

CUG 2011 • May 23-26  
Fairbanks, Alaska



# Scalability of Paraview's Coproprocessing Capability

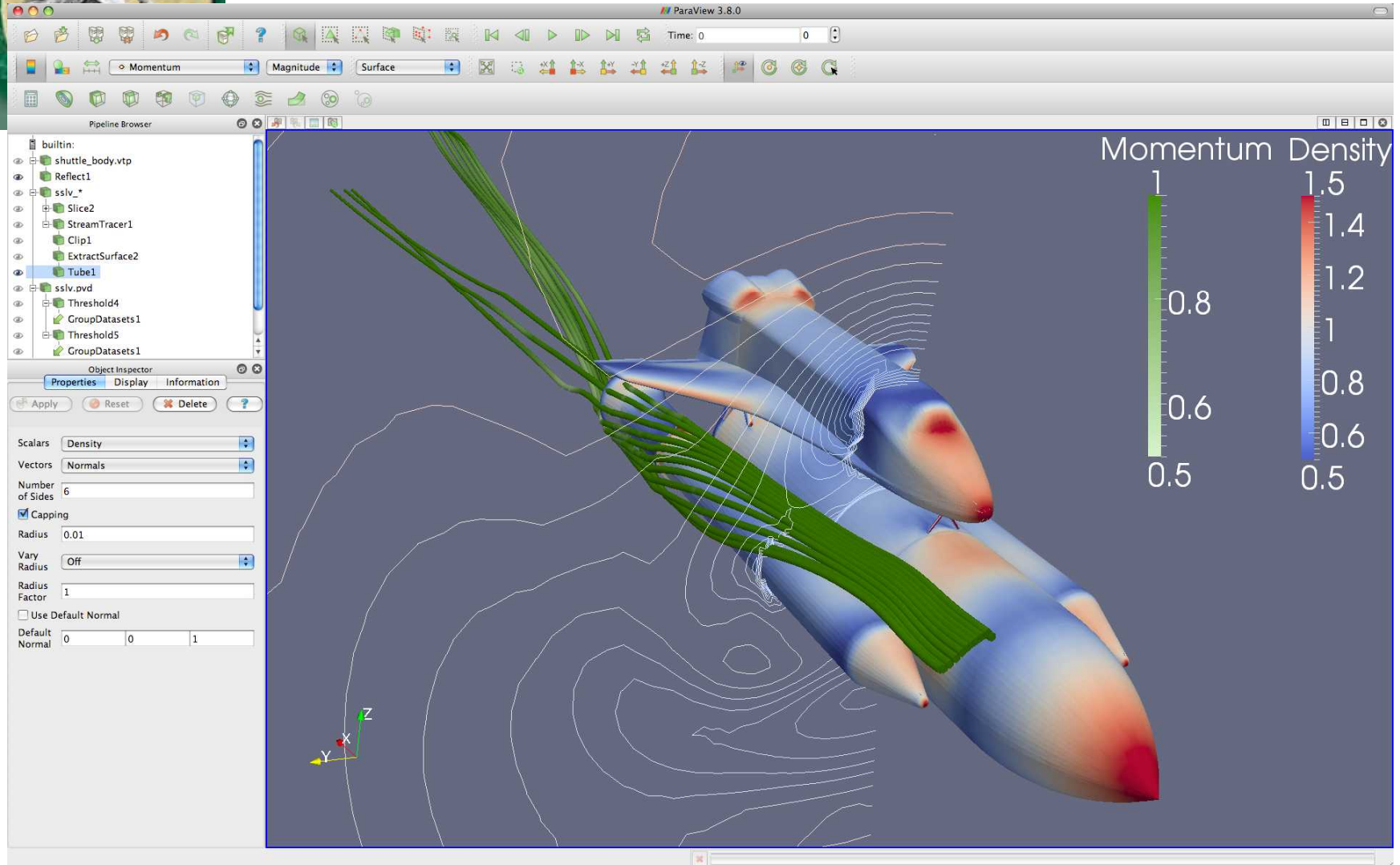
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CUG 2011  
Simulation Comes of Age  
SAND #

