

22 e 23
OUTUBRO

encontro de computação avanzada 2025



Universidade de Aveiro,
Edifício da Reitoria

FCCN | fct

CNCA

universidade de aveiro
theoria poiesis praxis

Parceiro:

comudel

Dias de Sousa
INSTRUMENTAÇÃO ANALÍTICA E CIENTÍFICA, S.A.

Apoios:

AI Factory

EUROCC PORTUGAL

EuroHPC
Joint Undertaking

PRR
Plano de Recuperação
e Resiliência

REPÚBLICA
PORTUGUESA

Financiado pela
União Europeia
NextGenerationEU



Introduction to HPC

Workshop

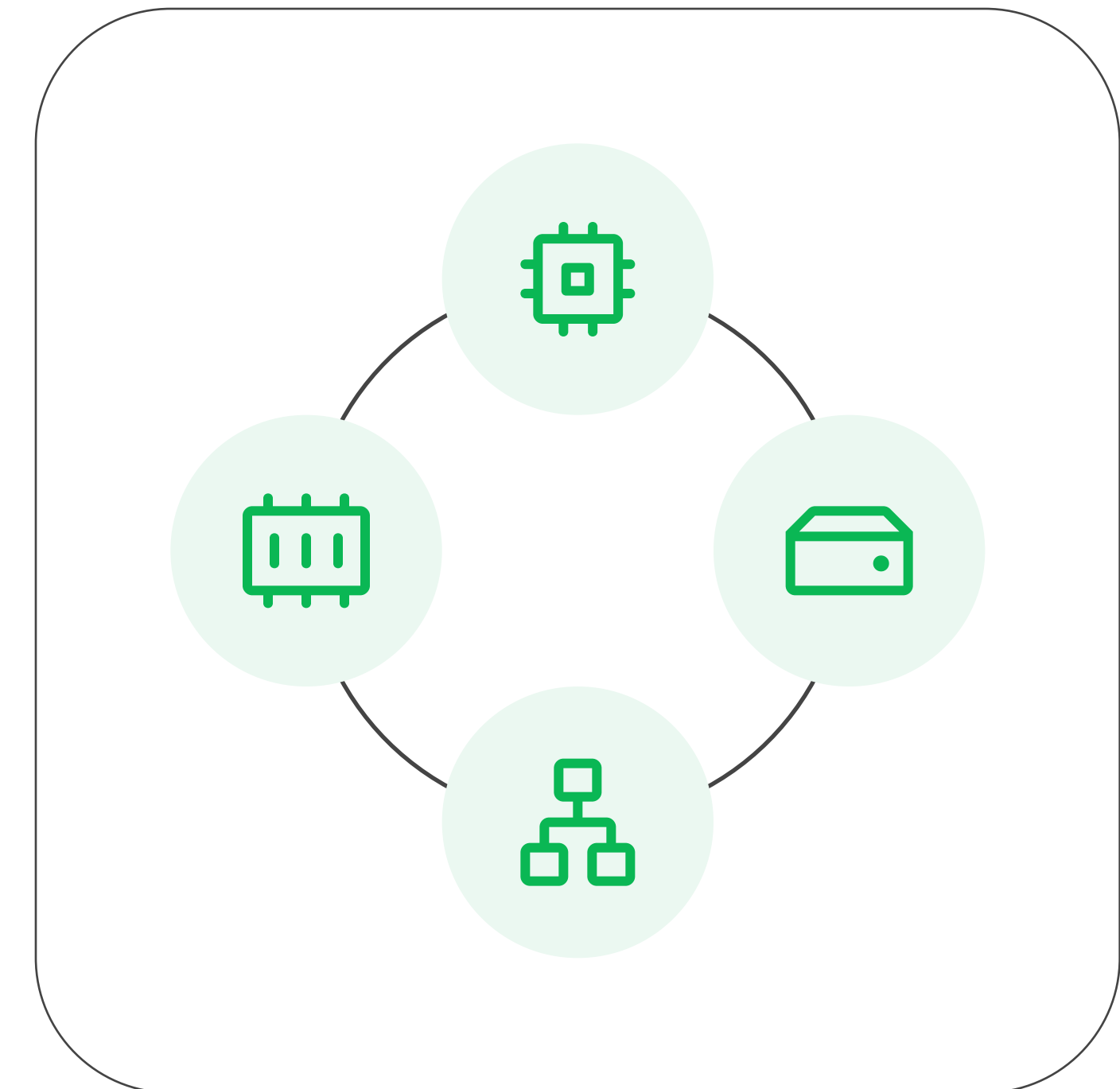
High Performance Computing

What is it?

