OAK RIDGE National Laboratory

OLCF-6 Updates

2023 OLCF User Meeting

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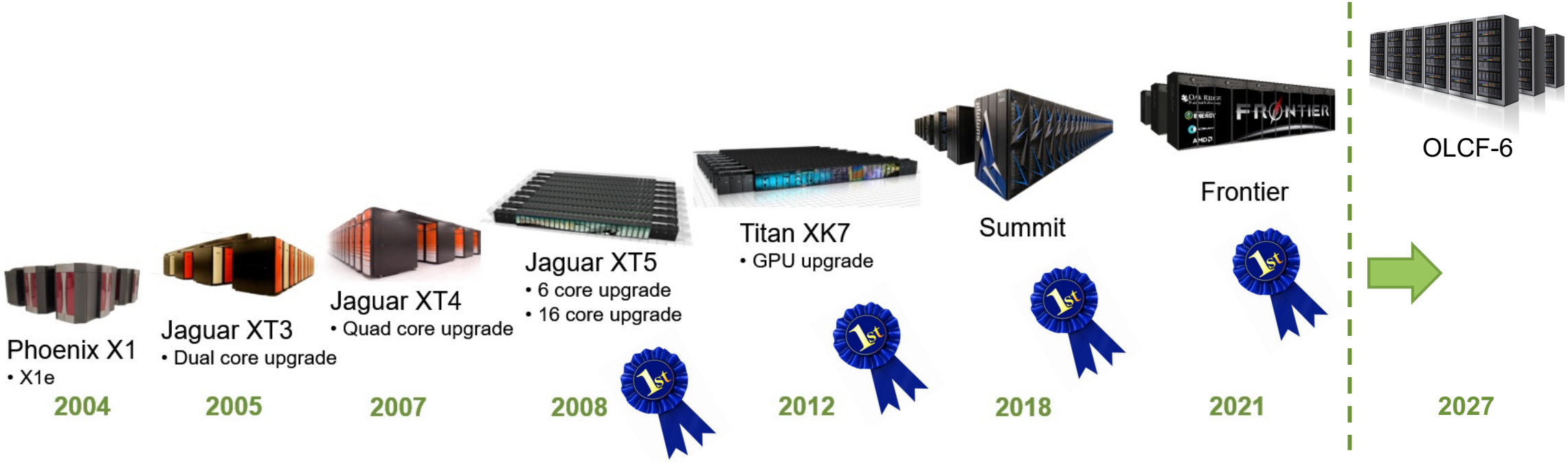
U.S. DEPARTMENT OF ENERGY

The OLCF has Delivered Seven Systems Since 2004

- Enabling high-impact, grand-challenge science and engineering
- Jaguar, Titan, Summit and Frontier all achieved #1 rankings on the Top500, with Frontier the nation's 1st exascale system
- OLCF-6 will be system number eight



Whither OLCF-6?

The Mission is Expanding!

The Mod/Sim user community will persist & grow

- ECP investments have primed the pump along with long history of successful OLCF projects
- We have never been in a better position to leverage extreme scale for mod/sim

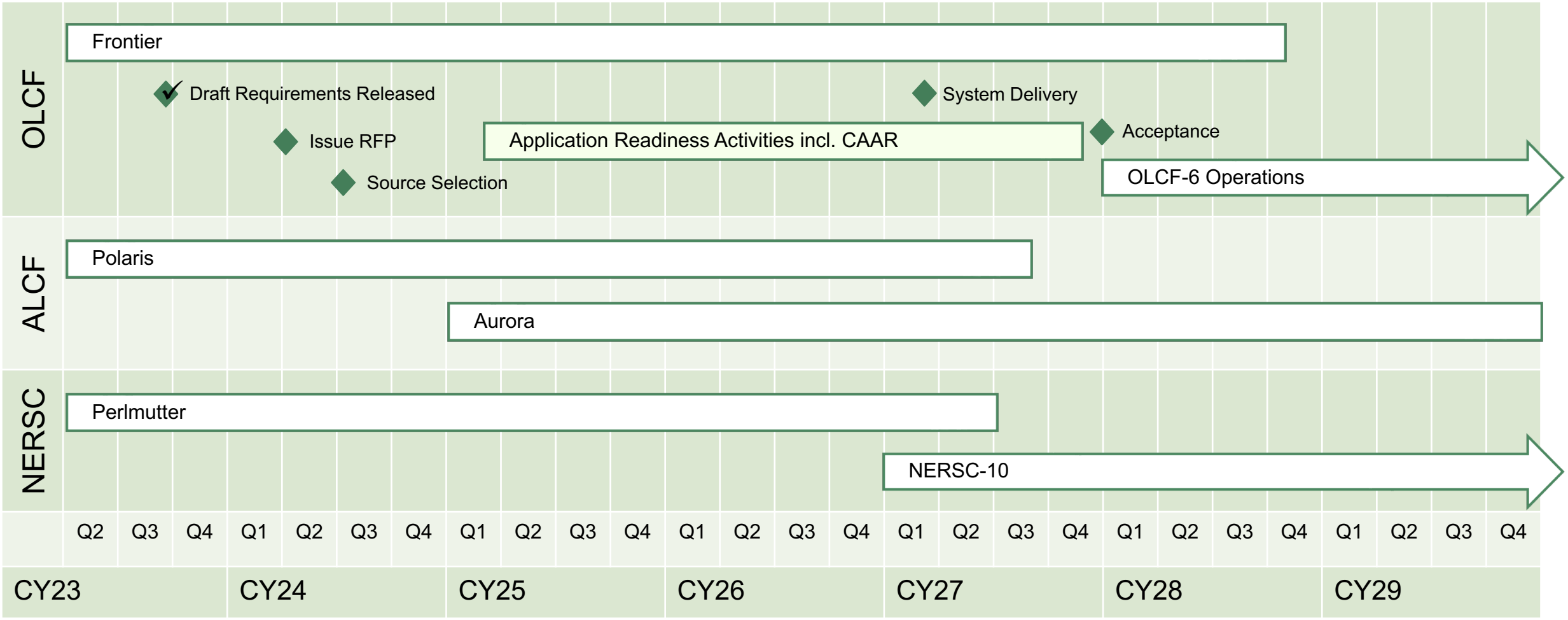
New integrated research infrastructure use cases

