

Overview of TACC

Victor Eijkhout, Susan Lindsey

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Your instructors

Victor Eijkhout, Susan Lindsey

work at the

Texas Advanced Computing Center

So where is TACC?



How do you get to TACC?



Pickle Campus

Formerly Balcones Research Center,
location of some of the best wildflowers in Austin.



James Jarrell ‘Jake’ Pickle

- 1913–2005, congressman
1963–1995
- US Navy during WW II
- important role in Civil Rights Act and Social Security reform



TACC

- Started in 2001 with 10-ish people, now 140
- UT has had computing centers before; in 2001 TACC became independent unit: falls under VP for research.
- First major supercomputer in 2008: Ranger.
- Currently: Frontera, #5 in the world, and largest academic computer in the world; and Stampede2, #19 in the world.

TACC now

- 140-ish people, divided in Systems, High Performance Computing, Computational Biology, Big Data, Machine learning, Visualization, Outreach (and more) groups.
- 15 platforms
- 1000 projects, 200 public data collections
- 30 web portals with 35k users
- new 10MWatt data center
- second new building in 10 years

Stampede1, now retired



(Want to guess how much a computer costs? How long it stays operational?)

Frontera

- 91 racks with 8008 nodes; each node two 28-core Intel Cascade Lake processors.
- 60Pbyte of storage, of which 3Pbyte flash.
- Two GPU subclusters

