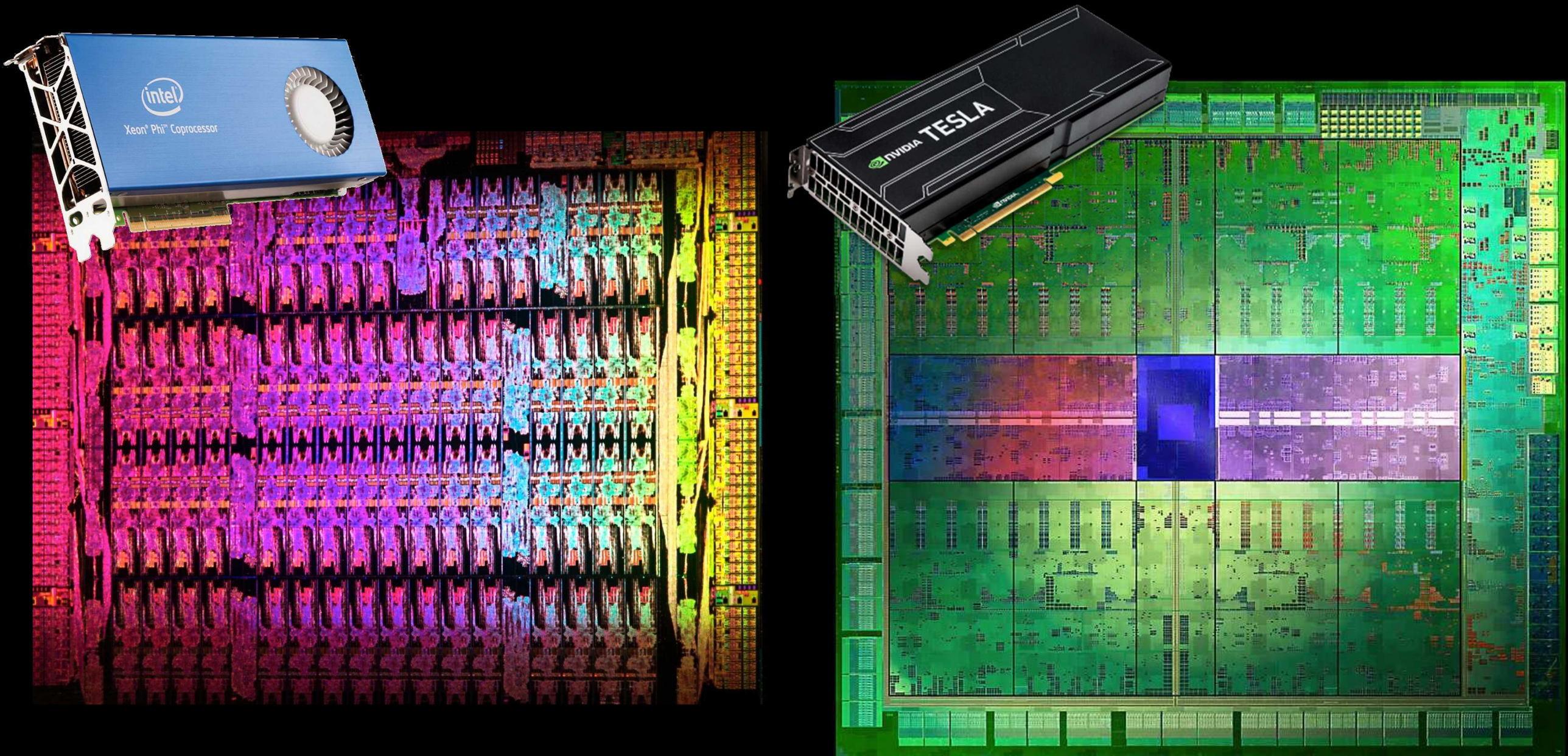

Acknowledgements

- Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.
- This work was supported in part by the DOE Office of Science, Advanced Scientific Computing Research, under award number 10-014707, program manager Lucy Nowell.
- Additional support by the Director, Office of Advanced Scientific Computing Research, Office of Science, of the U.S. Department of Energy under Contract No. 12-015215, through the Scientific Discovery through Advanced Computing (SciDAC) Institute of Scalable Data Management, Analysis and Visualization.