PIDX: Scalable I/O for Massive Simulations

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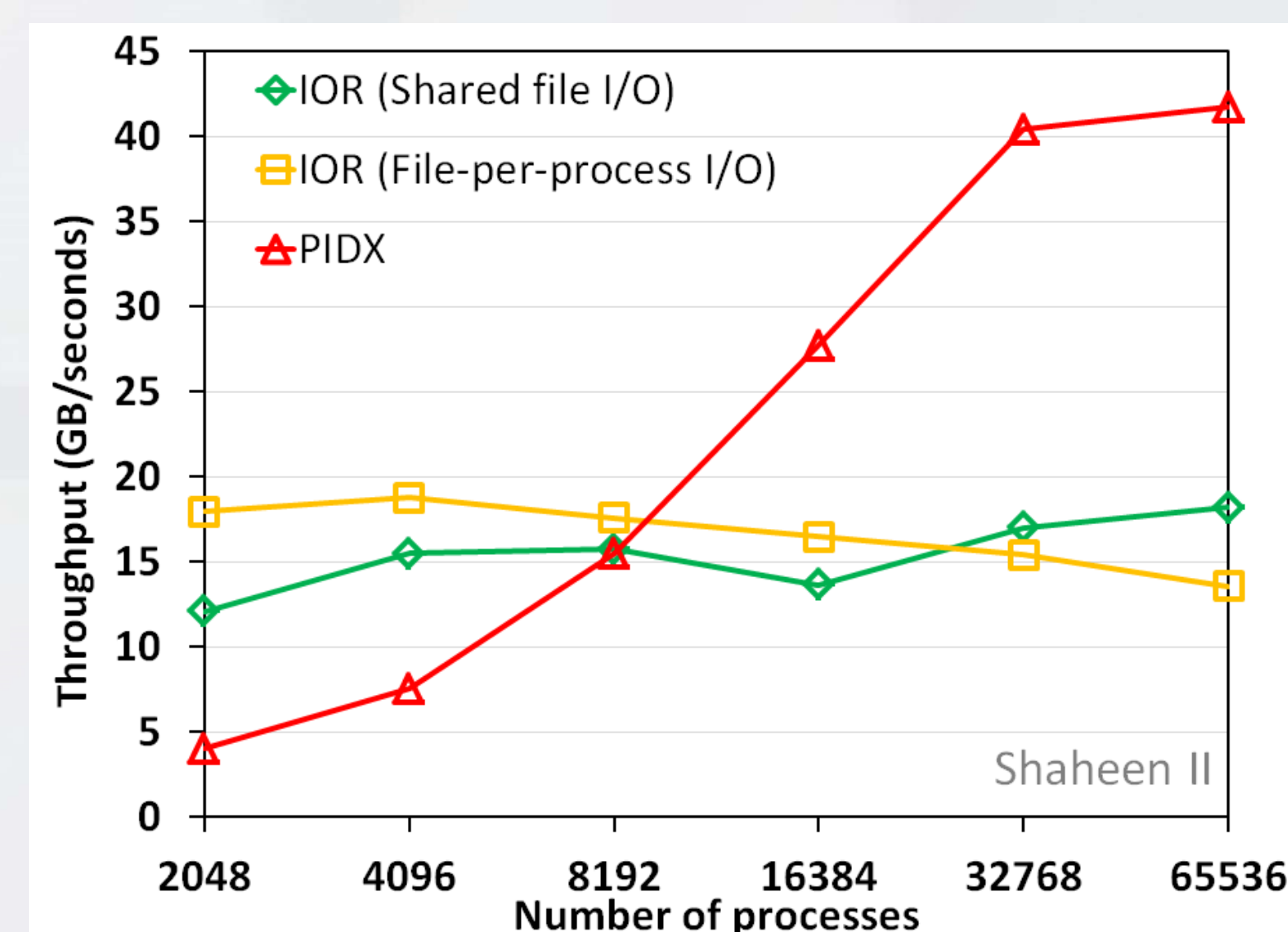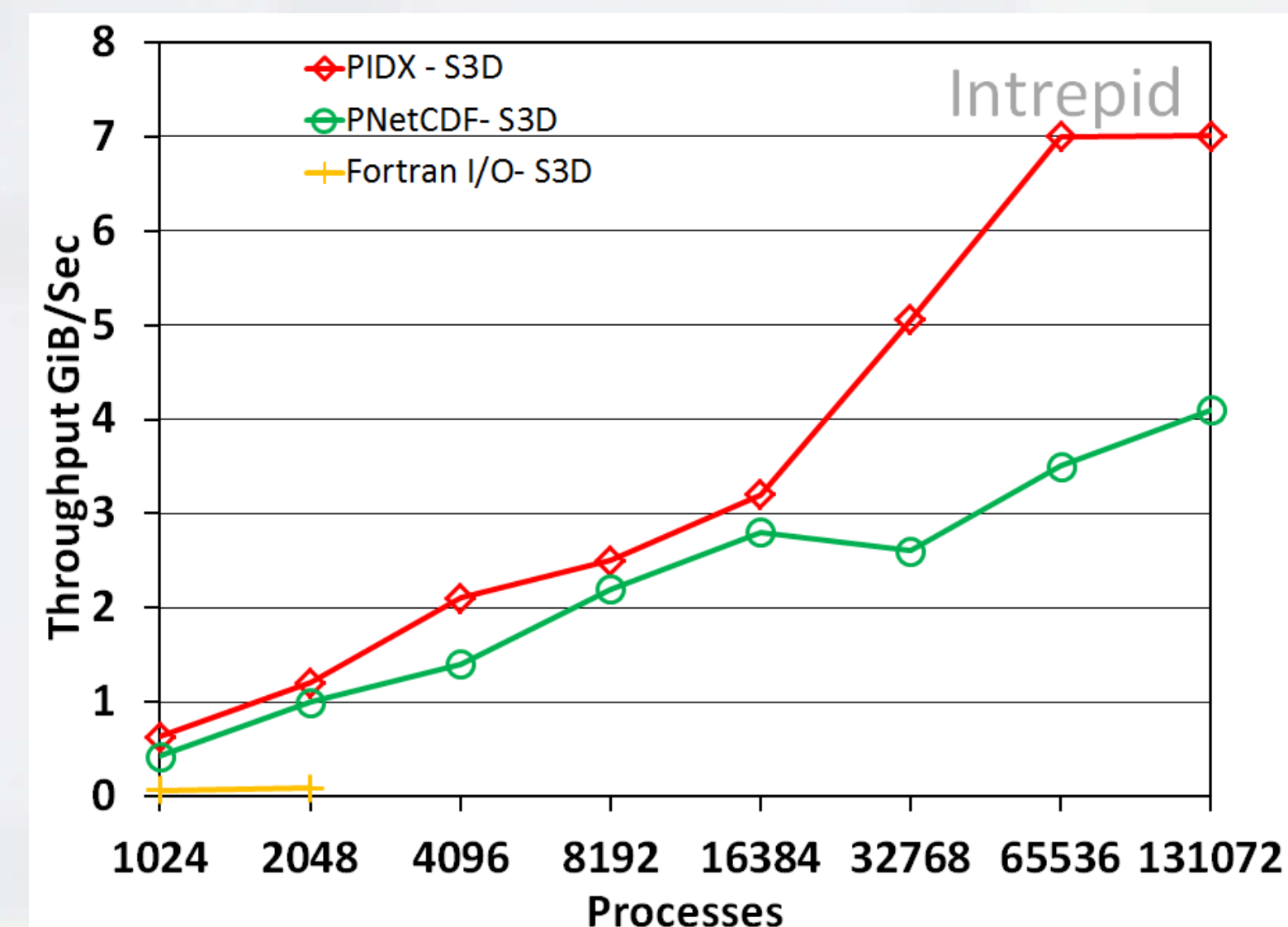