



E4

COMPUTER
ENGINEERING

WHEN
PERFORMANCE
MATTERS

IBM AI Bologna - Anomaly detection in Finance & AutoAI

Fabrizio Magugliani, Strategic Planning and Business Development

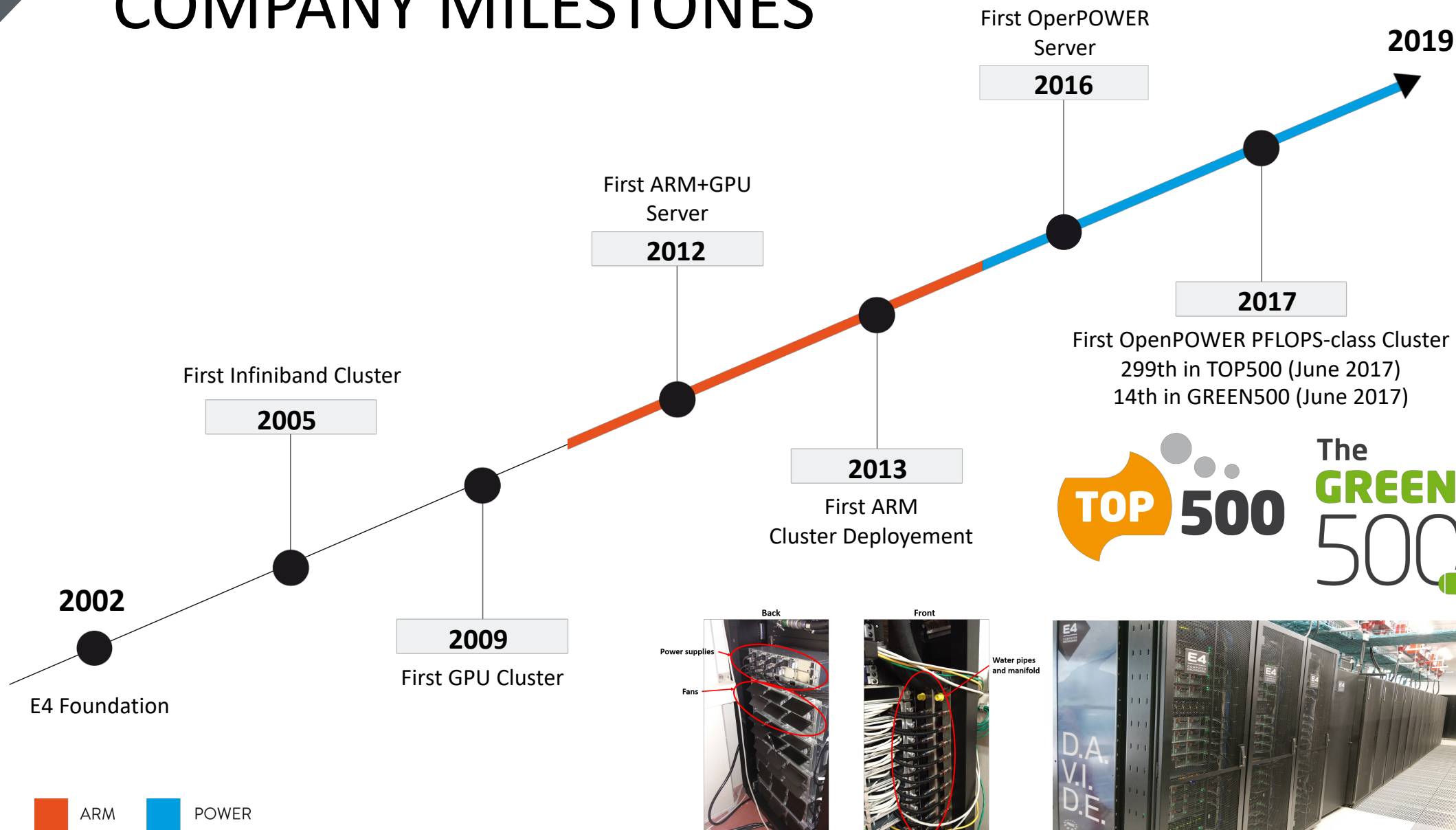
Scandiano, Dec 9th 2019

THE COMPANY

Since 2002, E4 Computer Engineering has been innovating and actively encouraging the adoption of new computing and storage technologies. Because new ideas are so important, we invest heavily in research and hence in our future. Thanks to our comprehensive range of hardware, software and services, we are able to offer our customers complete solutions for their most demanding workloads in: HPC, Big-Data, AI, Deep Learning, Data Analytics, Cognitive Computing and for any challenging Storage and Computing requirements.

