

The logo consists of the letters 'E4' in a bold, white, sans-serif font. A thin white horizontal line is positioned directly below the 'E4' text.

COMPUTER
ENGINEERING

COMPANY OVERVIEW

Q2 2023



E4 Computer Engineering designs and manufactures highly technological solutions for HPC Clusters, Cloud, Data Analytics, Artificial Intelligence and Hyper-Converged infrastructure for the Academic and Industrial markets. We have been collaborating for years with the main research centers at national and international level (Cineca, CERN, ECMWF, LEONARDO) and we are involved in national and European projects in the HPC and AI fields (EuroHPC JU EPI, EUPEX, Horizon Europe, KDT)



Through the sister company **E4 Analytics**, E4 works to integrate **Data Science** in organizations that undertake the **Digital Transformation** of their business to improve products/processes and optimize resources. We operate at the intersection between business and technology, supporting the customer in the adoption of AI solutions: with E4 Analytics, company data becomes a **resource for creating value**.



Each E4 solution is **UNIQUE**, like every one of our customers; **TESTED** in every single component; **VALIDATED** to verify the actual performance of each system and **SERVICED** by technicians who provide assistance in the most extensive and complex Italian and European computing infrastructures

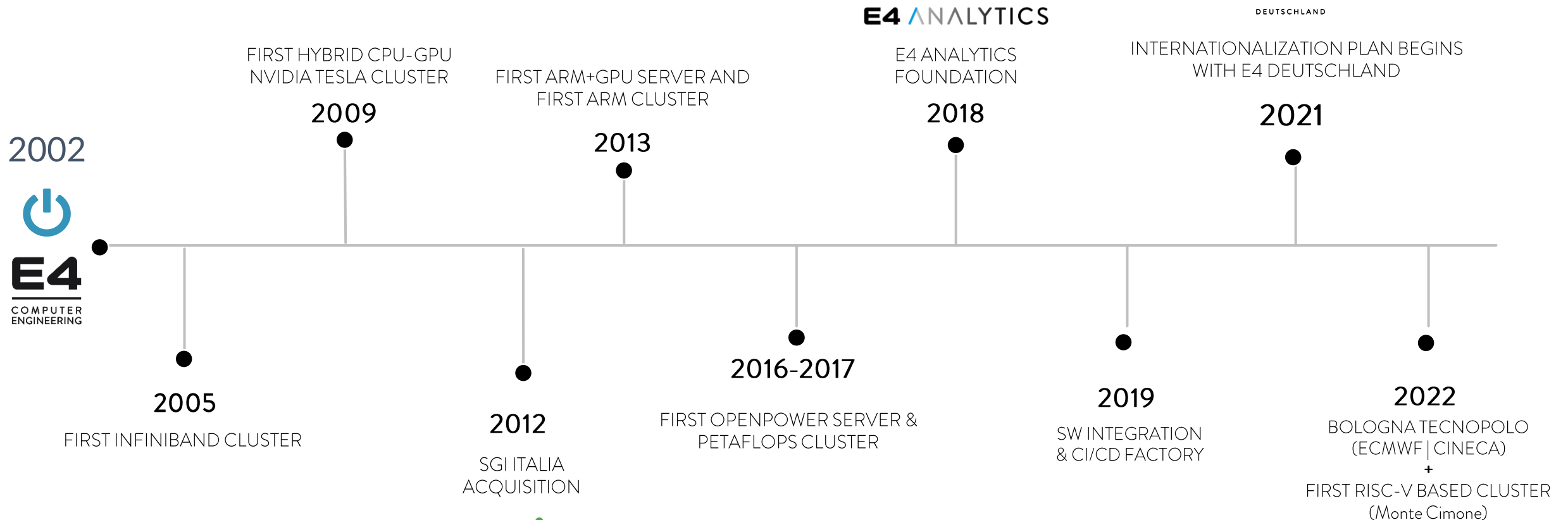
ACTUALLY... YOU ALREADY KNOW US



INFN & CERN AWARD (2012-2014)

Award of excellence in industrial collaboration for the ATLAS and CMS experiments at the Large Hadron Collider at CERN within the project of the discovery of the Higgs boson

E4 INNOVATION HISTORY



299° IN TOP500 (JUNE 2017)
14° IN GREEN500 (JUNE 2017)

