Komondor, the Hungarian Breed

National HPC development

Zoltan Kiss, Head of HPC Dpt.
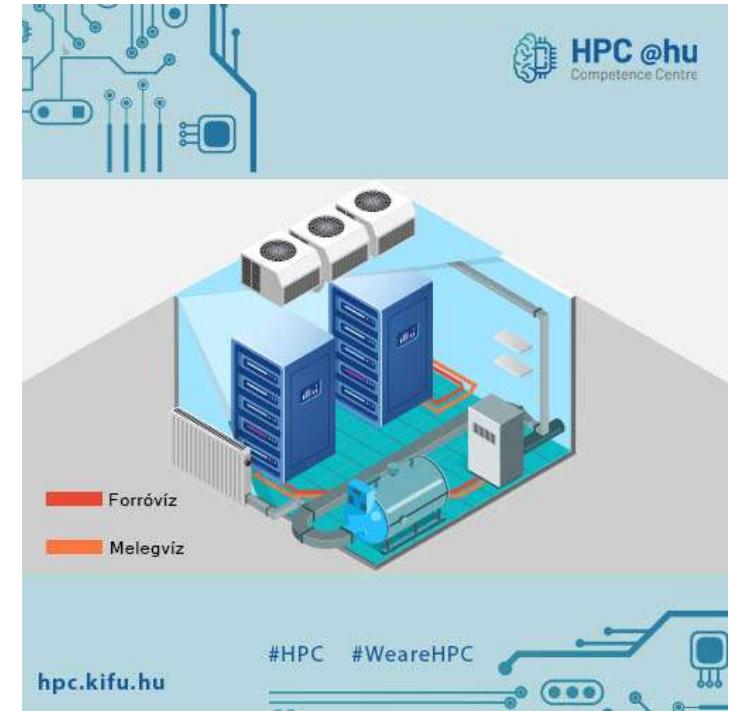
KIFÜ

HPC @hu
Kompetencia Központ
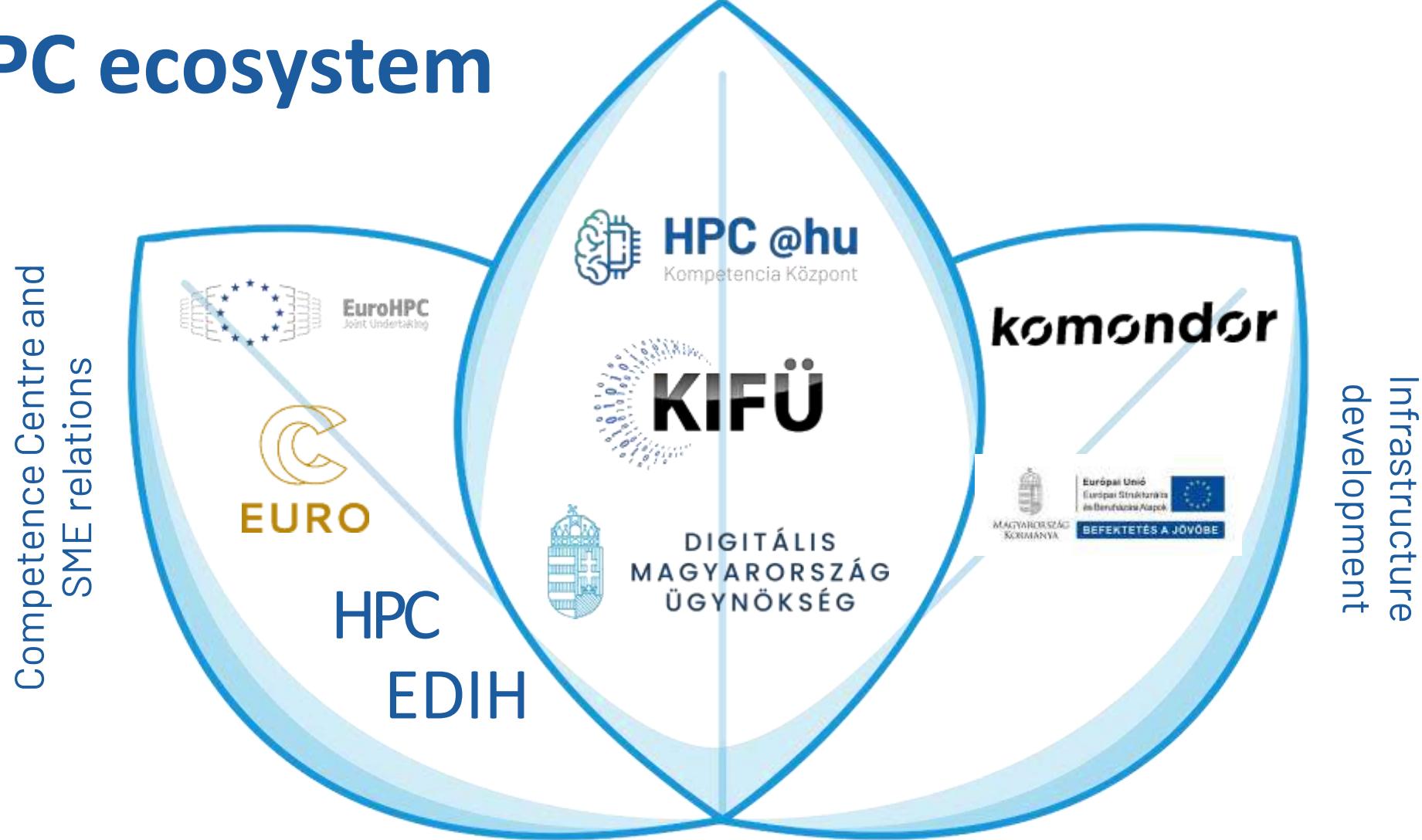