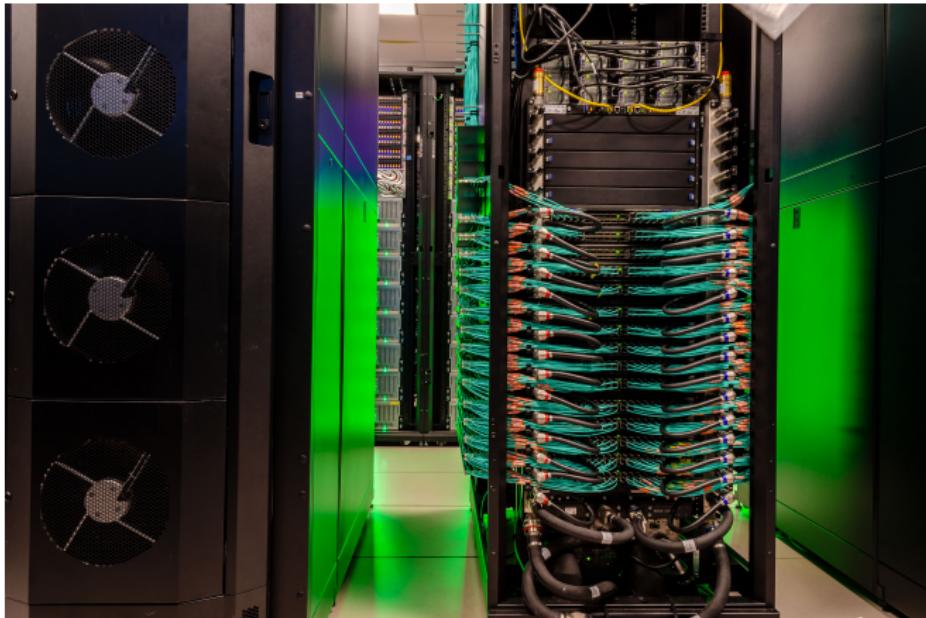
front view



frontera processors



network switch



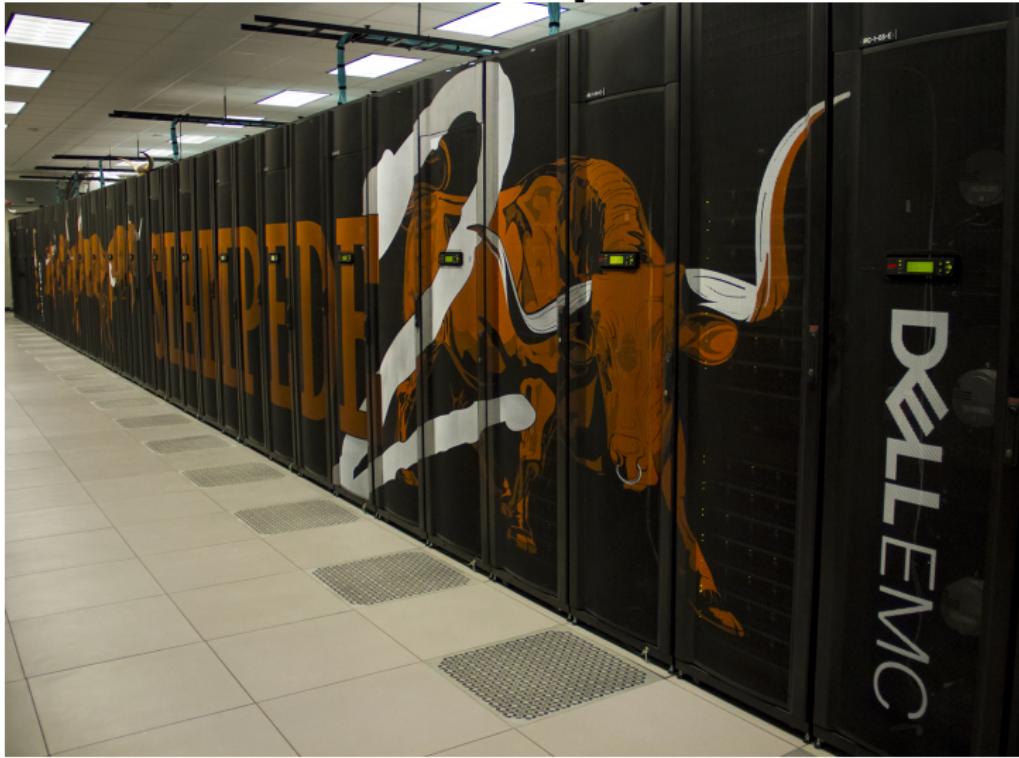
overhead cabling



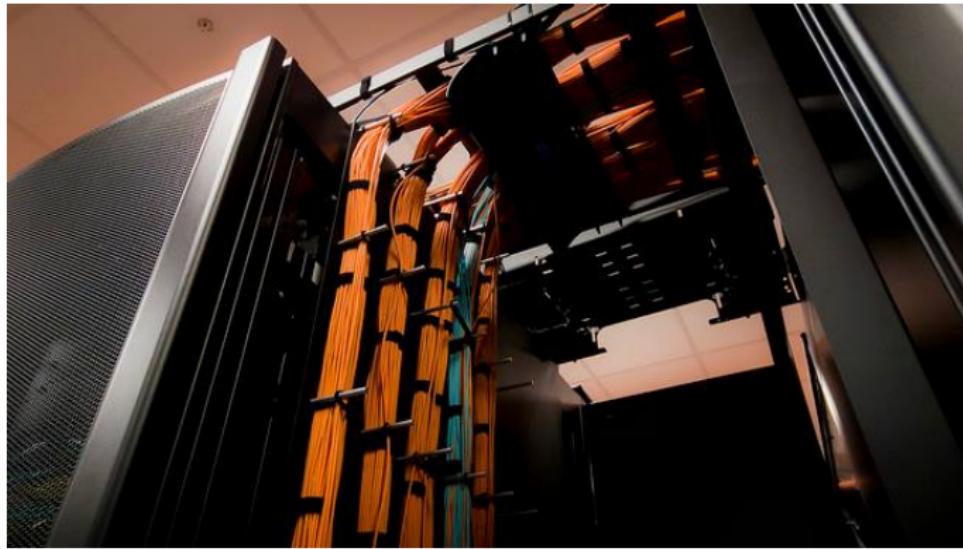
Stampede2

- Second biggest machine: cost \$30M
- 4000 nodes with Intel ‘Knights Landing’ Xeon phi;
1700 nodes with two Skylake server processors.
- 75 miles of cabling, up to 4.5Mwatt power
- TACC’s machines are popular and reliable:
Stampede1 was used by 5000 users, up 98% of the time,
8 million jobs over its lifetime.