WHERE WE SELL



EDUCATIONAL



FINANCE



PHARMA



SERVICE
PROVIDERS



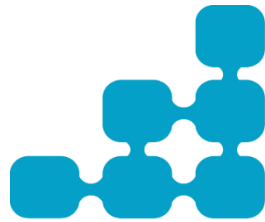
GOVERNMENT

SOLUTIONS PORTFOLIO



MEDOOZA

HIGH PERFORMANCE
COMPUTING



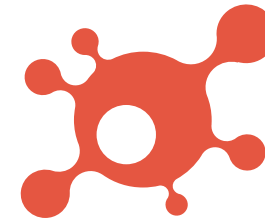
KAPTAIN

CONTAINER
INFRASTRUCTURE



GAIA

GPU ARTIFICIAL
INTELLIGENCE APPLIANCE



URANIA

CLOUD NATIVE
DATA SCIENCE



FLUCTUS

HIGH PERFORMANCE
CLOUD

VSTONE

CONVERGED
VIRTUALIZATION

VSHUFFLE

HYPERCONVERGED
VIRTUALIZATION

TWINSTONE

VIRTUALIZATION
BACKUP & DR SOLUTION

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TECH DIVISION

Q2 2023



AGNOSTIC APPROACH

We support the widest possible range of hw/sw components and operating systems, without limits, restrictions or commitments to any supplier at any level: CPU (x86, ARM, RISC, POWER), accelerators (GPU, FPGA), high-performance storage and networking as well as innovative disruptive technologies.



LONG-TERM EXPERIENCE

E4's technical staff boasts more than twenty years of practice operating in the most complex Italian and European IT infrastructures. This expertise achieved by working day by day on the field allows us to offer highly performing, reliable and sustainable infrastructures.



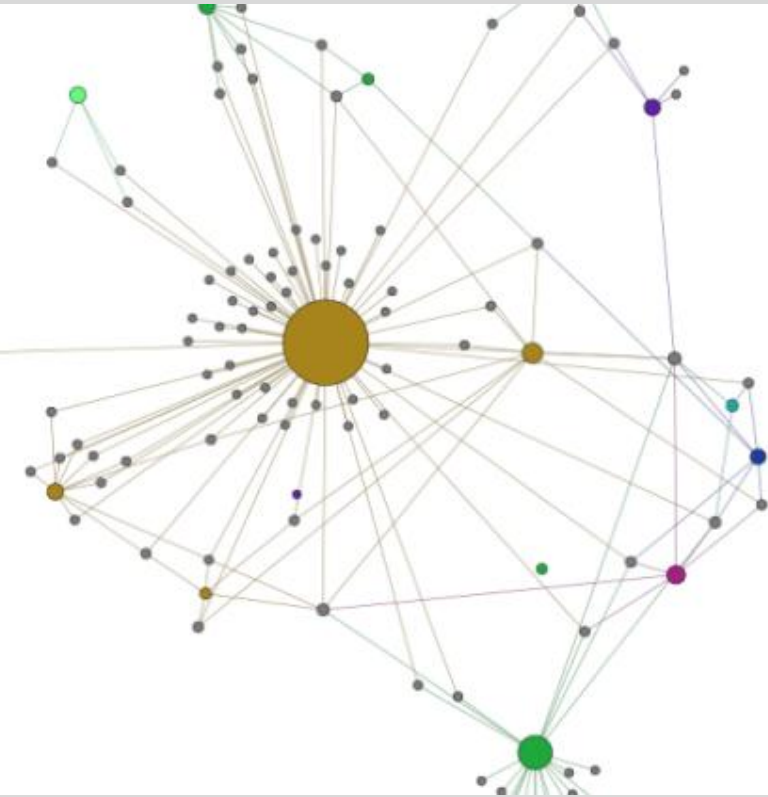
CONTINUOUS INNOVATION

The R&D team is always looking for innovative and disruptive technologies, regardless of mainstream market trends or pressures from manufacturers: our mission is to pursue full customer satisfaction using cutting-edge solutions.



E4 R&D PROCESS

- E4 does not rely on data declared by third parties but proceeds by carrying out in-house in-depth performance tests of which it certifies and shares the results with customers and project partners.
- E4 always keeps a high level of control over the real performance of components and systems, which allows the manufacturer of each technology to be involved in order to improve the proposed solution.
- The R&D team preventively checks the overall quality of the products used, the effectiveness of the management and integration tools, as well as the effective energy efficiency of the equipment.