Contents

- About KIFÜ
- DC Technologies
- HPC infrastructure
- Security
- KIFÜ @ CUG
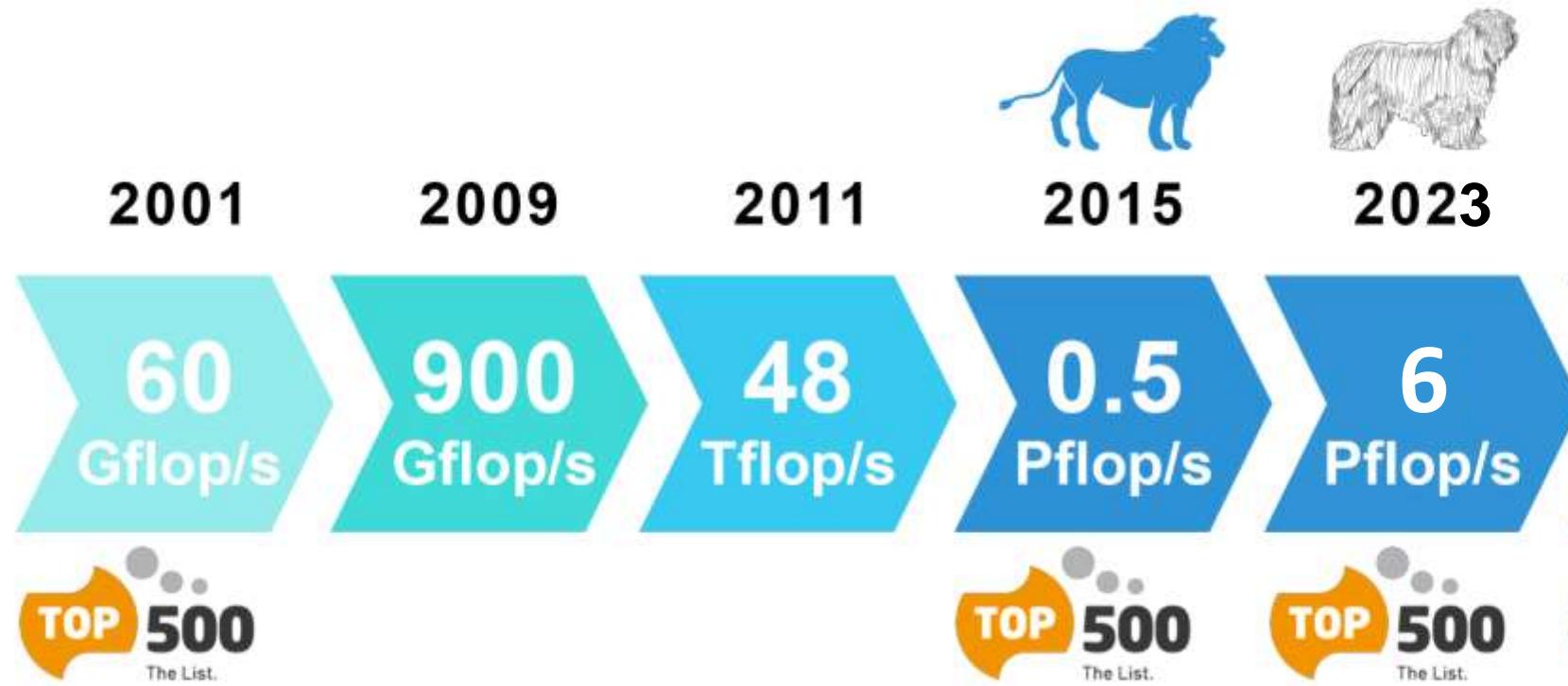
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HPC ecosystem