Stampede2



Stampede cabling



Lonestar5

Our Cray



Maverick2

GPU machine



Btw, this picture is not sideways:
the machine hangs in a bath of HEB-\$1/bottle-mineral oil
(ok, slightly better than that)

Hikari



Hikari water cooling



Big data

- Wrangler: big data machine with lots of SSDs
- Rustler: hadoop cluster
- Stockyard: 20Pbyte spinning disc (shared between all clusters)
- Ranch: 50Pbyte of tape

Wrangler



Clouds

- Rodeo: mostly internal use
- Chameleon: cloud research
- Jetstream: for educational use

Jetstream



Catapult

Microsoft FPGA machine learning platform



Stockyard

Mass storage

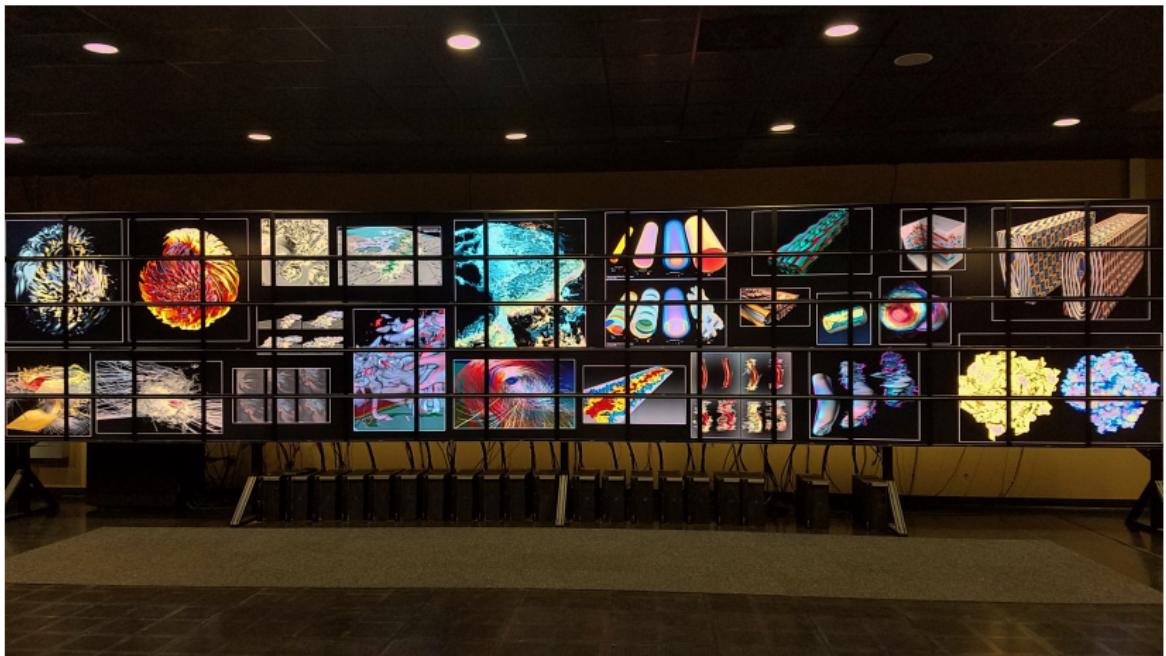


Visualization lab (POB)

