

ATPESC 2021 – Hardware

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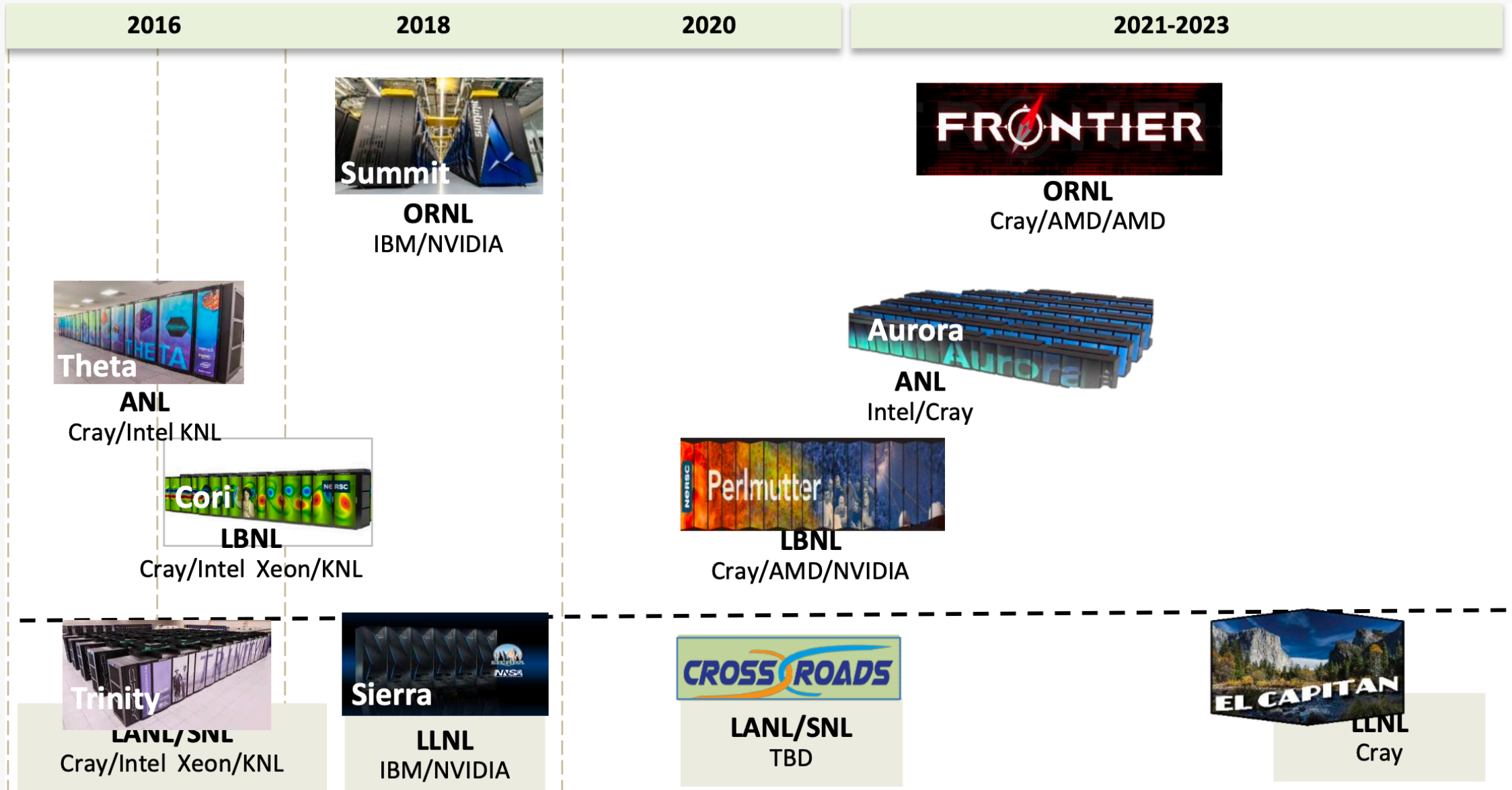
AGENDA

MONDAY, August 2, 2021

Track 1 – Hardware Architectures

9:00	Speaker check-in	
9:30	Introduction to Track 1 – Hardware Architectures	Kalyan Kumaran, ANL
9:45	Cerebras	Andy Hock, Cerebras
10:30	Frontier	Swaroop Pophale, ORNL
11:15	Break	
11:30	Groq	Dennis Abts, Groq Inc.
12:15 p.m.	Lunch	
1:15	Interconnects	Eric Borch, HPE Igor Gorodetsky, HPE
2:00	SambaNova	Urmish Thakker, SambaNova
2:45	Break	
3:00	Habana	Sree Ganesan, Habana
3:45	Perlmutter	Brian Friesen, LBNL
4:30	Aurora	Servesh Muralidharan, ANL
5:15	Quantum Computing	Yuri Alexeev, ANL