# 20 years of Hungarian HPC

Green DC

WASTE HEAT REUSE – swimming pool

- 1 MW capacity - 330 kW current peak
- 2x Jaeggi ADC 2x4 32C temp
- ARCS closed rack for air cooling
- Award winning building designer
- In Debrecen Campus

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It was a long labour, but worth it HPC @hu
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TOP 199 HPC in the World

komondor

TOP 500 The List.
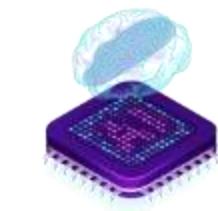
20 000+ CPU mag	200+ GPU		4x	10 PB
		Big Data 12 TB memória	8GPU/node	Tape
CPU 0.9 petaflops	GPU 4.6 petaflops			3 PB
				Project + scratch
CPU	**GPU**	**BIG DATA**	**MI**	**STORAGE**
23 552 core	**232 GPU**	**12 TB**	**20 AI PF**	
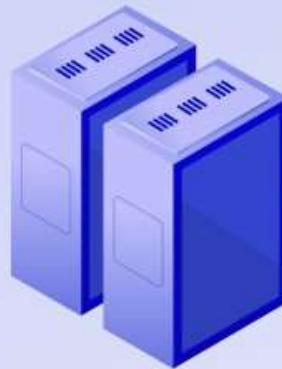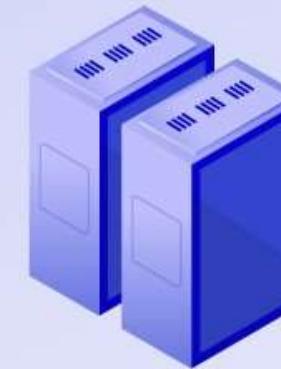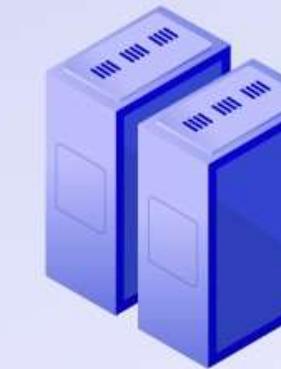
CPU only partition

184 nodes, each contains 2 pcs of 64-core AMD EPYCTM 7763 (Milan) CPU and 256 GB RAM (all together 23552 core), 200 Gb/s Rpeak=0.9+ PF
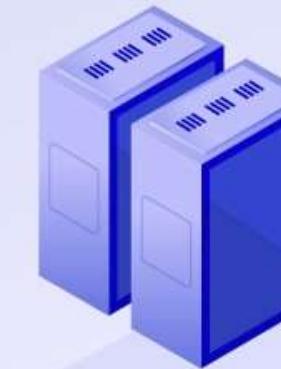
Accelerated (GPU) partition