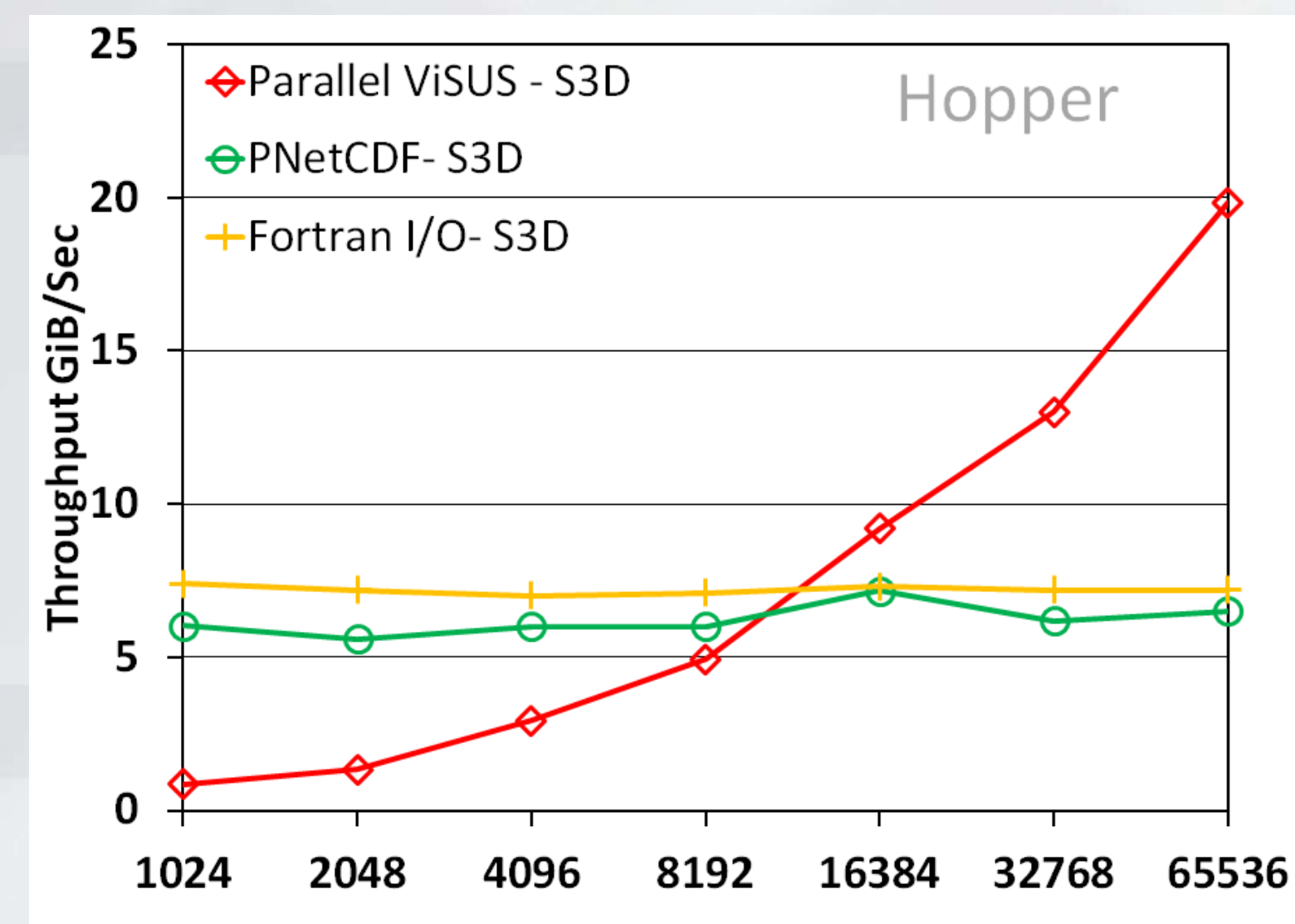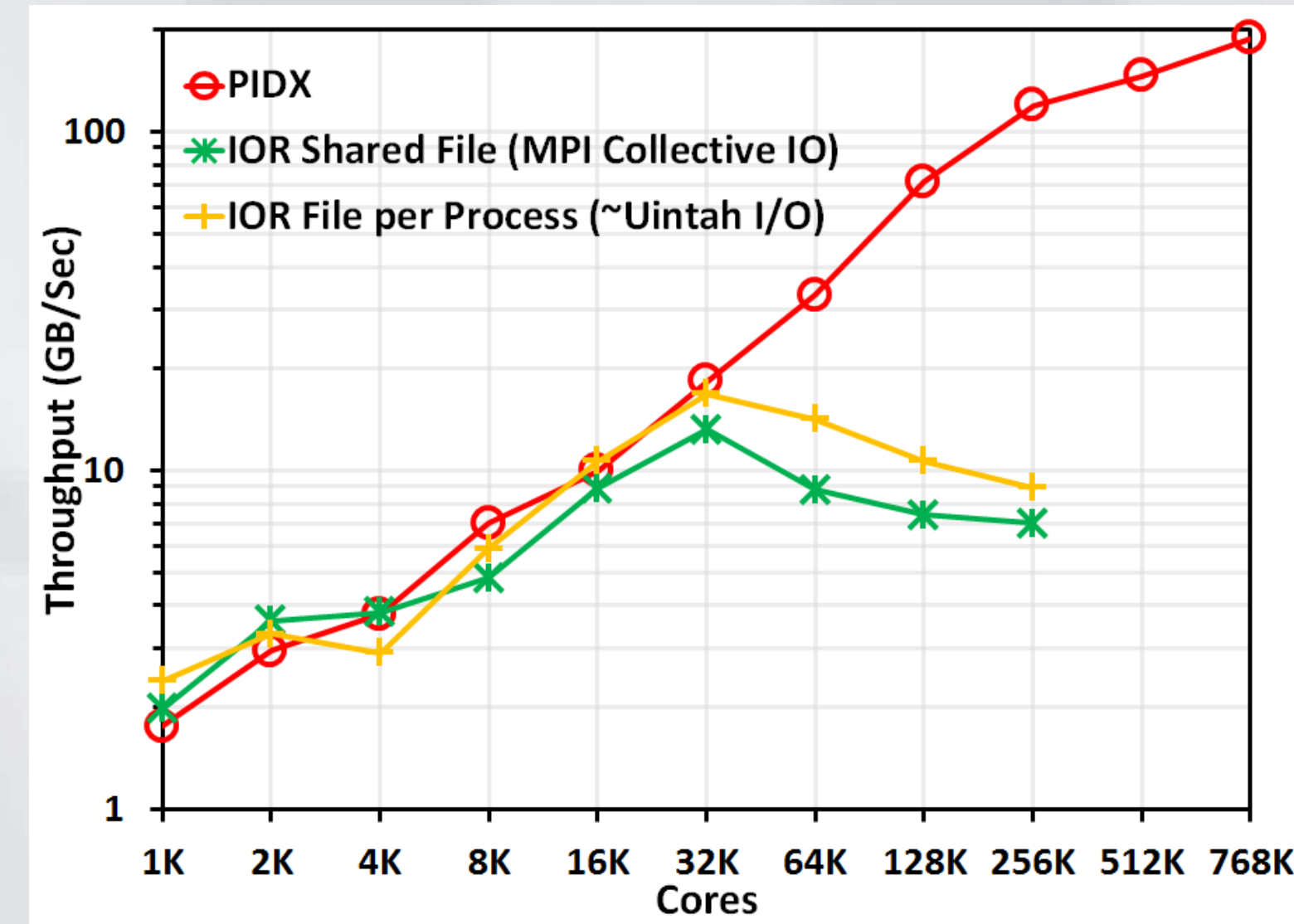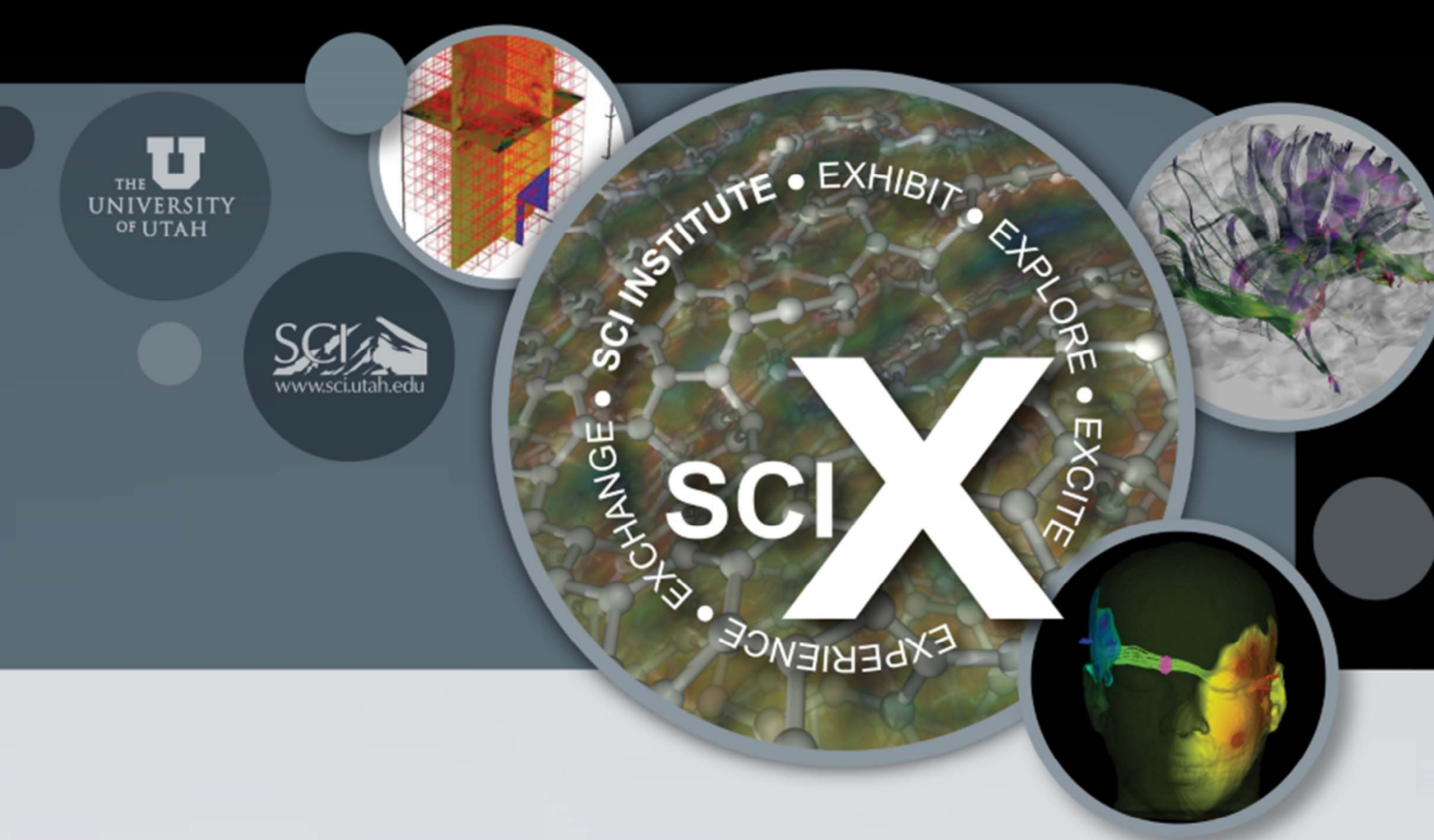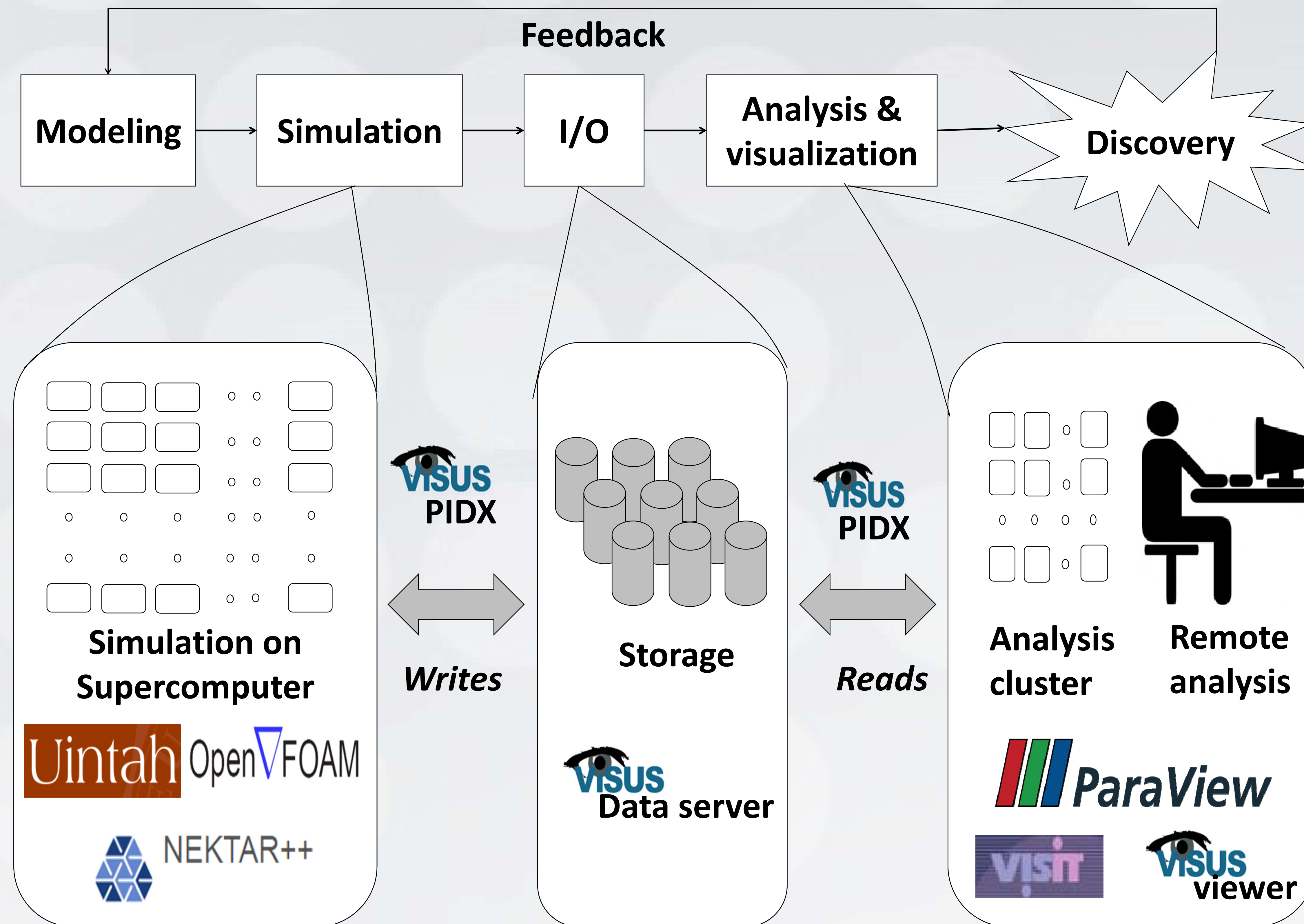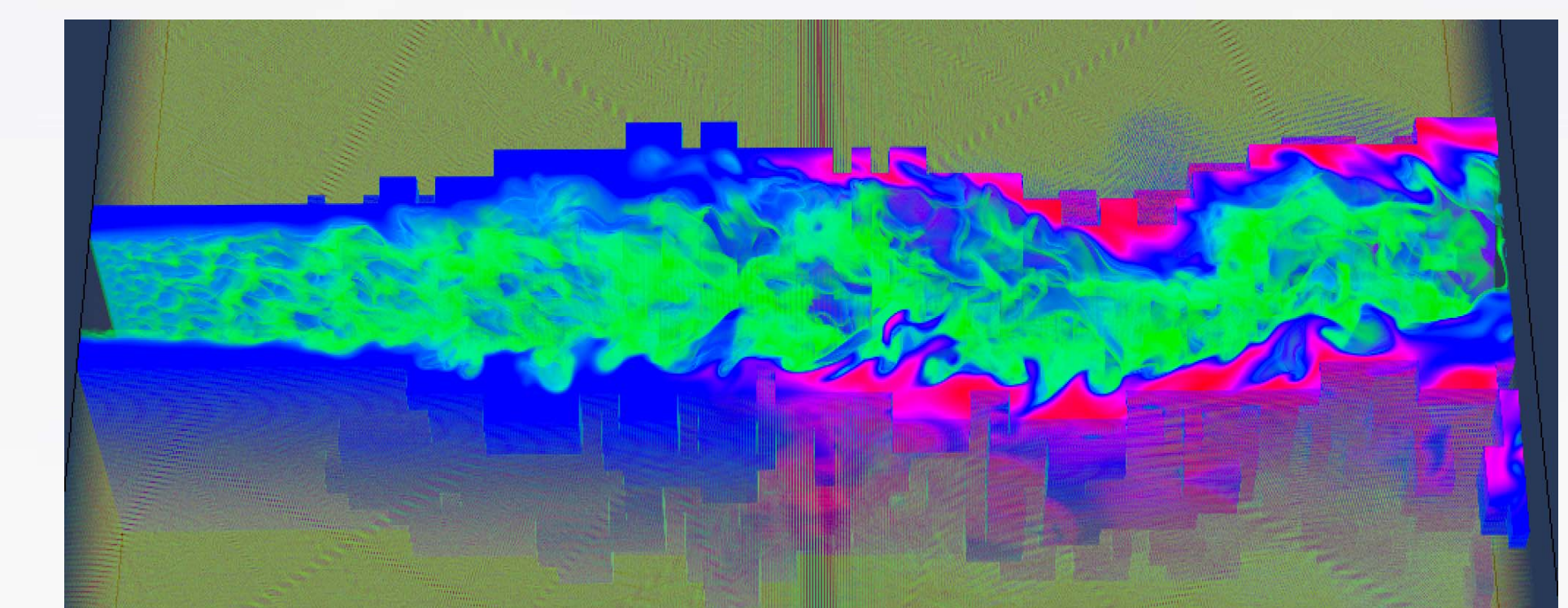