

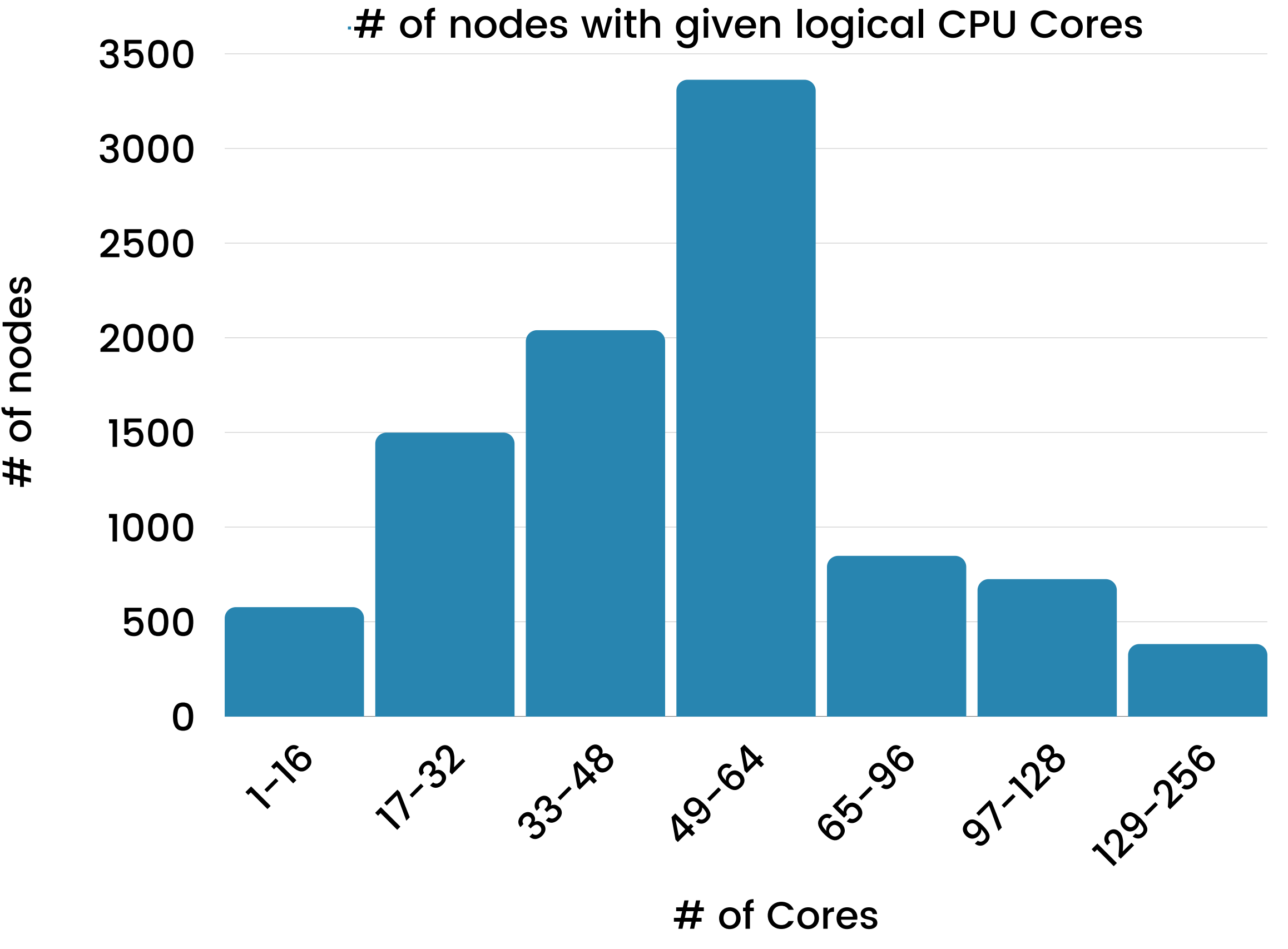
1 PROBLEM

- Existing Grid middleware can only evaluate **few infrastructure attributes** of a worker node^[1]
- A small number of **hardcoded** infrastructure attribute evaluation **limits the possibilities** of job matching
- Introducing a new matching parameter requires a **lot of work**

