

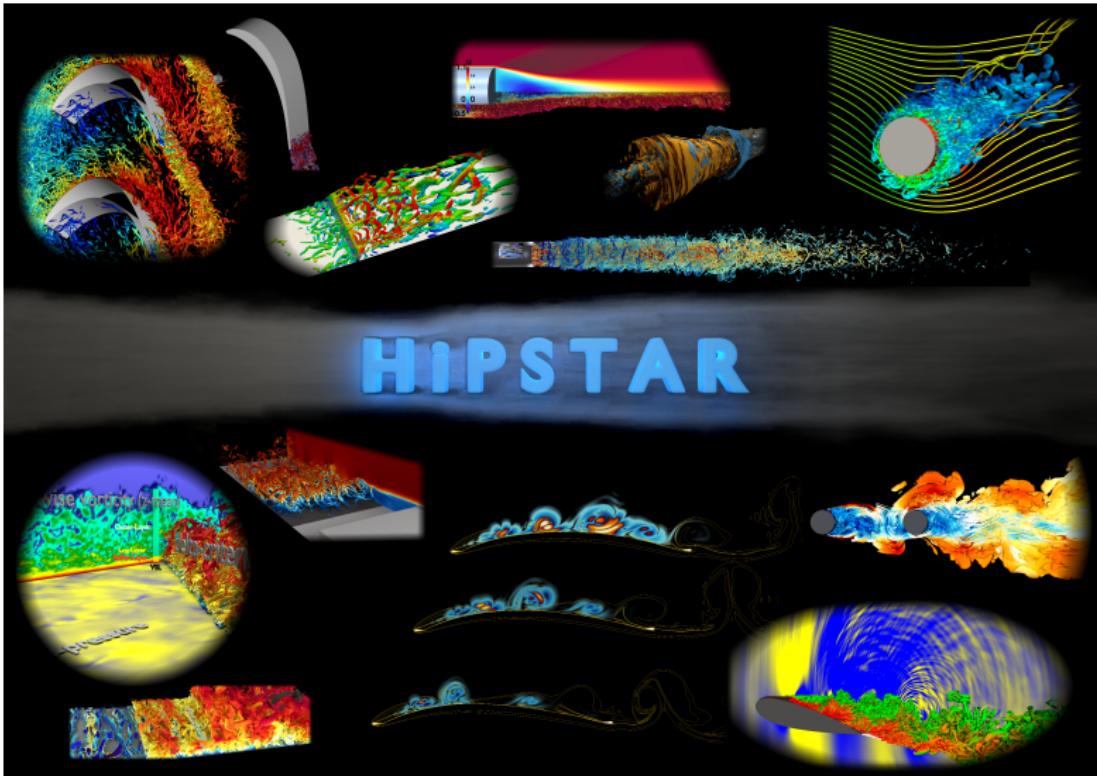
Eurohack 2015

Progress Presentation

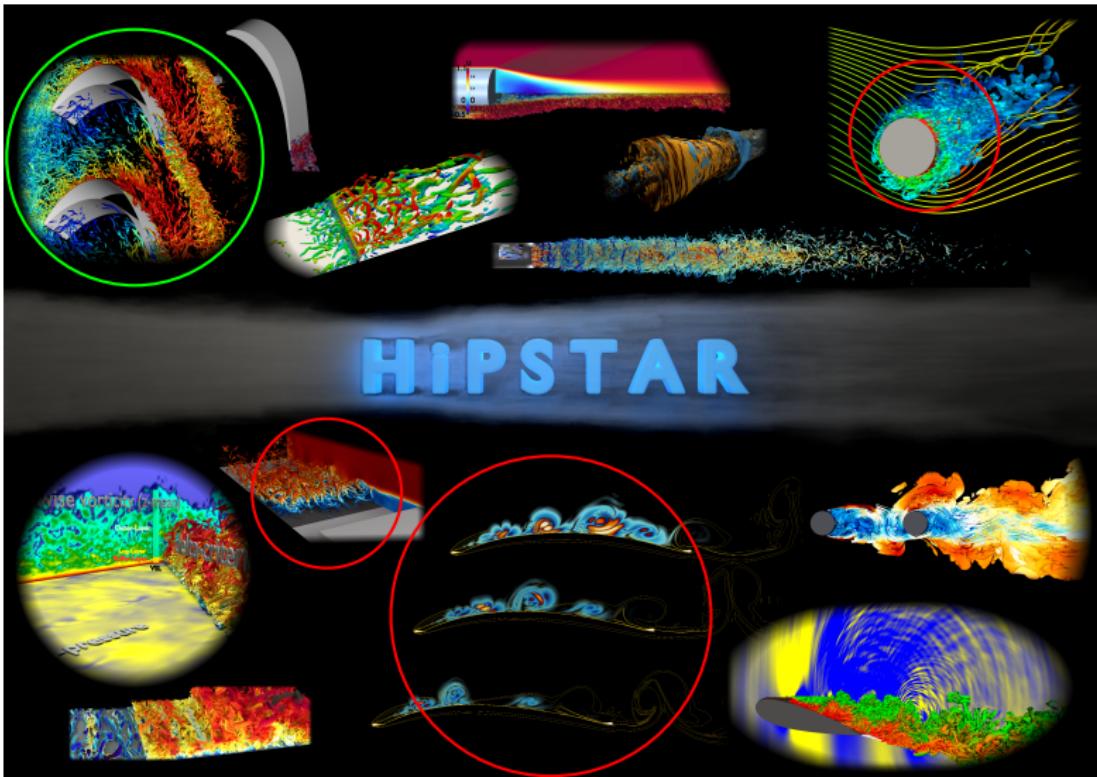
Team HiPSTAR

July 10, 2015

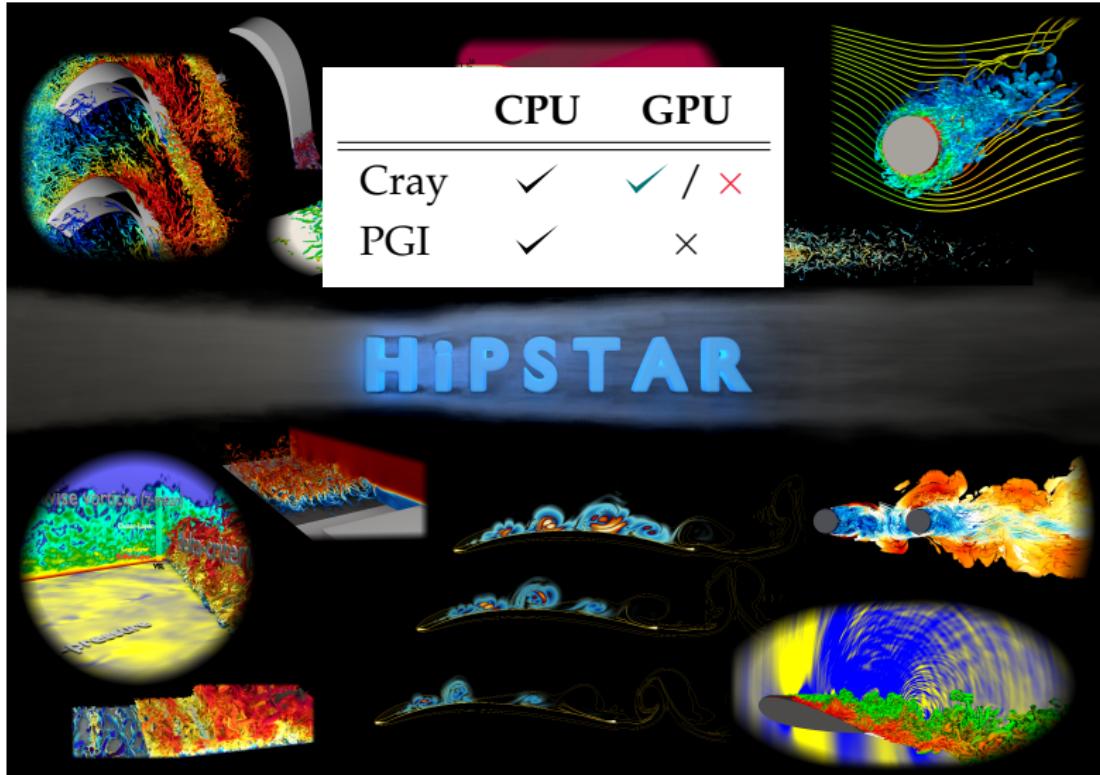
WHAT WE DO



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GETTING STARTED – DAY 1 - 3

Choosing the right Environment

- ▶ $-C \Leftrightarrow -Mnbounds$ (solved with PGI 15.7)
- ▶ perftools $\Rightarrow -g$
- ▶ $-Mcuda$

Setup Phase

- ▶ Interaction with experts from PGI, Cray and Nvidia speeded up work enormously!
- ▶ Found some PGI and Cray compiler bugs

PICKING UP PACE

What We Experienced

- ▶ Checking values on device difficult/not possible yet
- ▶ fine grain performance control resulted in different outcomes with regard to compilers ⇒ inconsistent behaviour
- ▶ More MPI ranks per node increased performance
- ▶ Future: async IO / keeping CPU and GPU busy at the same time

PROFILING AND PERFORMANCE

Table: Speedup

| | Cray | PGI | Cray vs. PGI |
|-----------------------------|-------|-------|--------------|
| Adjoint Framework | 1.65× | 14.9× | 0.11× |
| Fluid Structure Interaction | 2.17× | 1.9× | 1.14× |
| Low Pressure Turbine | 1.5× | - | - |

CONCLUSION

- ▶ Ported two additional frameworks
- ▶ Achieved a speedup
- ▶ Familiarised ourselves with GPU tools

Feedback

- ▶ Internet connection issues
- ▶ -Mcuda

Experience

- ▶ Gained a lot of experience
- ▶ Insight into work of compiler and software developers
- ▶ Networking