58 nodes, each contains 1 pc of 64-core AMD EPYCTM 7763 (Milan) CPU and 256 GB RAM and 4 pcs NVIDIA A100 GPU (all together 232 pieces GPU), 2 x 200Gb/s Slingshot interconnect Rpeak=4.6+ PF
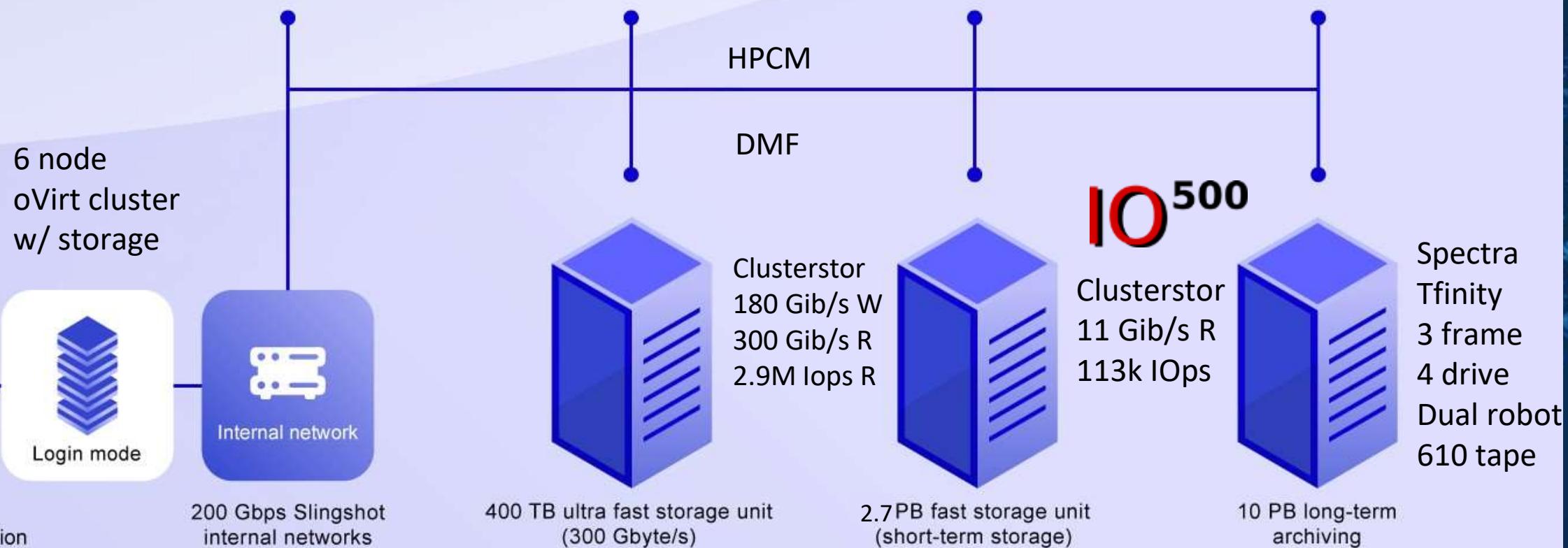
Artificial Intelligence (AI) partition

