



**COSMA8 :**  
The largest HPC system in the  
country\*

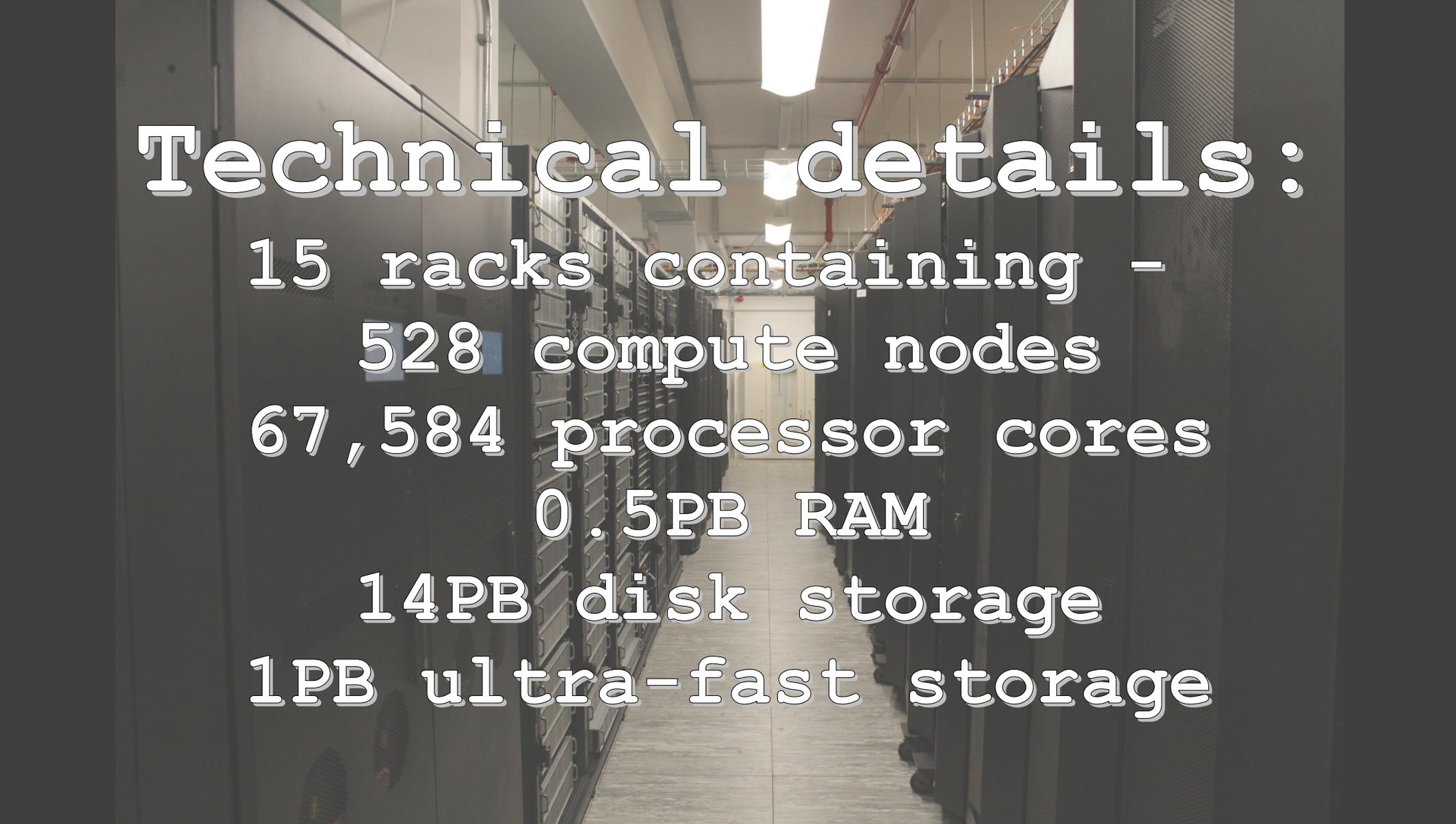


\*With some caveats

- for Academic research
- by CPU core count
- in England

A photograph of a server rack in a data center. The servers are black and arranged in a row. The text is overlaid on the image in a white, outlined, monospace font. The text reads: "COSMA8 :  
A highly capable  
system for memory-  
intensive workloads".