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# What is ParaView

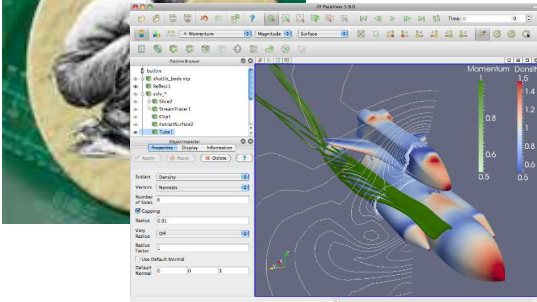




# Current ParaView Usage

- Used by academic, government, and commercial institutions worldwide.
  - Downloaded ~3K times/month.
- Landmarks of SNL usage:
  - 6 billion structured cells (2005).
  - 250 million unstructured cells (2005).
  - Billions of AMR cells with 100's of thousands of blocks (2008).
  - Scaling test over 1 Trillion structured cells (2010).

# ParaView Application Architecture



ParaView Client

pviewpython

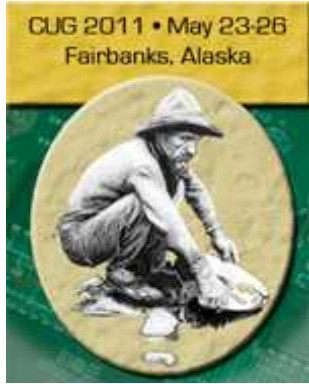
Coprocessing

Qt Controls

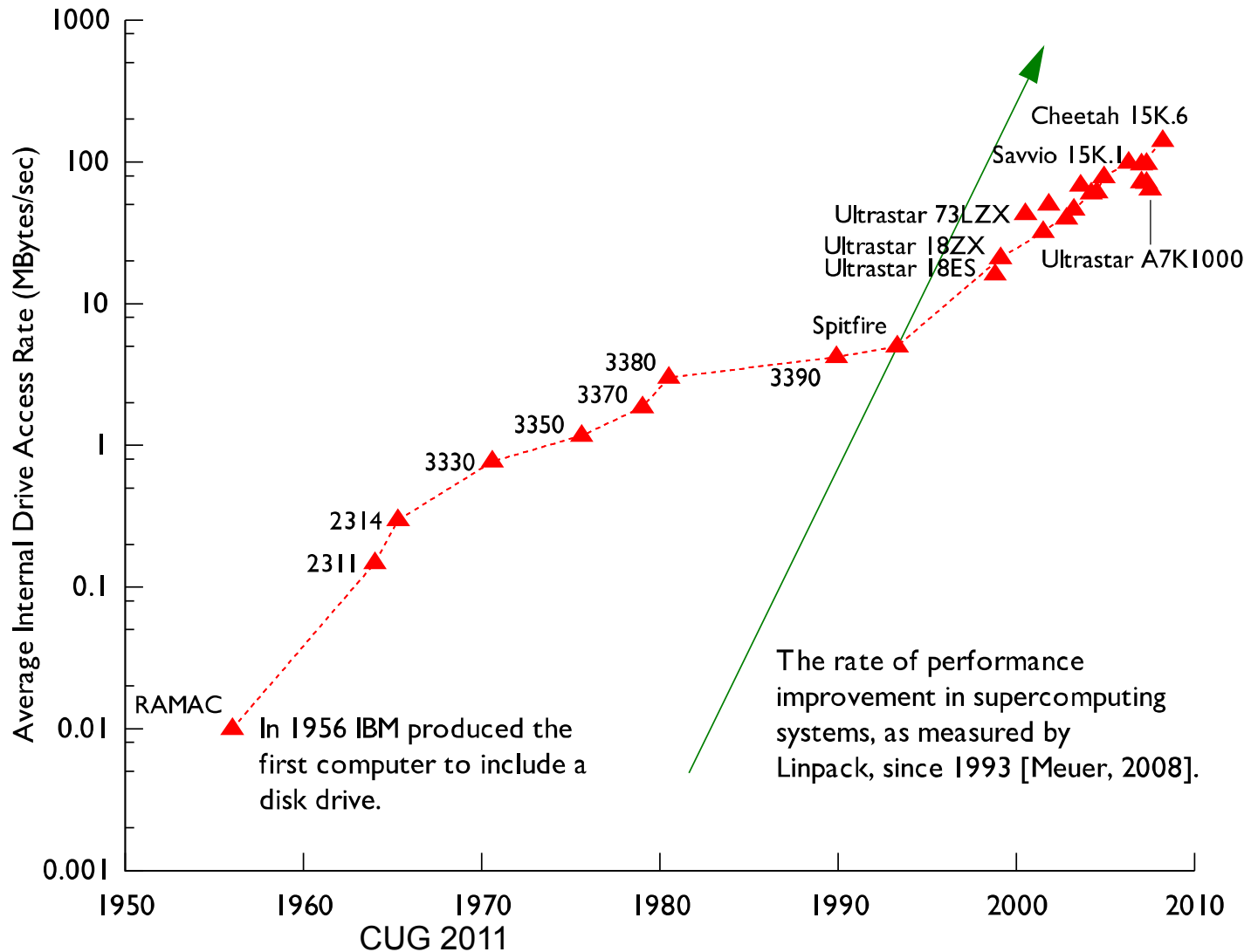
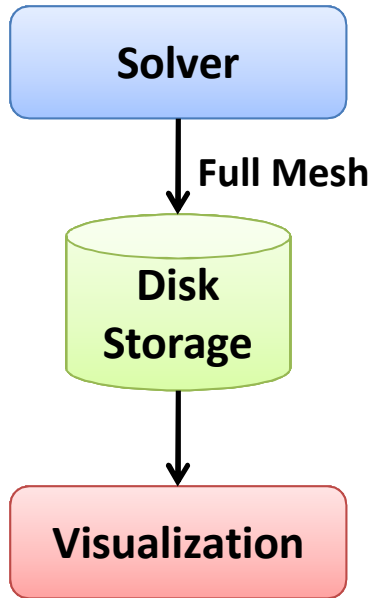
Python Wrappings