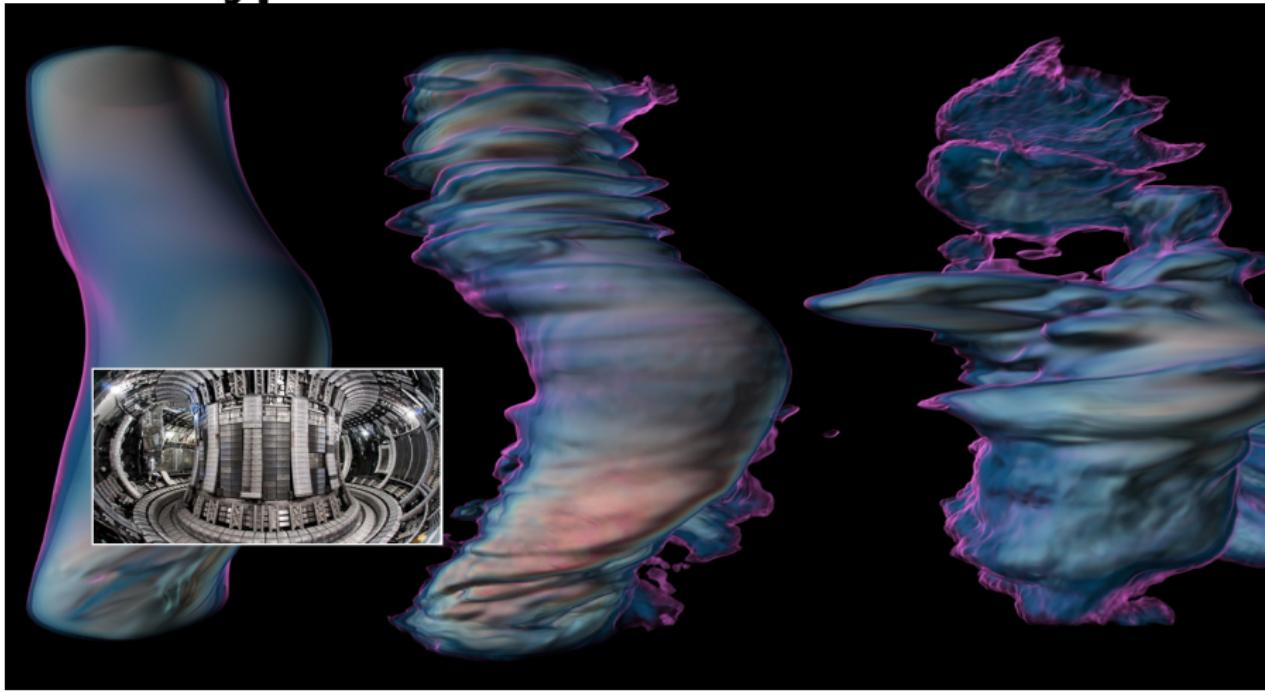


A picture is worth a thousand...

Our graphics people can help you understand your results (and sell your research) through high quality visualization.