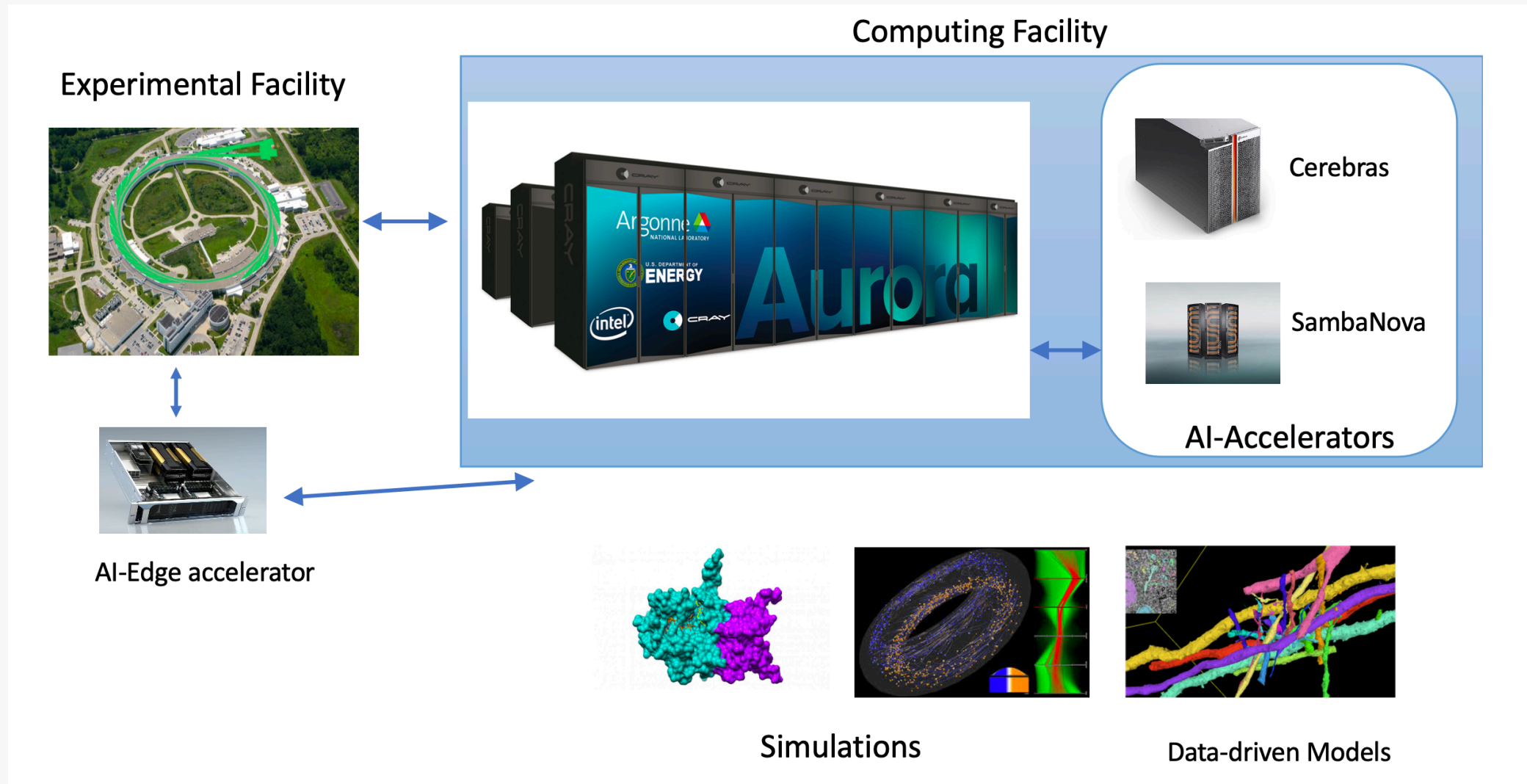
DOE HPC SYSTEMS



SURGE OF SCIENTIFIC MACHINE LEARNING

- Simulations / Surrogate models
 - Replace, in part, or guide simulation with AI-driven surrogate models
- Data-driven models
 - Use data to build models without simulation
- Co-design of experiments
 - AI-driven experiments

INTEGRATING AI SYSTEMS IN FACILITIES



CAPABILITIES OF AI SYSTEMS

- Software-driven reconfigurable dataflow architecture based on the application needs
- Custom hardware turned to accelerate core AI operations (e.g., Matrix multiplications)
- Accelerate training and inference phases, run large models

ML HARDWARE



Cerebras (CS-1)



Habana



Groq



SambaNova