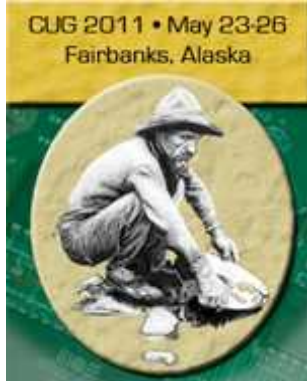
ParaView Server  
Parallel Abstractions and Controls

VTK  
Core Visualization Algorithms



# Traditional Visualization Workflow is Breaking Down

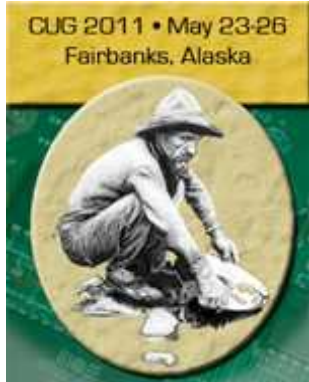




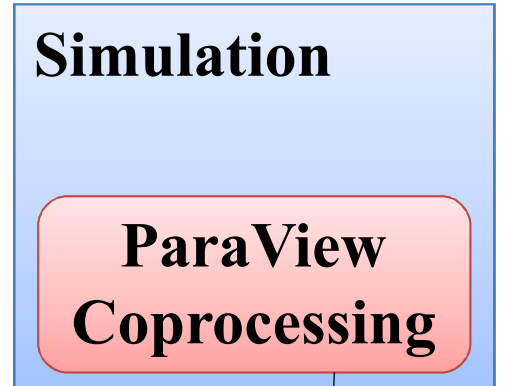
# What is the ParaView Coprocessing Library?