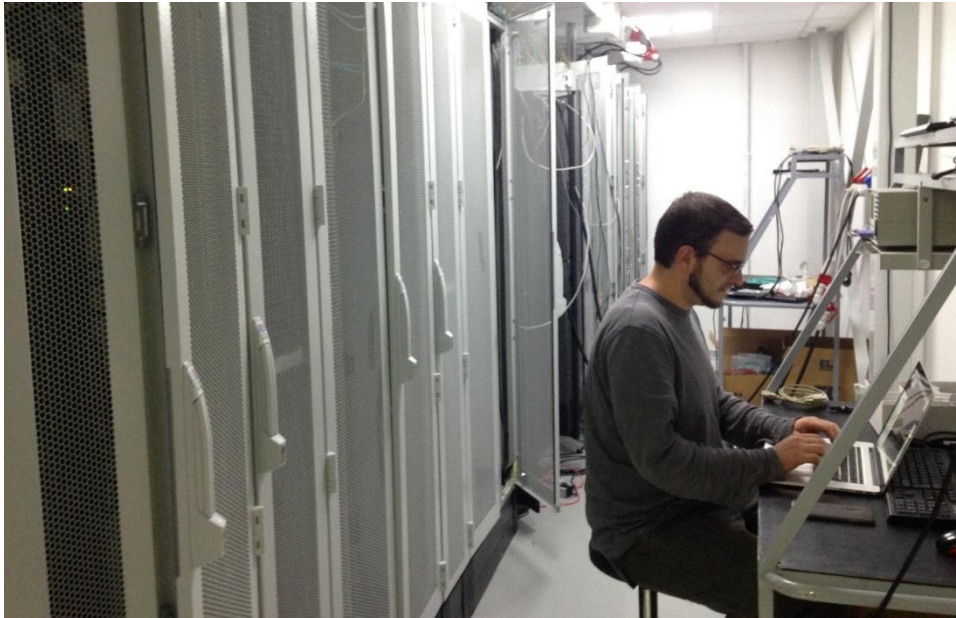




- Scout, select, design, test, integrate, configure, optimize, validation & verification and install the **full stack of HW & SW** components and infrastructures
- Consider the **product development** as a never-ending process, accept failures but strive for success
- Apply **co-design** within a continuously changing scenario
- Agnostic approach: supports the widest possible range of hw/sw components and operating systems

E4 ASSETS | R&D LAB

- 30 m²
- temperature 27/30°C
- 6 x Rack 19'
- 4 x Chiller 22 kw
- Active Power available ~100 kw
- Hardware Management via OpenDCIM
- open source



REMOTE ACCESS AVAILABLE ON DEMAND

ITALIAN – SOUTH EUROPEAN SUPPORT L1-L2

- We have great experience with traditional hardware for HPC and storage systems (20 years)
- We provide support L1-L2 for Hardware and Software in HPC environment:
 - SW side: SLURM, PBS, Lustre, BeeGFS
 - HW side: ENI, Pirelli | Tecnopolo: ECMWF, LEONARDO,...



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SUCCESS STORIES

Q2 2023

E4 PROTOTYPE | MONTE CIMONE RISC-V CLUSTER (2022)

E4 is at the forefront of the adoption of RISC-V, E4 is a strategic Member of the RISC-V Foundation

- The accelerator of EPI/SGA2
- In-house R&D
- First real HPC cluster
- Early adopters as main target

Monte Cimone was built by E4 and operated by the Università di Bologna

<https://www.e4company.com/en/2021/12/e4-announces-breakthrough-innovative-technologies-spanning-silicon-software-and-power-management-tools-integrated-in-the-risc-v-based-monte-cimone-cluster/>

Preprint “Monte Cimone: Paving the Road for the First Generation of RISC-V High-Performance Computers” available online:

<http://arxiv.org/abs/2205.03725>

Paper: <https://ieeexplore.ieee.org/document/9908096>



D.A.V.I.D.E. – CINECA

“Design of an Energy Aware Petaflops Class High Performance Cluster Based on Power Architecture”