E4. When Performance Matters.

COMPANY MILESTONES



D.A.V.I.D.E. SUPERCOMPUTER

(Development of an Added Value Infrastructure Designed in Europe)

Original E4 design based on OpenPOWER specifications

Partners engaged to complement/supplement E4's expertise

liquid cooling: asetek

power management: University of Bologna (UniBO)

BIOS: IBM

Co-design process:

- Ecosystem is key
- PRACE (purchasing entity) monitored the design and deployment process
- CIENCA (hosting entity) was involved in the design, testing and deployment process (sysadmins, users, facilities, support)
- relentless dialogues with the stakeholders

**D.A.V.I.D.E.
SUPERCOMPUTER**
(Development of an
Added
Value
Infrastructure
Designed in
Europe)



D.A.V.I.D.E. SUPERCOMPUTER

(Development of an Added Value Infrastructure Designed in Europe)

OCP form-factor compute node
based on IBM Minsky

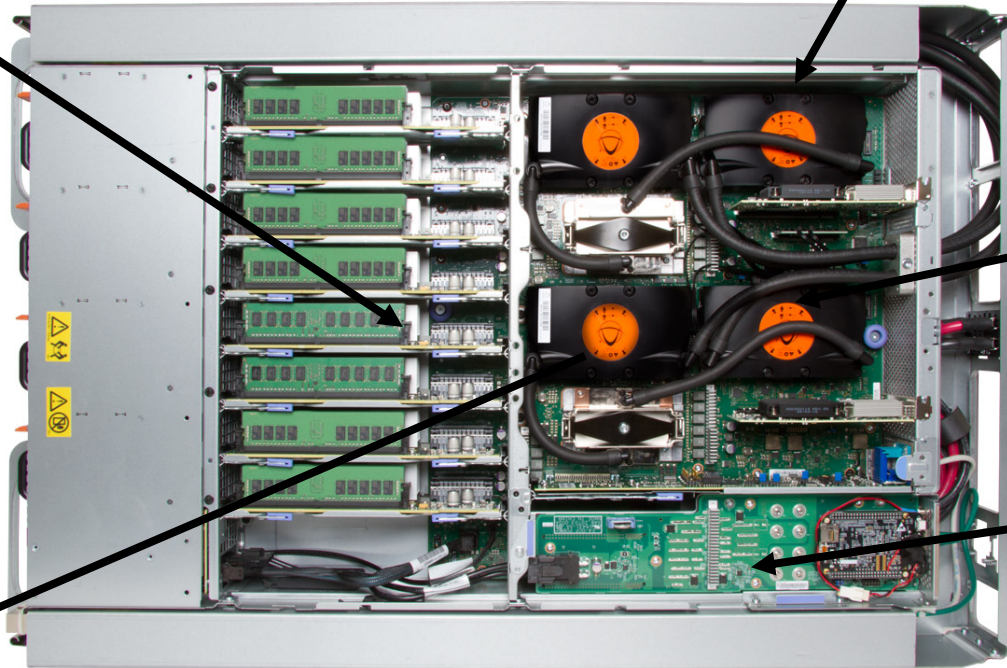
4x  **NVIDIA** Tesla P100 HSMX2

2 x  **POWER8** with NVLink

2xIB EDR

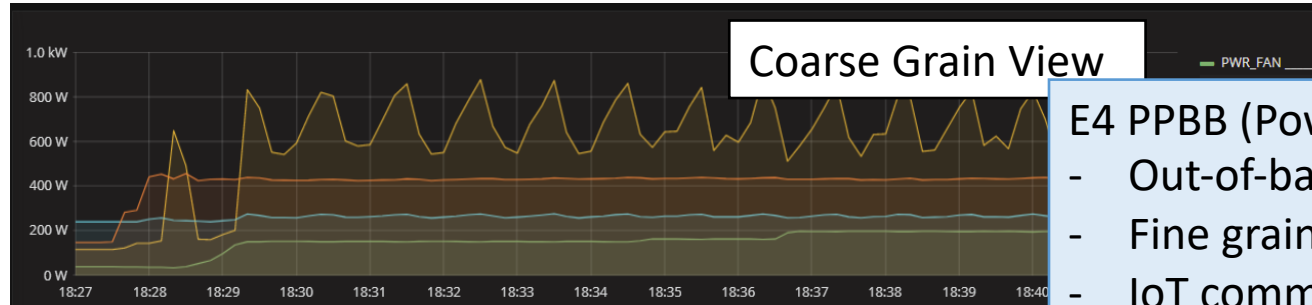
BusBar

E4/Bologna University
POWER MANAGEMENT
COMPONENTS



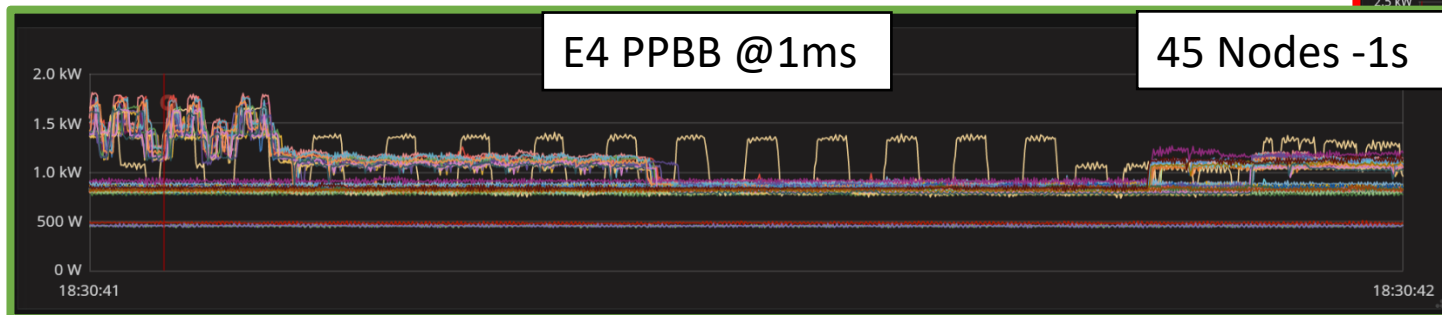
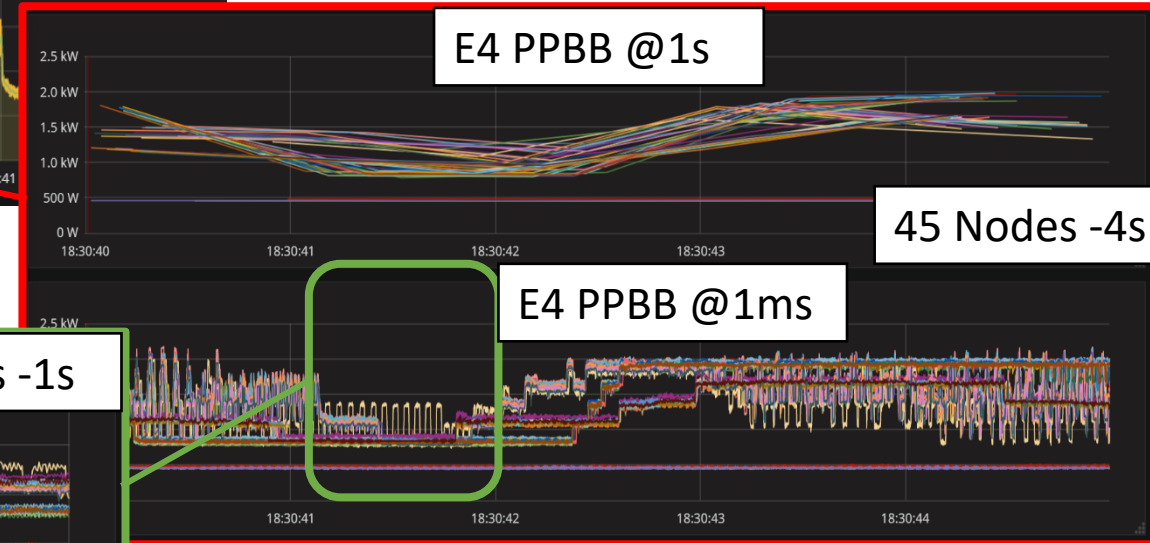
LIQUID COOLING