**Simulation**

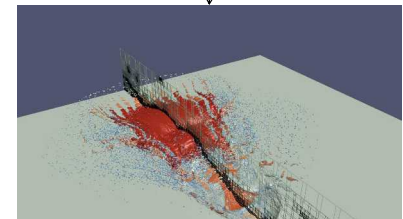
**ParaView  
Coprocessing**



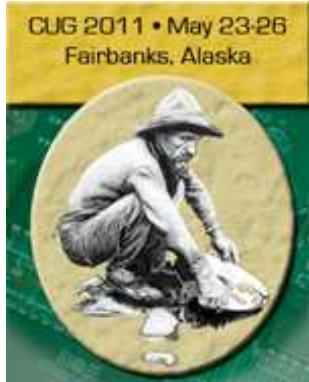
# What is the ParaView Coprocessing Library?



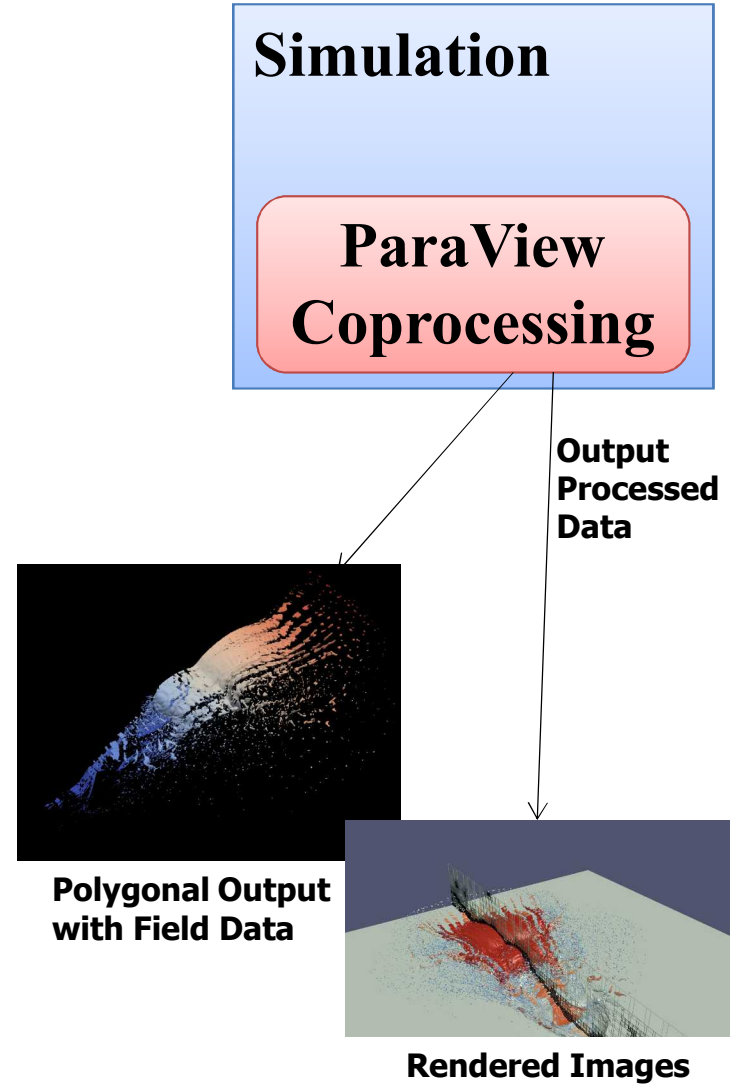
Output  
Processed  
Data



**Rendered Images**



# What is the ParaView Coprocessing Library?