- Workflows; real time compute; data movement, storage & curation

AI for Science, Energy & Security

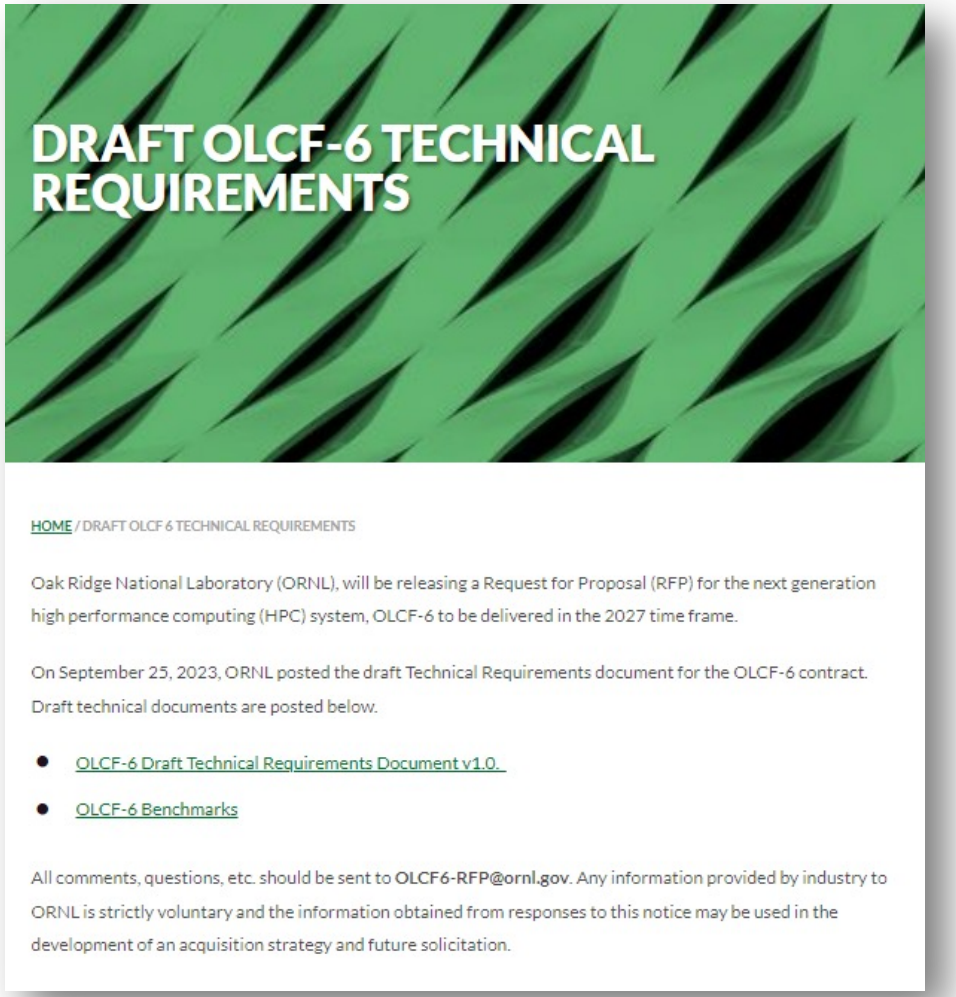
- Different weighting on balance between FLOPs, memory, BW & storage