978-0-7695-6149-3/17 \$31.00 © 2017 IEEE

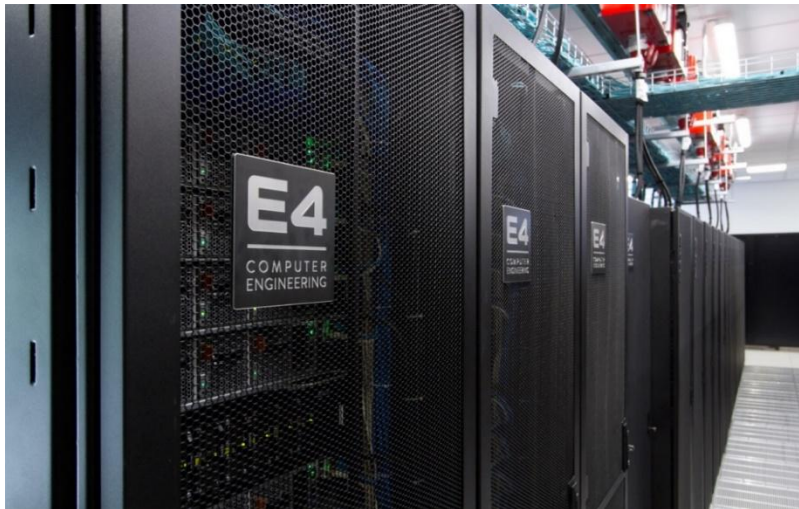
DOI 10.1109/IPDPSW.2017.22

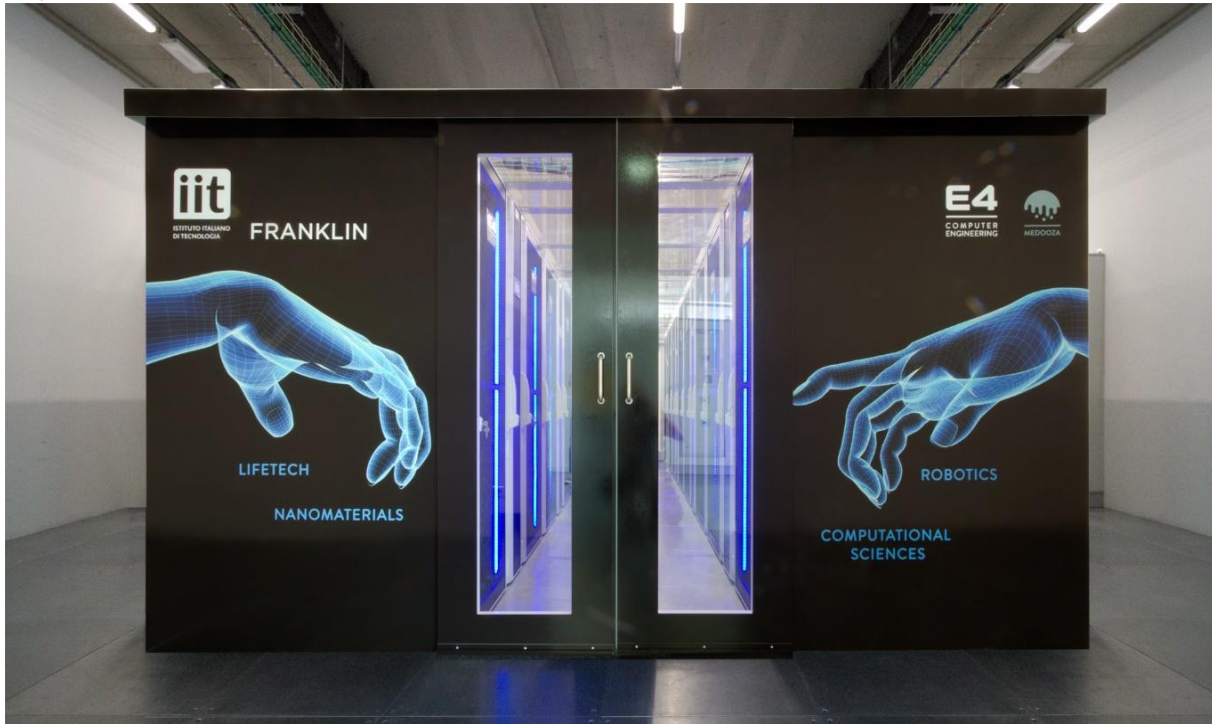
“The D.A.V.I.D.E. Big-Data-Powered Fine-Grain Power and Performance Monitoring Support”

CF '18, May 8–10, 2018, Ischia, Italy

© 2018 Association for Computing Machinery. ACM ISBN 978-1-4503-5761-6/18/05... \$15.00

<https://doi.org/10.1145/3203217.3205863>





ISTITUTO ITALIANO DI TECNOLOGIA (IIT) GENOVA



- GPU Cluster and File systems in 16 Racks with LCP liquid cooling
- Special design with energy and temperature management tools
- Tailor-made Infrastructure integrated with home-designed Software from Uni. Bologna

E4 | SPECIAL DEPLOYMENT AND FULL RANGE SUPPORT (2021 – ongoing)



Engagement and Collaboration with ATOS,
with 3 E4 full-time staff on-site daily

ECMWF – Tecnopolo di Bologna



E4 MAJOR INSTALLATION



E4's engineers work inside the Bologna Technopole, installing, maintaining and managing LEONARDO, the fourth fastest supercomputer in the world.

