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# SDAV Progress Report

Sandia National Laboratories

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# VTK-m Update (1)

- VTK-m moved to gitlab
  - <https://gitlab.kitware.com/vtk/vtk-m>
  - Merge Requests provide quick review cycle
    - Discussion thread for developers
    - Kitware's buildbot runs tests on branch (before merge)
    - Anyone can submit a merge request (lowers barrier to contribution)
  - Tested with GCC, CLANG, MSVC, NVCC, ICC, PGI
  - Simple Issue tracker
- Basic functionality of Dax, EAVL, PISTON ported to VTK-m
  - Worklets (from Dax) execute over data structures (from EAVL)
  - Isosurface (from PISTON) operates on data structures (from EAVL) and abstract device (from Dax)
  - Integration rough edges being smoothed over (e.g. execution on zoo cells, templating on point coordinates)

# VTK-m Update (2)

- Supported Devices: Serial, CUDA, TBB
  - OpenMP implementation underway (LANL/U Utah)
- Code Sprint planned September 1-2
  - Held at LLNL in conjunction with NVIDIA
  - 4 Planned breakouts
    - Code development (with SC demo in mind)
    - Performance tuning
    - OpenGL interop
    - VTK-m introduction

# Recent VTK-m Work (In progress)



- Structured Isosurface on VTK-m data model and worklets (Kewei Lu, Ohio/LANL)
- Stream lines and stream surfaces (Kewei Lu, Ohio/LANL)
- OpenMP backend (Will Usher, Utah/LANL)
- Benchmark infrastructure (Will Usher, Utah/LANL)
- Statistical filters (Pat Fasel, LANL)
- External faces (Brent Lesley, Oregon)
- Analysis in XGC code (James Kress, Oregon/ORNL)
- Structured volume rendering (Hendrik Schroots, Davis)

# Other Activities

- Paper: “Formal Metrics for Large-Scale Parallel Performance,” ISC 2015
- ParaView tutorial for SciVis 2015
- Panel at SciVis 2015: “Color Mapping in VIS: Perspectives on Optimal Solutions”
- ParaView tutorial for SC 2015