OLCF-6 Timeline



Draft Technical Requirements Released on Sept 25

- The technical requirements also include the benchmark suite
- Intended to give vendors a preview of the OLCF-6 technical requirements
- We invite your feedback!



https://www.olcf.ornl.gov/draft-olcf-6-technical-requirements/

The Forecast is Partly Cloudy

"Supercomputing is the next wave of hyperscale"
– Niti Chappell, GM for Microsoft Azure

- We have been exploring how to integrate cloud into our offerings
- Hyperscalers and AI are converging with HPC
  - The hyperscalers are learning from the HPC field how to deploy massively interconnected systems
- OLCF-6 is taking cloud seriously
  - The RFP will be tailored to enable responses from cloud providers

What Can We Expect OLCF-6 to Look Like?

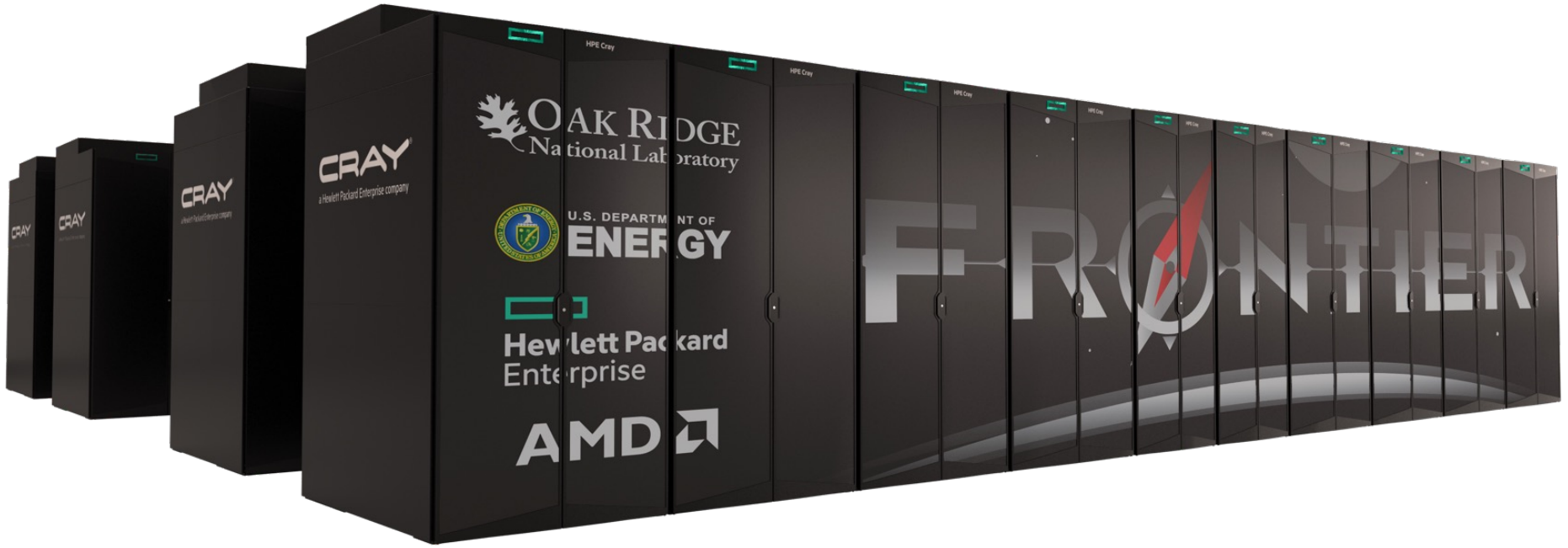
- What we are hearing from processor vendors:
  - Limited gains from new process nodes
    - ~15-20% compute performance iso-area
  - Most gains are from packaging (e.g., larger SoCs)
    - Expect boosts to memory bandwidth, memory capacity & FLOPs
  - And higher power
    - Trend is to higher power per socket
    - Limited performance improvement iso-power

Center for Accelerated Application Readiness (CAAR)

The primary OLCF program to achieve and demonstrate application readiness

- OLCF-6 will build on the successful CAAR experience from OLCF-3 (Titan), OLCF-4 (Summit), and OLCF-5 (Frontier)
- CAAR project resources
  - Dedicated collaboration with OLCF staff
  - Support and consultation from other project personnel, particularly from the Programming Environment and Tools area, and the vendor Center of Excellence
  - OLCF Postdoctoral fellows (both during application readiness and early science)
  - Allocations to available compute resources
- New OLCF-6 Emphasis on Science per joule: incentivizing energy efficiency

Questions?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