LEONARDO – CINECA @
BOLOGNA TECHNOPOLE - 2022



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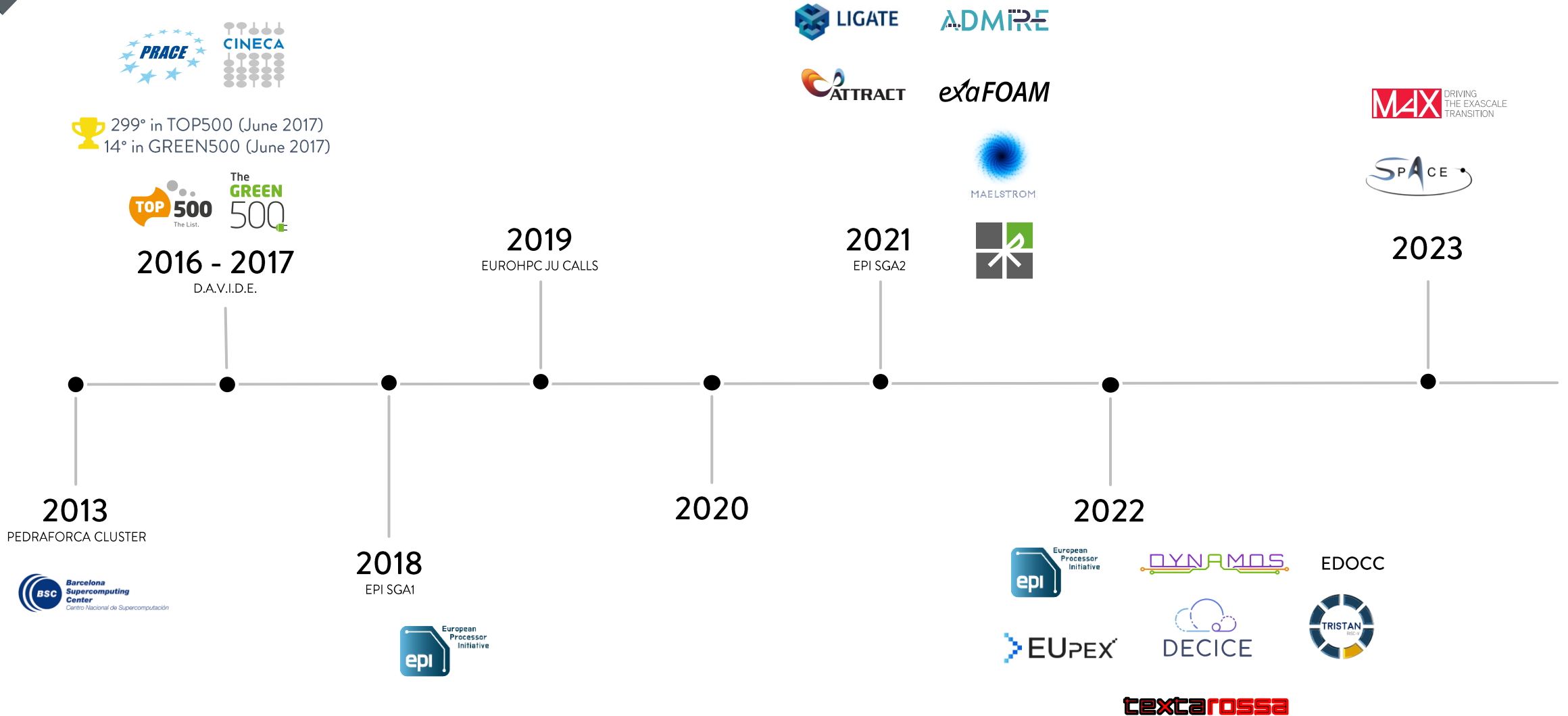
COMPUTER
ENGINEERING

EUROPEAN PROJECTS

2023 Q2

- E4 actively participates in multiple European projects focused on High Performance Computing (**HPC**).
- These projects provide E4 with opportunities to collaborate with **national and international institutions and companies**.
- Many of these European projects receive support from the **EuroHPC Joint Undertaking** (JU).

EU PROJECTS



A GROWING & WINNING TEAM



EMILIAN ENTHUSIASM | EUROPEAN EXCELLENCE

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**GRAZIE
THANK YOU**



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