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# Technical details:

15 racks containing -

528 compute nodes

67,584 processor cores

0.5PB RAM

14PB disk storage

1PB ultra-fast storage

# The Ecosystem

includes:

Login nodes

Data transfer nodes

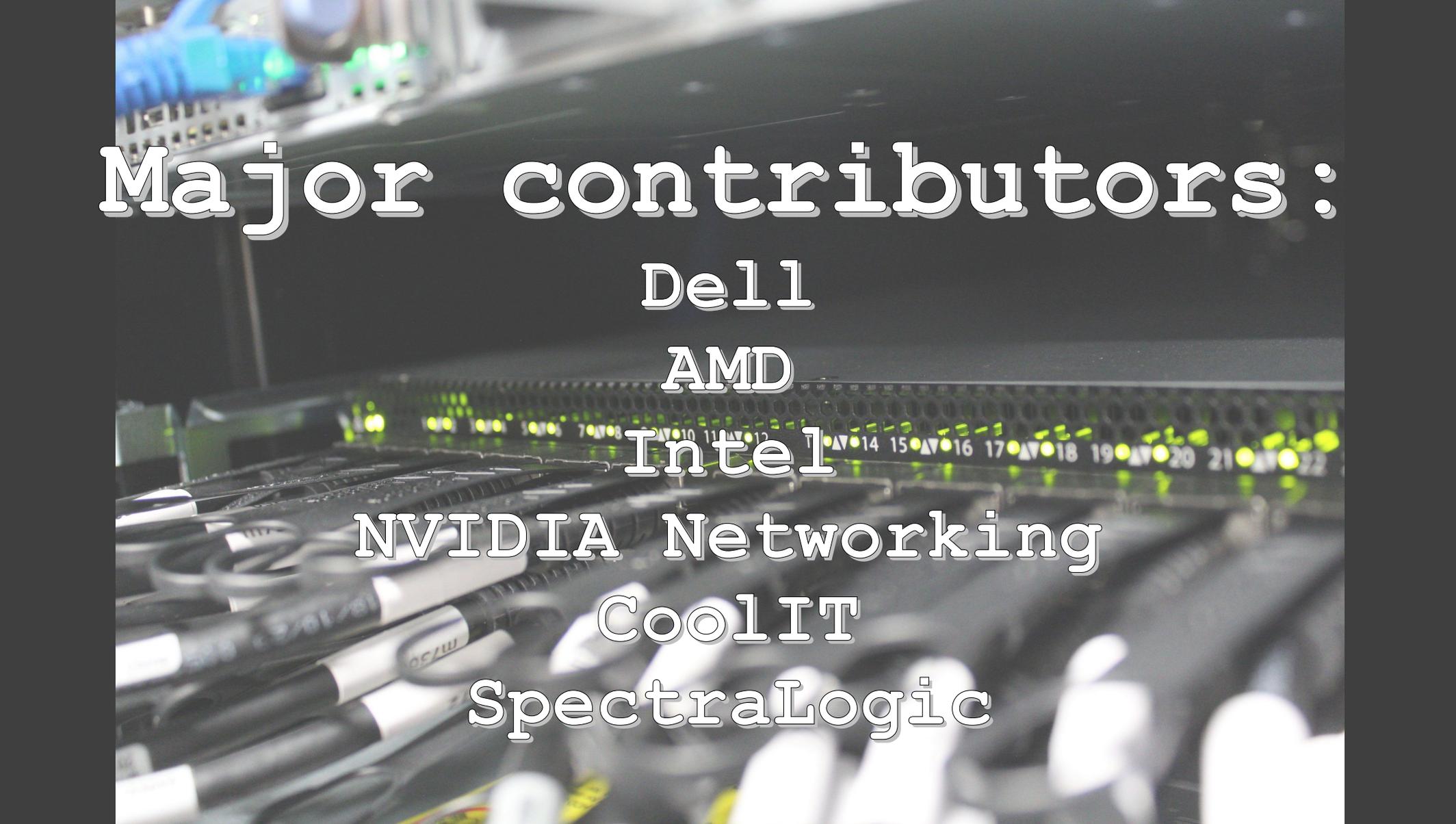
Archival nodes

Ultra-high-RAM nodes

GPU nodes (AMD and NVIDIA)

Technology dev nodes

Software services (e.g. Jupyter)

A server rack with network cables and glowing green lights. The background is a server rack with network cables and glowing green lights. The text is overlaid on the image.