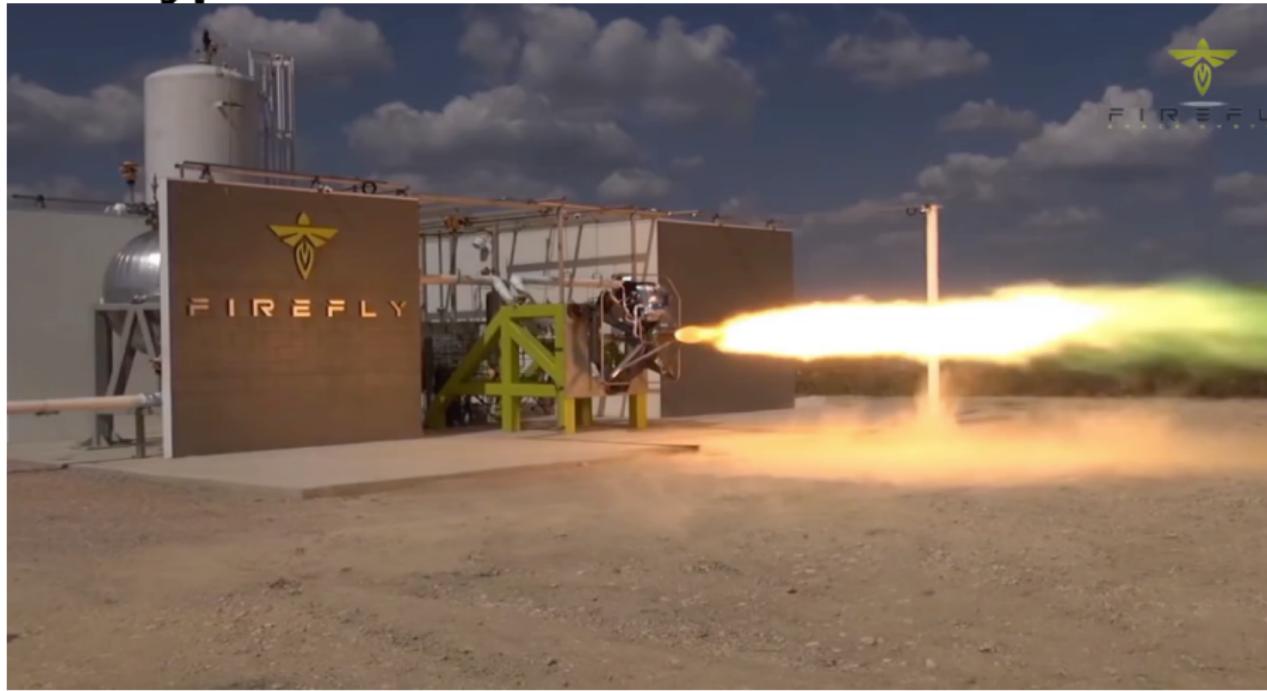
Typical academic customer



Non-typical academic customer



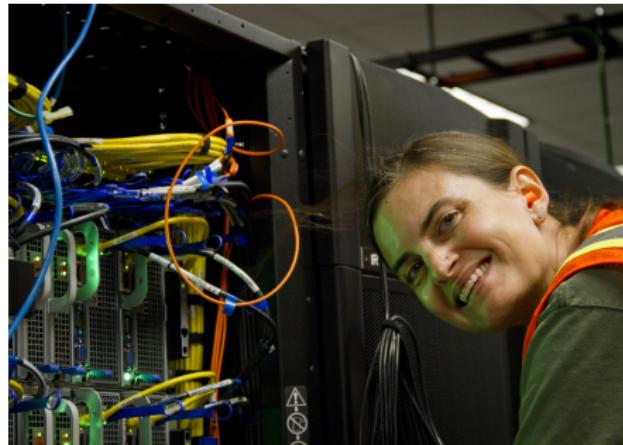
Typical non-academic customer



We're very hands-on



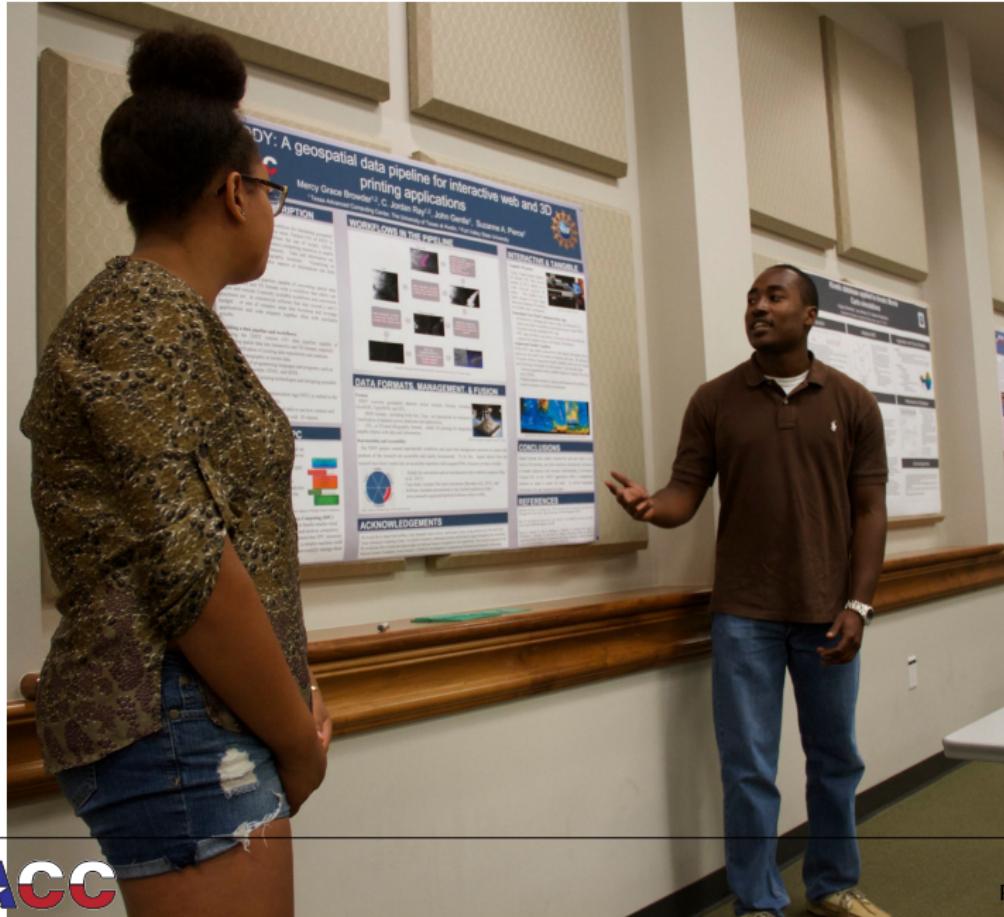