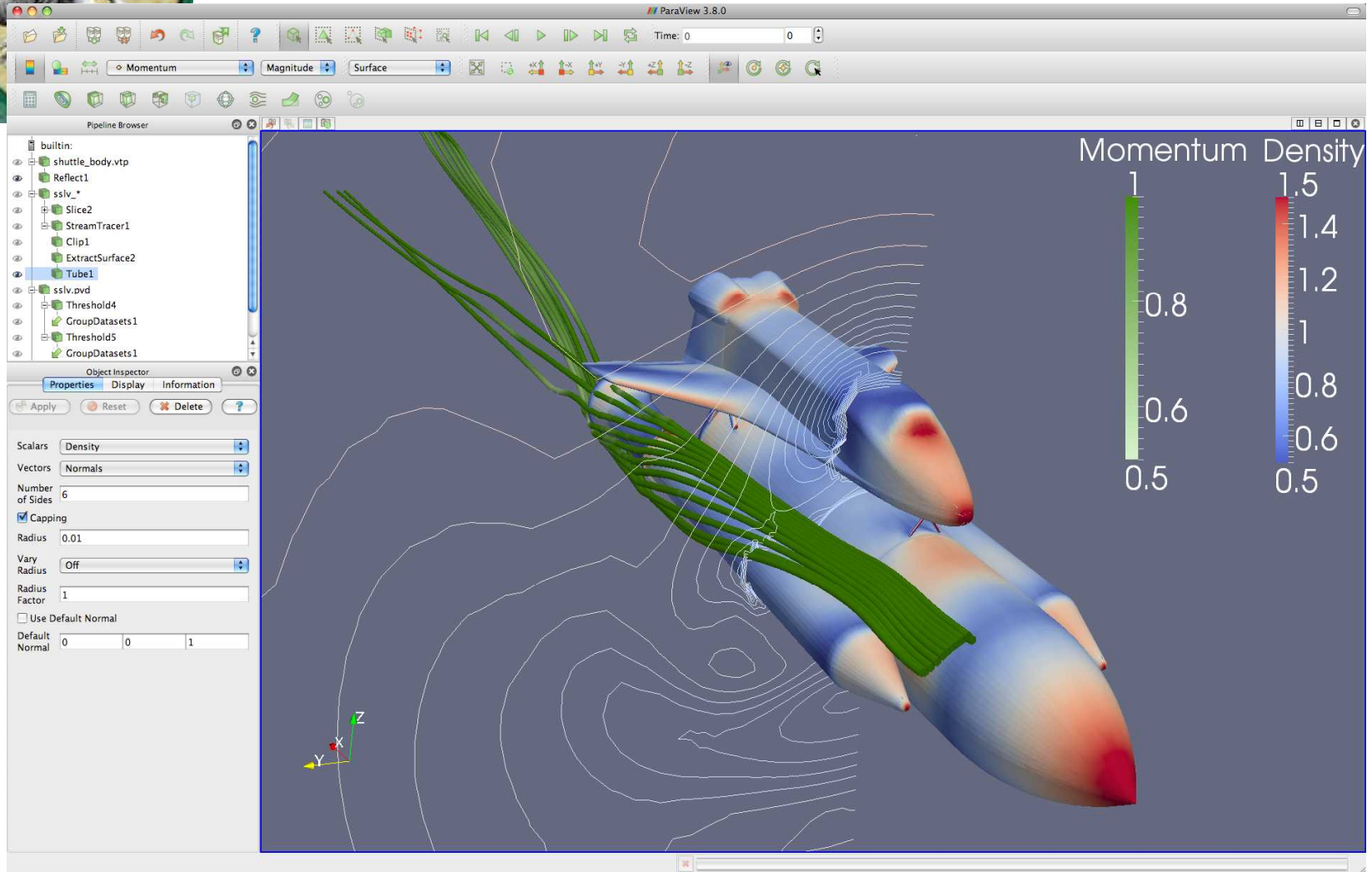


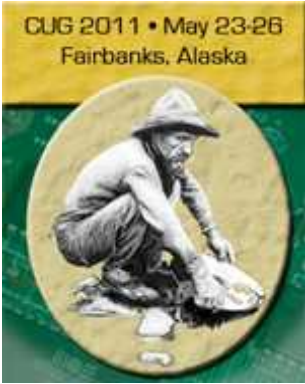




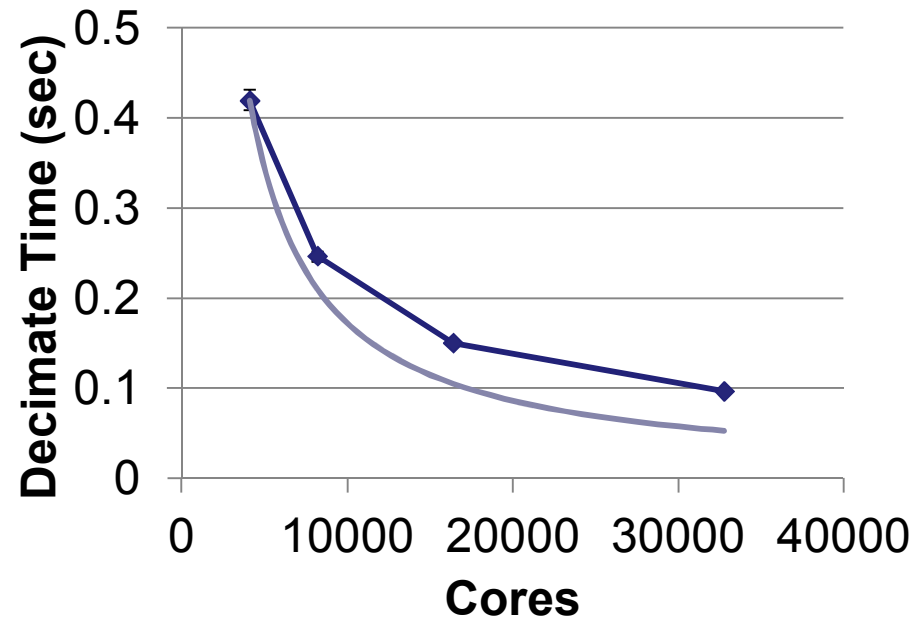
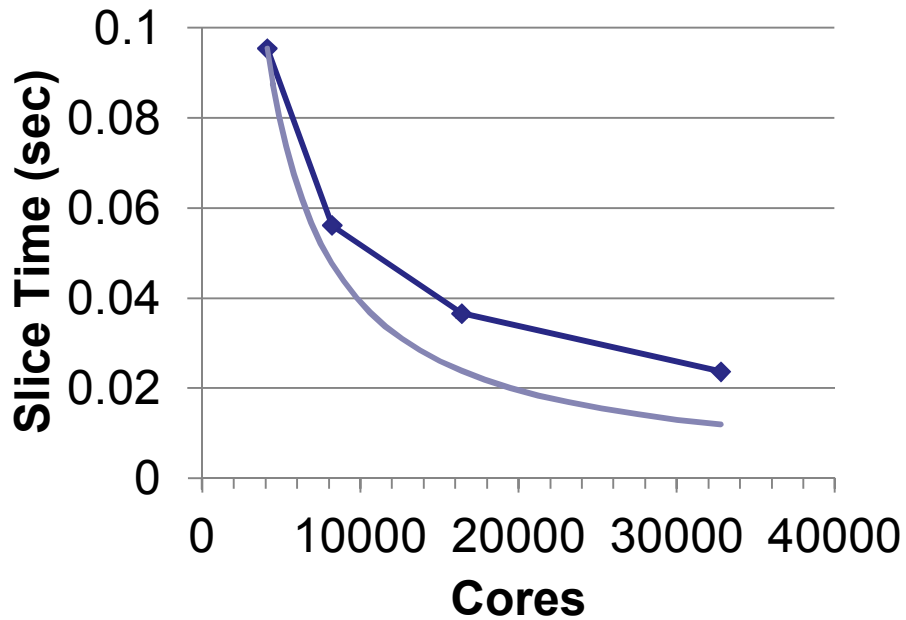