High performance node network

In a real-life analogy, a kitchen with multiple ovens & stoves can deliver the same number of meals in a much faster way than a traditional one.

-  Higher performance
-  Scalability & parallelism
-  High availability & resilience
-  Faster algorithm resolution
-  Tech evolution



High Performance Computing

Usage examples

Artificial Intelligence

Simulations

Astronomy

Fraud detection

Meteorology

Autonomous driving

Supercomputers

Augmented reality

Medications

Vaccines

Cure for diseases

Biomedicine

Molecular modeling

Physical systems

Algorithms

EuroCC2 × UA

HPCvLAB@CVA-UA

EU-funded project
Integration into RNCA
Support for researchers
Assistance in program adaptation

✉ ieeta-hpc@ua.pt

🌐 eurocc2.web.ua.pt



300k
CPU hours



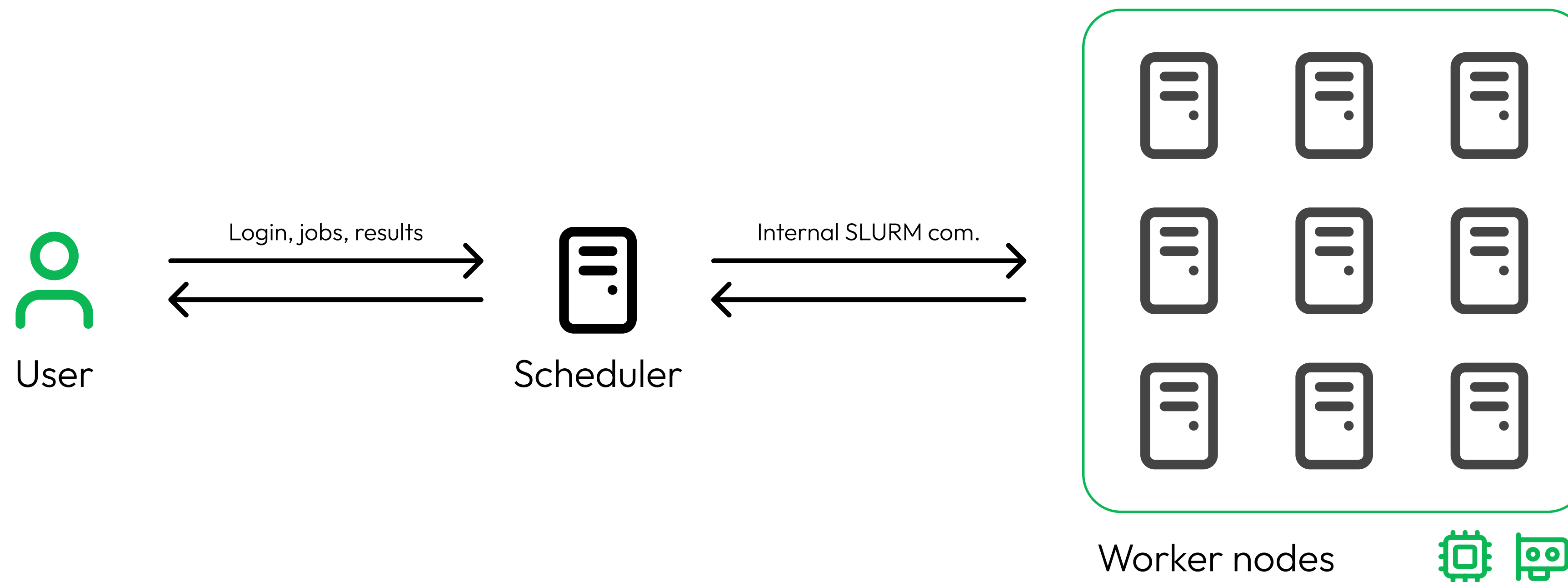
10k
GPU hours



10 TB
storage

Scheduler & worker nodes

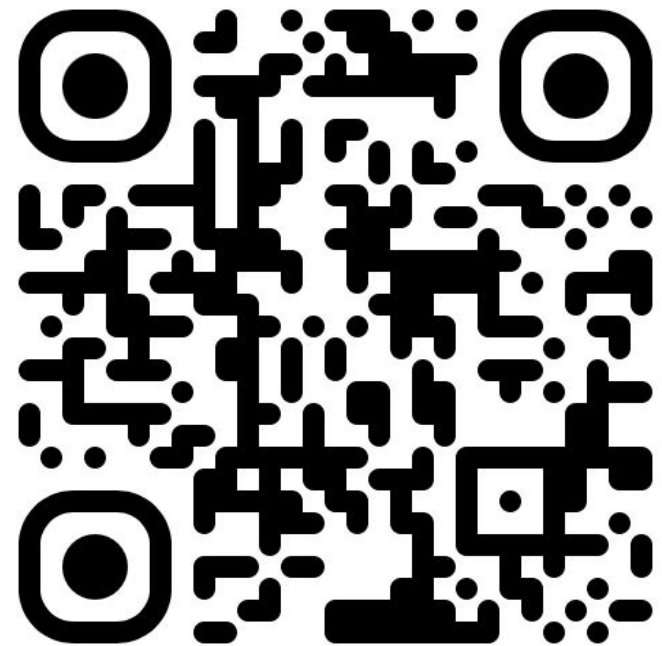
How does SLURM work?



Ready to work?