Major contributors:

Dell

AMD

Intel

NVIDIA Networking

CoolIT

SpectraLogic

A new system - with a  
long life

Already scientifically  
productive

Technical case developed in 2014

Prototype system in 2020

Phase 1 in 2021

Completion in 2023



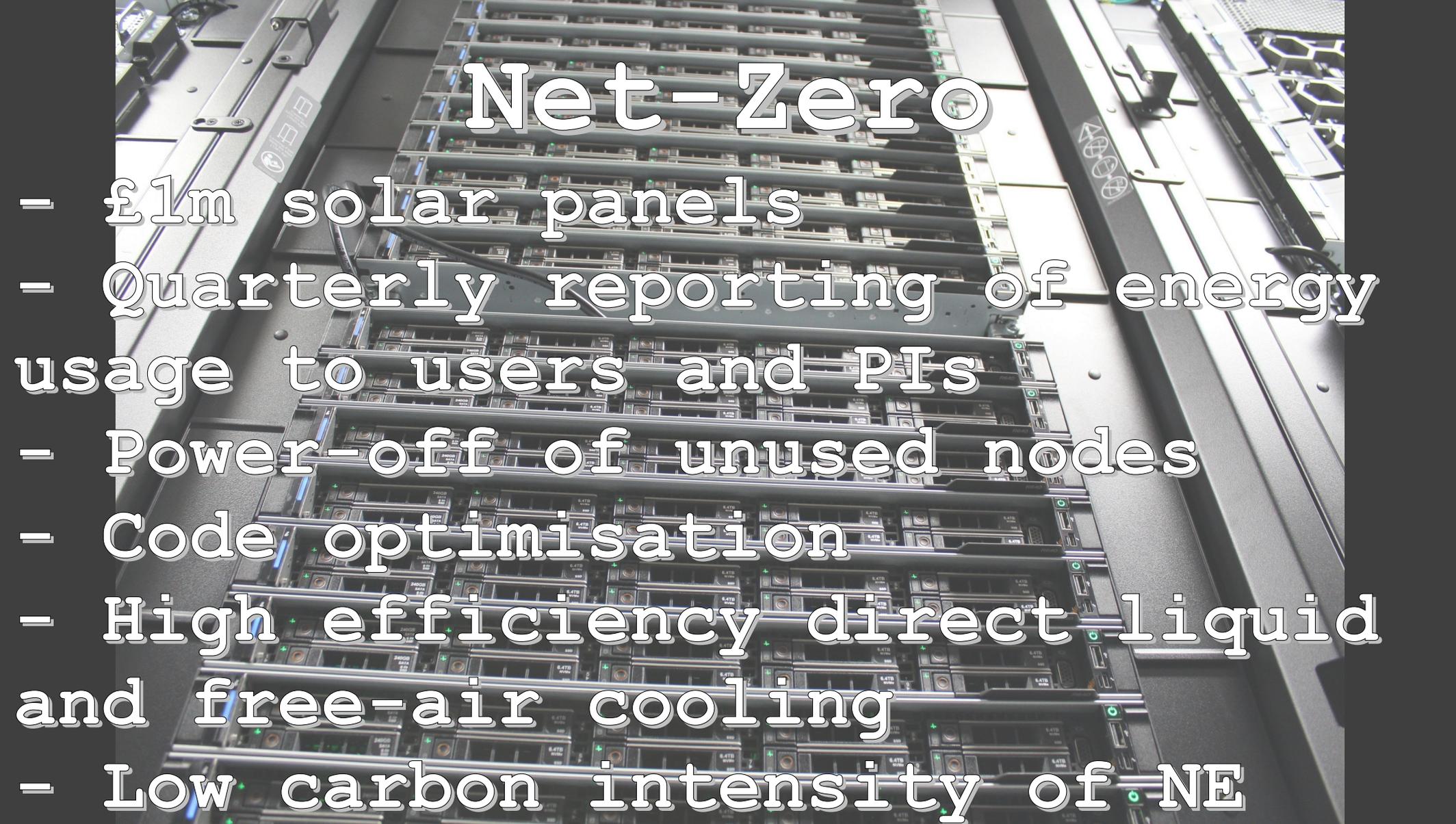
The COSMA8 success:

Exploratory development

Prototyping of high-risk  
components

Bespoke design and self-build

Cost effectiveness



# Net-Zero

- £1m solar panels
- Quarterly reporting of energy usage to users and PIs
- Power-off of unused nodes
- Code optimisation
- High efficiency direct liquid and free-air cooling
- Low carbon intensity of NE

# The future: COSMA9

- DIRAC-4 system - science case being written
- Site improvements required
- Input power (coupled with buildings)
- Heat reuse: Integrated planning