KEY ENABLING TECHNOLOGIES



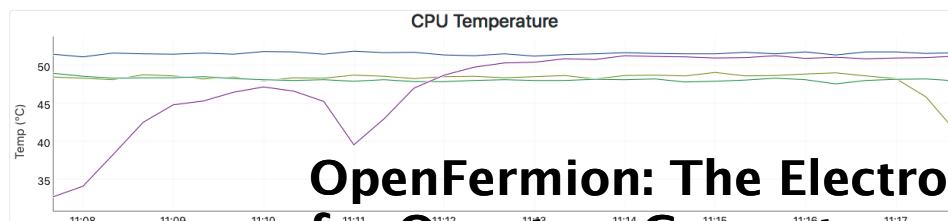
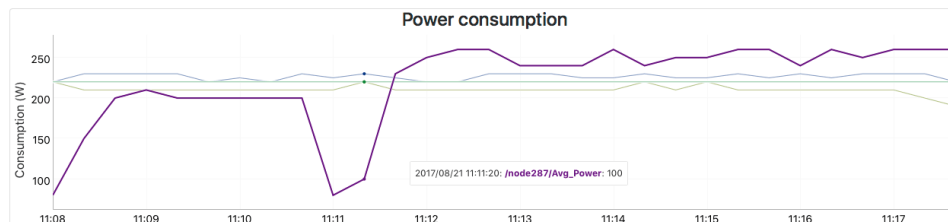
E4 PPBB (Power and Performance «Black Box»)

- Out-of-band => Zero overhead
- Fine grain => down to ms scale
- IoT communication technology => scalable
- Time synchronous (NTP, PTP)



KEY ENABLING TECHNOLOGIES

Job Info Performance **Energy**



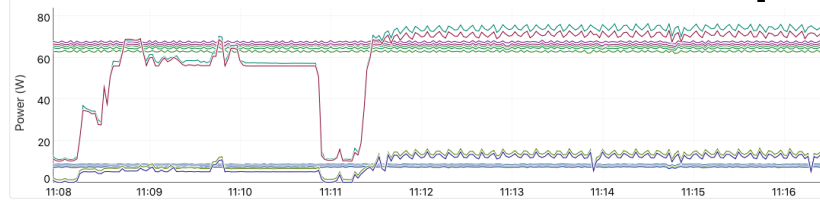
OpenFermion: The Electronic Structure Package for Quantum Computers

Job Info Performance **Energy**

Job ID: **XXXXXXXXXX** | User ID: **XXXXXXXXXX** | Account name

Times

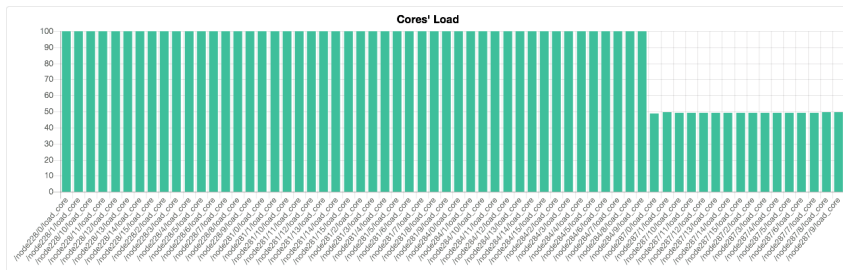
Duration: 9 mins 59 secs
Queue time: 11:07:55 21/08/17
Start time: 11:07:55 21/08/17
End time: 11:17:54 21/08/17