4 nodes (HPE Apollo 6500 Gen10Plus), each contains 2 pcs of 64-core AMD EPYC TM 7763 (Milan) CPU and 512 GB RAM and 8 pcs NVIDIA A 100 GPU (all together 32pcs GPU), 2x200Gb/s Slingshot interconnect Rpeak=0.6+ PF
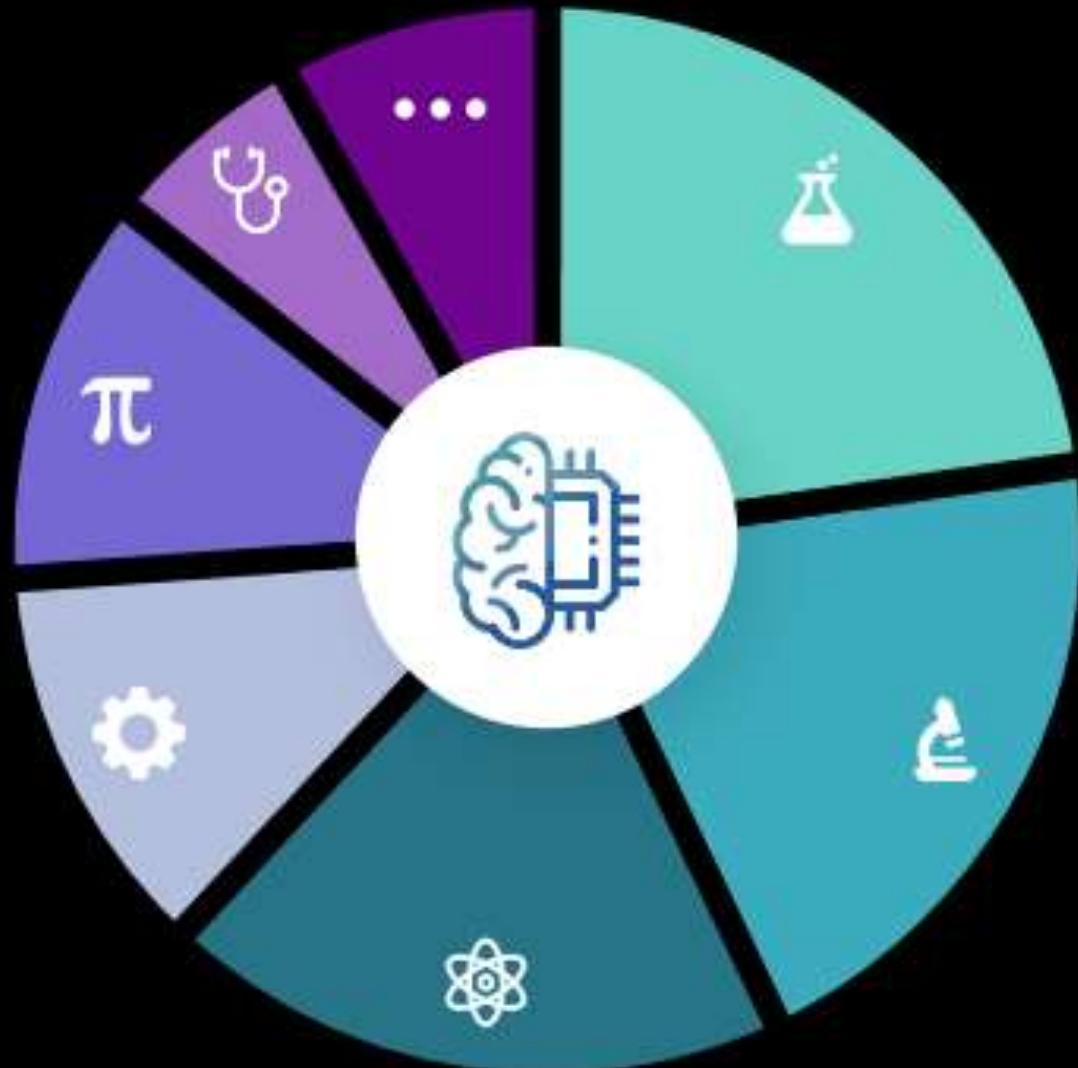
Big Date (Data Analytics) partition

1 node (SMP/NUMA), 16pcs 18-core Intel® Xeon® Gold 16 CPU (all together 288 core) and 12 TB RAM, 2 TB SSD, 2x200Gb/s Slingshot interconnect Rpeak=30 TF

HPCM

DMF

6 node
oVirt cluster
w/ storage

IO⁵⁰⁰

Clusterstor
180 Gib/s W
300 Gib/s R
2.9M Iops R

Clusterstor
11 Gib/s R
113k IOps

Spectra
Tfinity
3 frame
4 drive
Dual robot
610 tape

Login mode

Internal network

200 Gbps Slingshot
internal networks

400 TB ultra fast storage unit
(300 Gbyte/s)

2.7 PB fast storage unit
(short-term storage)

10 PB long-term
archiving

ction
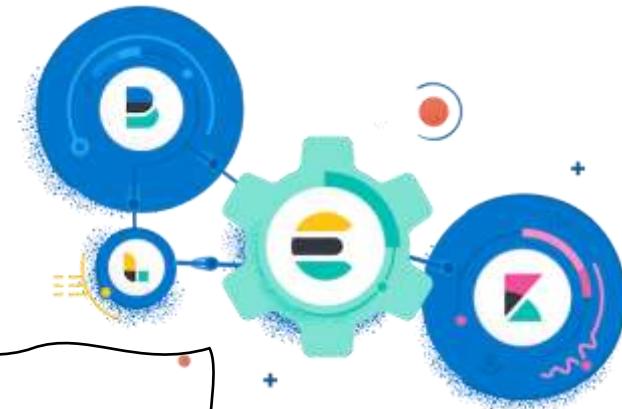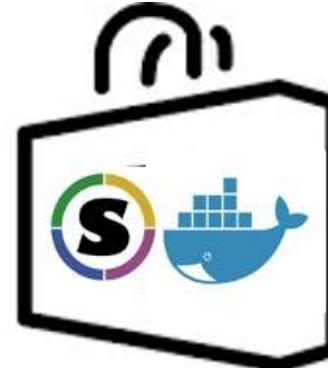
Scientific Disciplines