Get your SSH key on the following URL

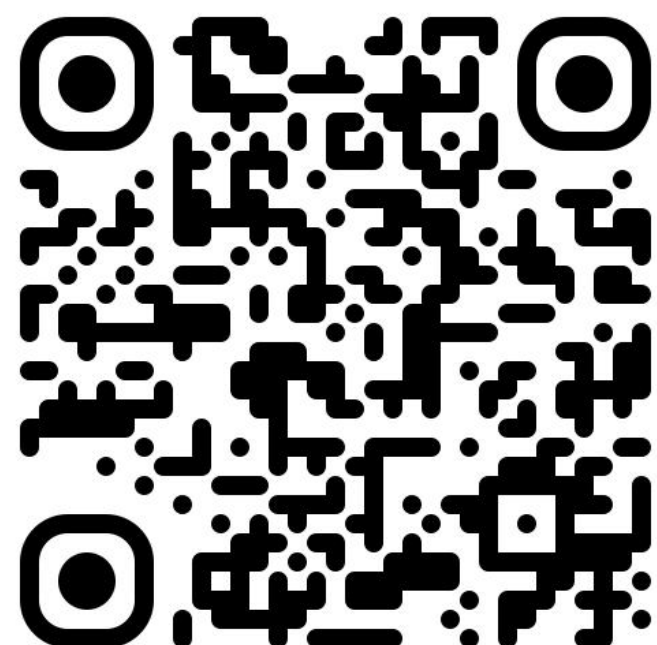
<https://workshop.rubengarrido.pt>



One more thing.

Clone the following repository on your INCD node user using the following command

```
git clone https://github.com/RGarrido03/HPC-Workshop.git
```



Applications running in containers

In a real-life analogy, it's as if each application in Docker were a package in a shipping container.

- ⚙️ Independent of the operating system
- 📦 Abstraction from the infrastructure
- 📶 Greater consistency
- 📈 Better performance compared to VMs

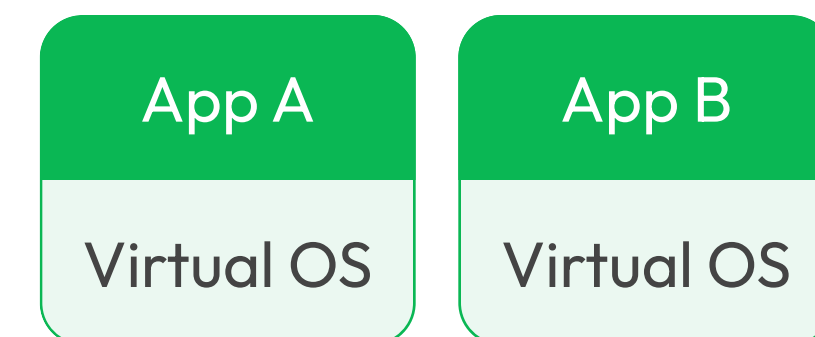


Docker Engine

Host OS

Infrastructure

Docker



Hypervisor

Host OS

Infrastructure

VM

Compared to Docker, **udocker** offers some advantages in this context



Does not require
administrator permissions



Executed in
user space



Configured by the
user themselves



Suitable
for HPC

Obrigado.

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