Overview 3D View

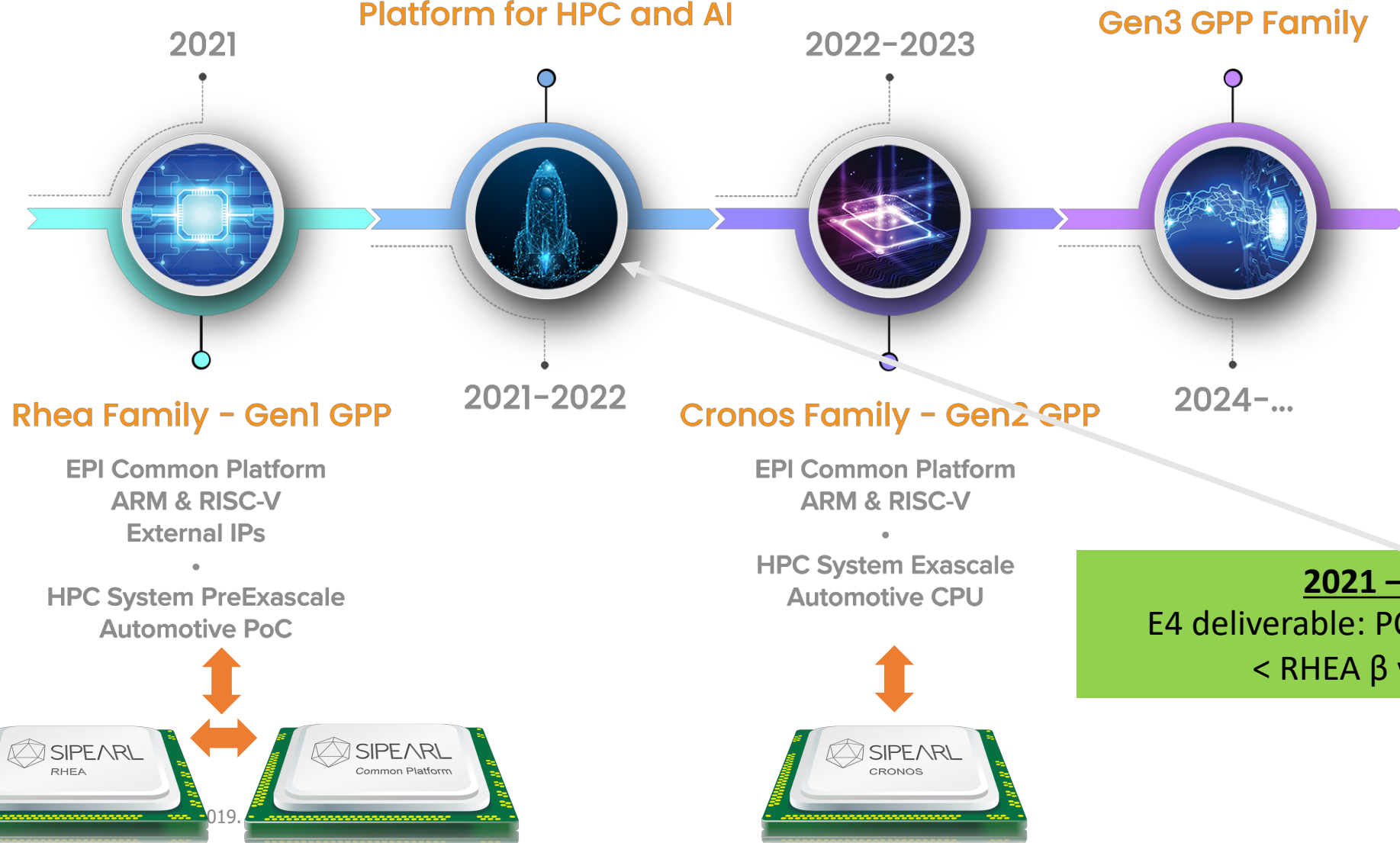


Status: **Finished** | Average Power: **684.4 W** | Sys Utilization: **77.4 %** | CPUs Utilization: **92.34 %** | Average Temperature: **46.24 °C**



ROADMAP

EPI IP's Launch Pad
&
Pan European Research
Platform for HPC and AI



A4 & AI



E4 & AI

Leverage the features of the best-in-class tools: PowerAI

Close cooperation with partners

Design the best solution

Learn from the process

Focus on the opportunities enabled by EPI