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# SDAV Progress Report

Sandia National Laboratories

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# VTK-m Funding Source Contributions



## **SDAV (SciDAC)**

- Integration
  - VTK, ParaView, VisIt
- Collaboration
  - Application Science Projects
- Filters
  - Specific to science problems

## **XVis (ASCR SDMAV)**

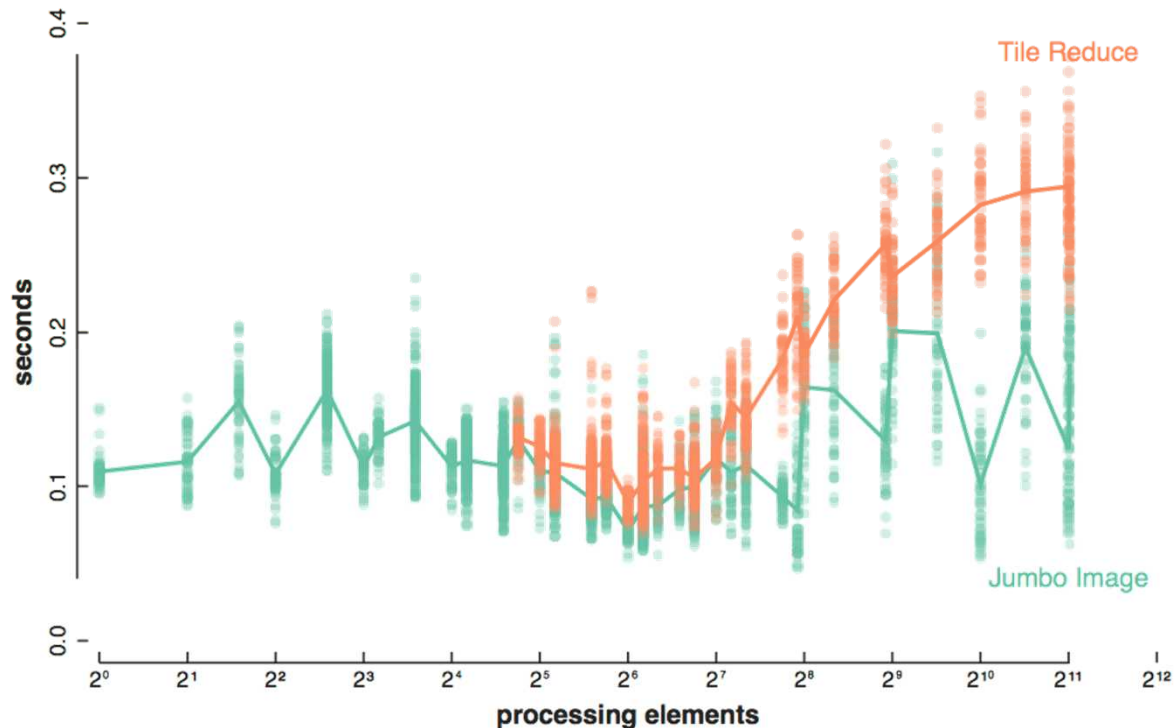
- Infrastructure
  - Codebase, Core services
- Research
  - Fundamental multi-/many-core algorithms
- Filters
  - General functionality
  - Representative research examples

# VTK-m Update

- Base repository available
  - <http://public.kitware.com/gitweb?p=vtkm.git>
  - Tested with GCC, CLANG, MSVC, ICC, PGI
- CUDA device added
  - Drop in replacement for serial device behavior
- PISTON-style Isosurface algorithm
  - Implemented with generic VTK-m device
  - Works in serial and in CUDA
  - (Not in master branch, yet.)
- EAVL-style data structures underway

# IceT Scaling

- Comparing [Moreland2001] with [Peterka2009]
  - New algorithm can benefit, but at cost of more memory
  - Benefit only at large displays with large clusters (i.e. clusters larger than Stampede's)
- Should revisit non-power-of-2 optimizations
  - Might not be working as well on Cray as on Blue Gene.



# Other Activities

- Participated in “Indo-US Workshop on Virtual Institutes for Computing and Data-Enabled Science & Engineering”
- Submitting “Formal Metrics for Large-Scale Parallel Performance” to ISC 2015
- Submitting ParaView tutorial for ICS 2015