- 23% Chemistry
- 20% Biology
- 19% Physics
- 12% Engineering
- 12% Mathematics
- 6% Medicine
- 8% Other

Teaching a young dog some new tricks
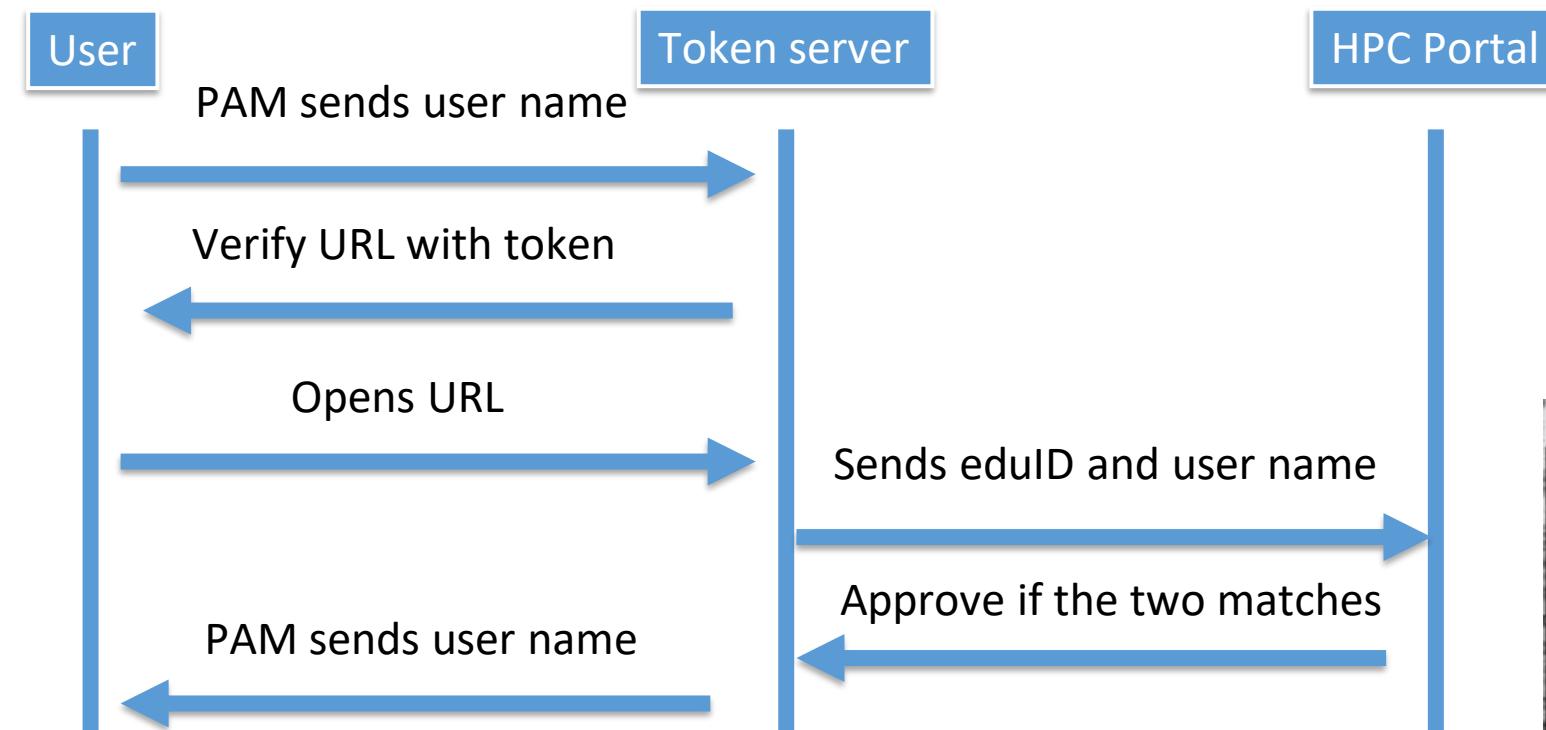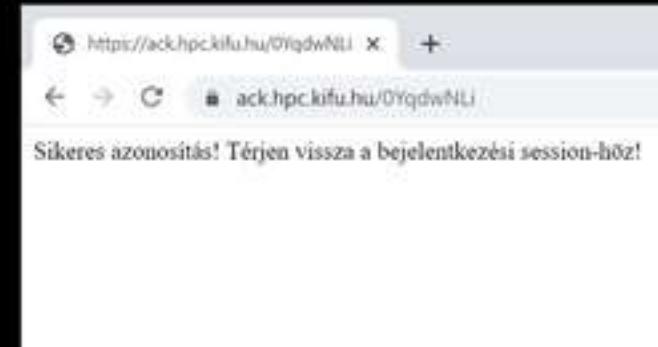