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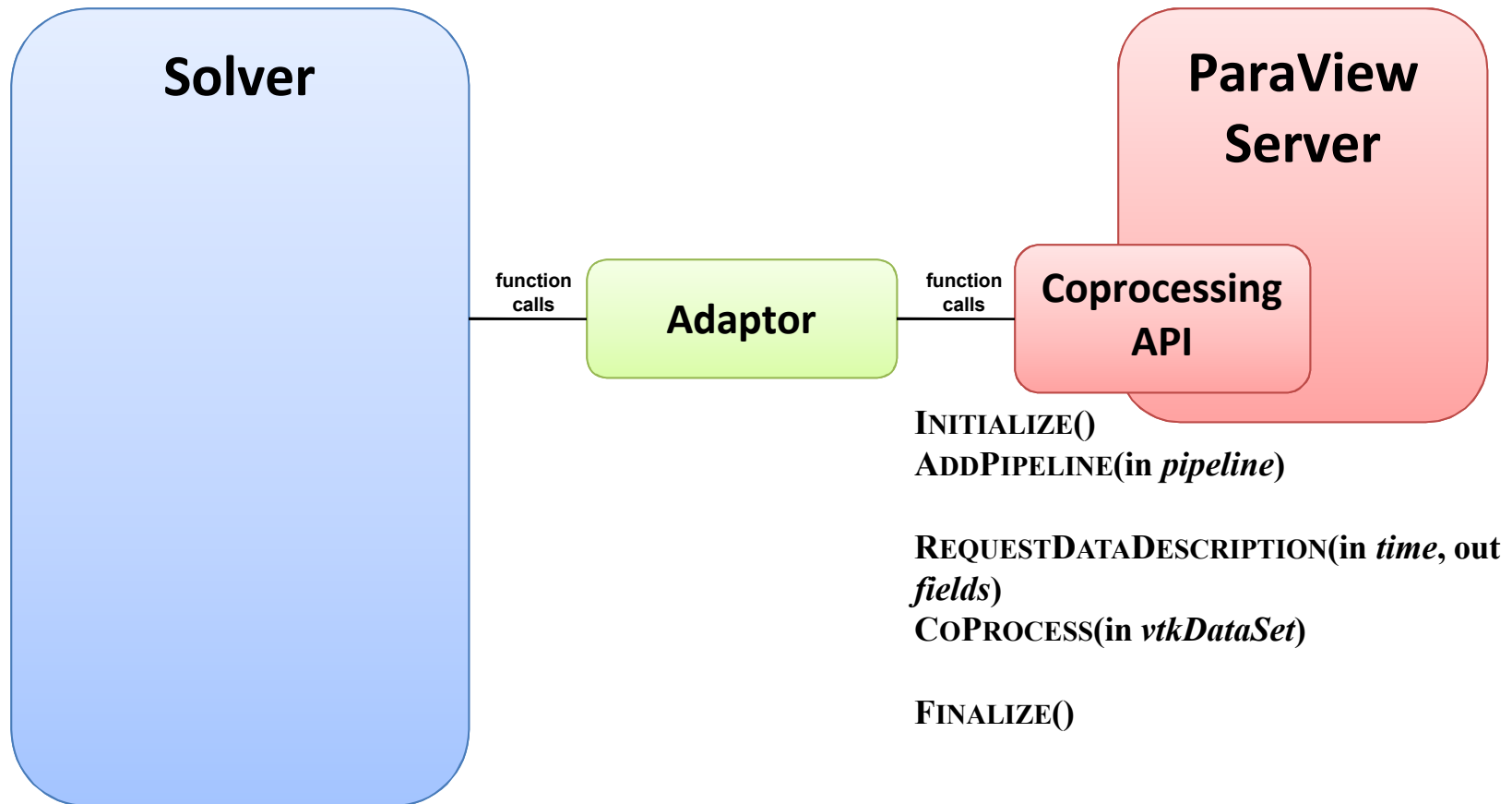


# Solid Scaling Performance





# Coprocessing Library



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Golden Nuggets of Discovery