We're very hands-on



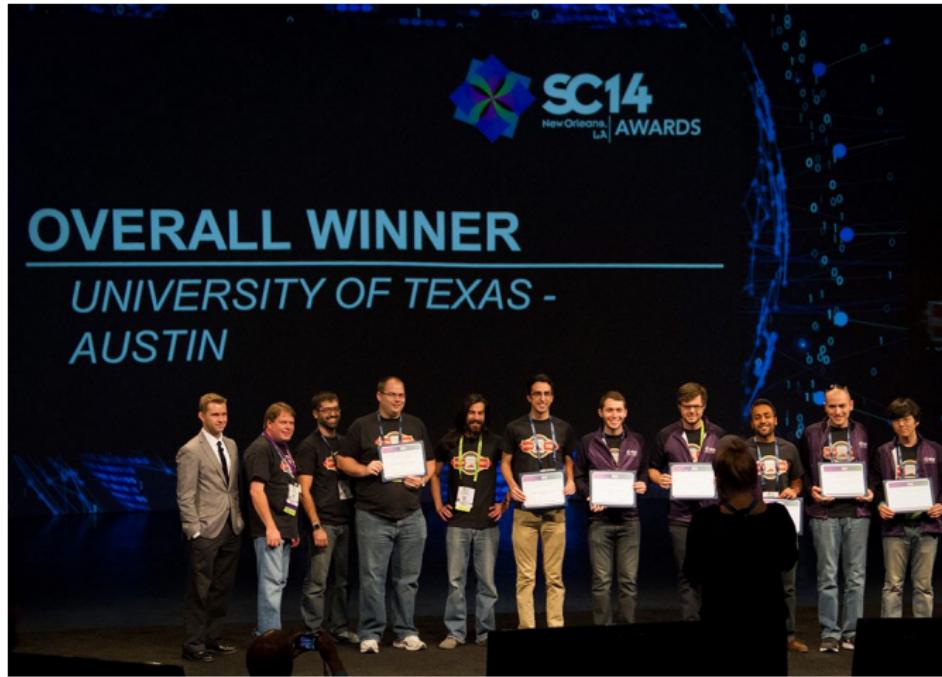
We're very hands-on



Student activities: REU



Student cluster competition



Outreach: Code at TACC



We keep growing



Our new building



TACC is a good place to be