2FA: ssh key and web login
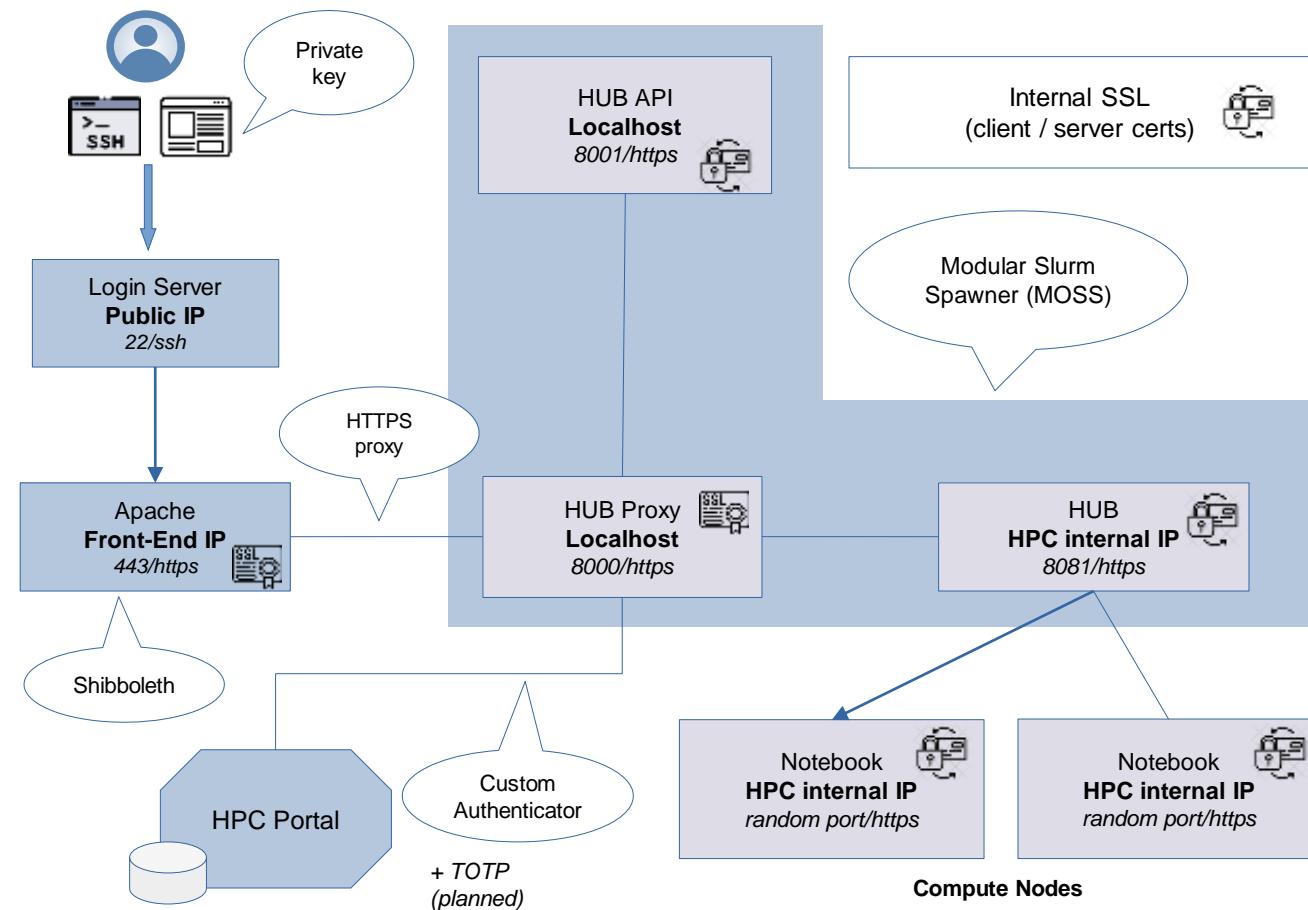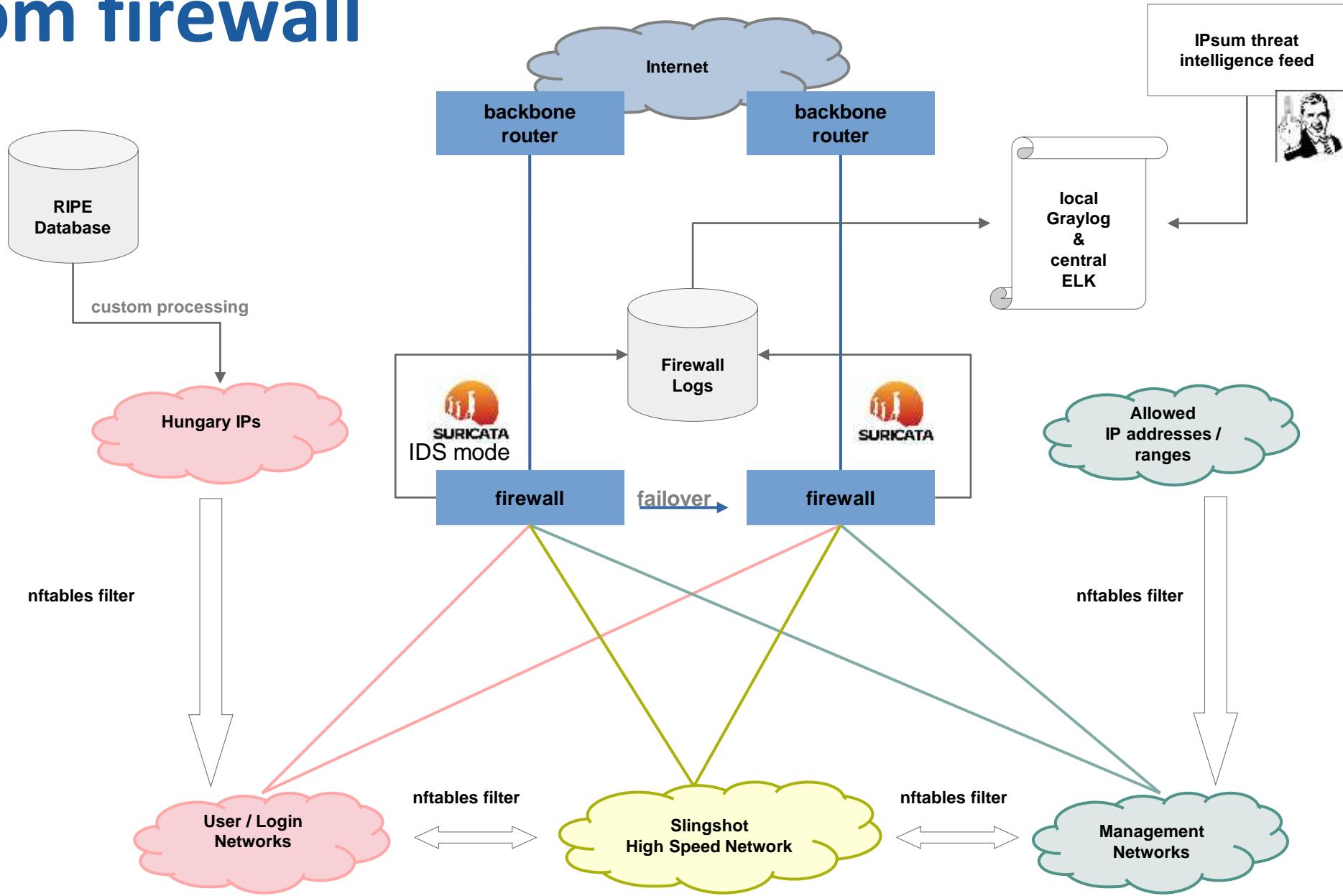
Secure Jupyter

Custom firewall

Things to do in CUG

🧠 See Helsinki

🧠 Learn

🧠 Search for SIG-s (security, storage, slingshot et al.)

🧠 Get connected

🧠 Share findings

🧠 Alert each other bugs/issues

🧠 **HPC @hu**
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Thank you!

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