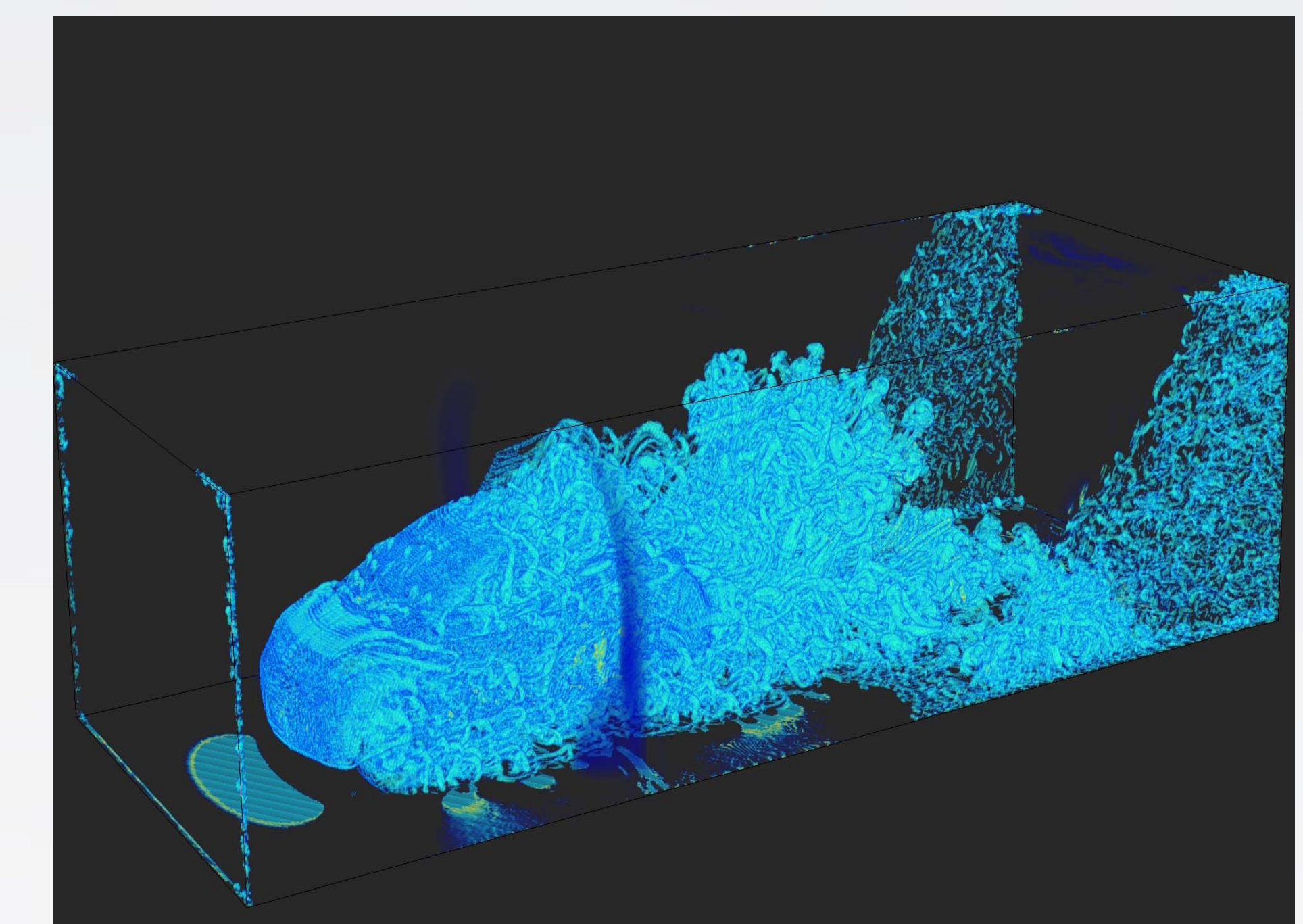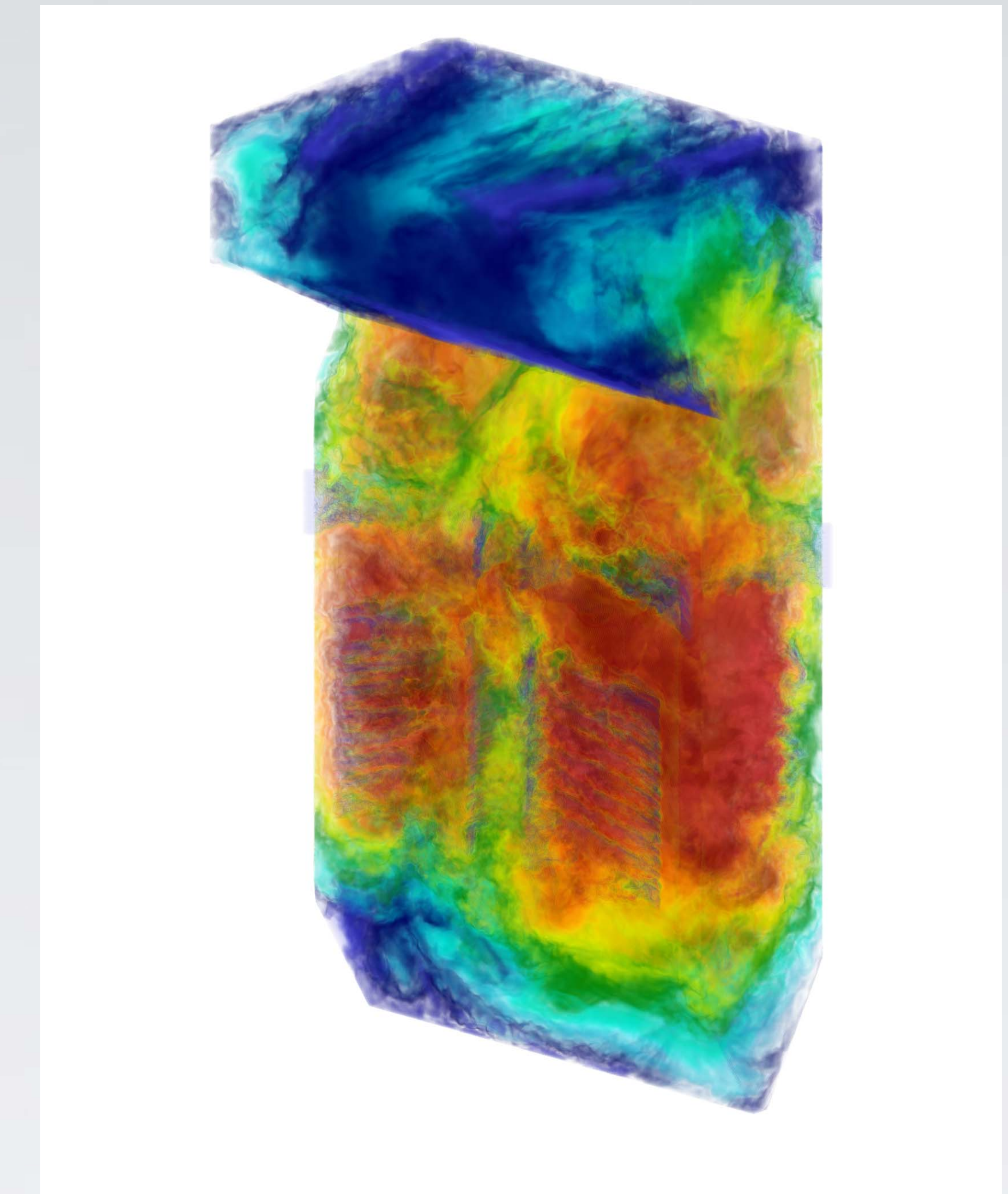
" With PIDX I/O time came down from 50% of total simulation time to 7%, thus allowing us to dump more data more frequently and have a much better understanding of the actual science." – Ben Isaac PhD (PIDX user and Research Associate at Institute for Clean & Secure Energy)

Feedback

Modeling → Simulation → I/O → Analysis & visualization → Discovery

Simulation on Supercomputer

VISUS PIDX

Writes

Storage

VISUS Data server

VISUS PIDX

Reads

Analysis cluster   Remote analysis

Simulation on Supercomputer
Uintah OpenᐁFOAM NEKTAR++

ParaView
VISIT VISUS viewer

PIDX salient features
- Has shown scalability to 768K cores.
- Generates analysis and visualization appropriate data format.
- Allows real-time monitoring of simulation.
- Allows ROI based dumps enabling simulations to dump regions to store data at varying resolution.
- Uses a compression scheme that allows reading and decompressing data at different bit rates.
- Has been tested on some of the fastest supercomputers of the world.
- Exposes lots of parameter and is very tunable.

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