2 OBJECTIVE

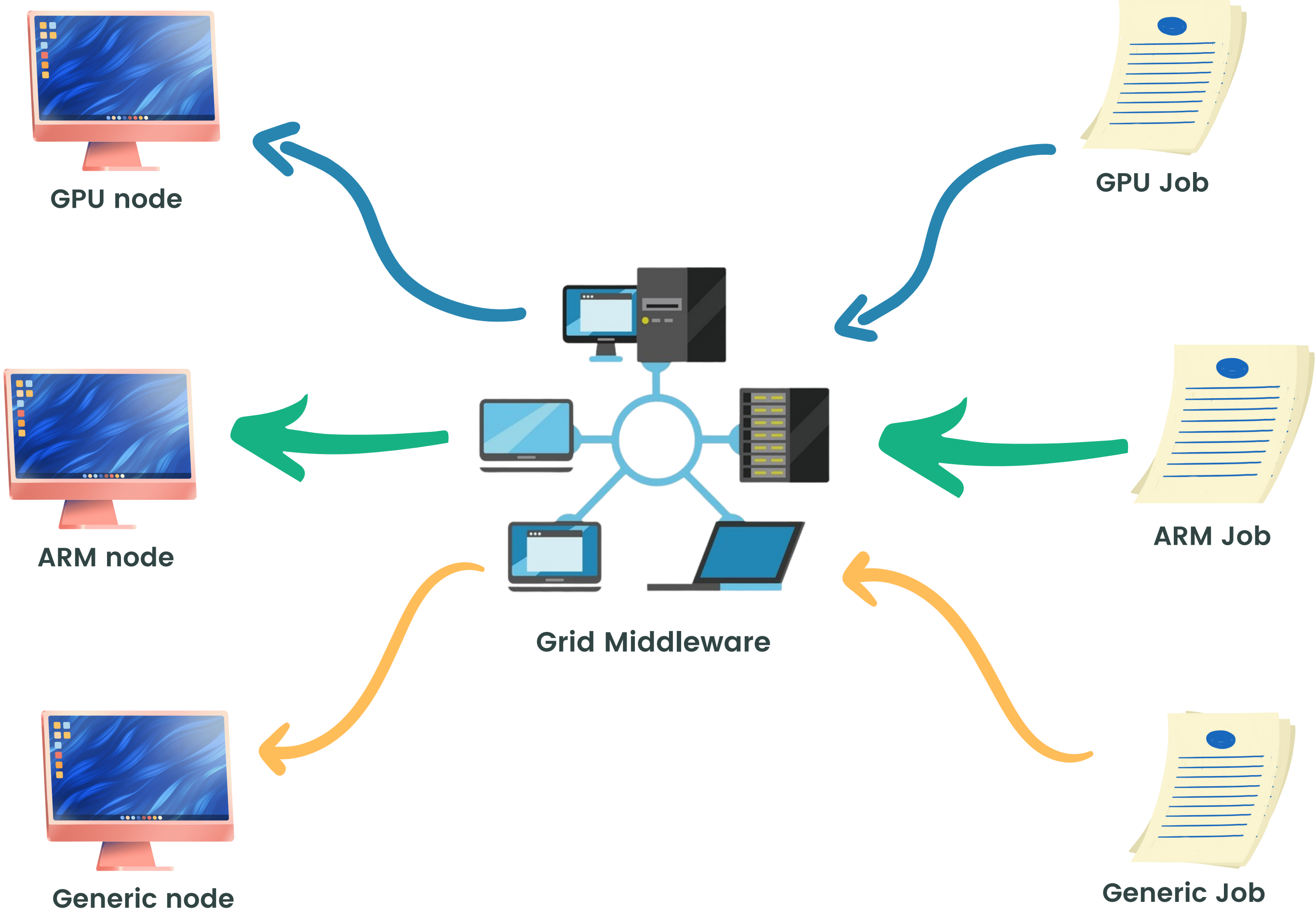
- Introduce **Infrastructure Aware Job Matching** to reduce job failures in the Grid
- Explore the possibility of allowing job matching based on **any infrastructure attribute** of the worker node
- Optimize the Grid middleware to **better target** suitable worker nodes
- Increase **efficiency** of the Grid resource utilization

54 Sites **9443** Shared Nodes **608K+** Logical Cores



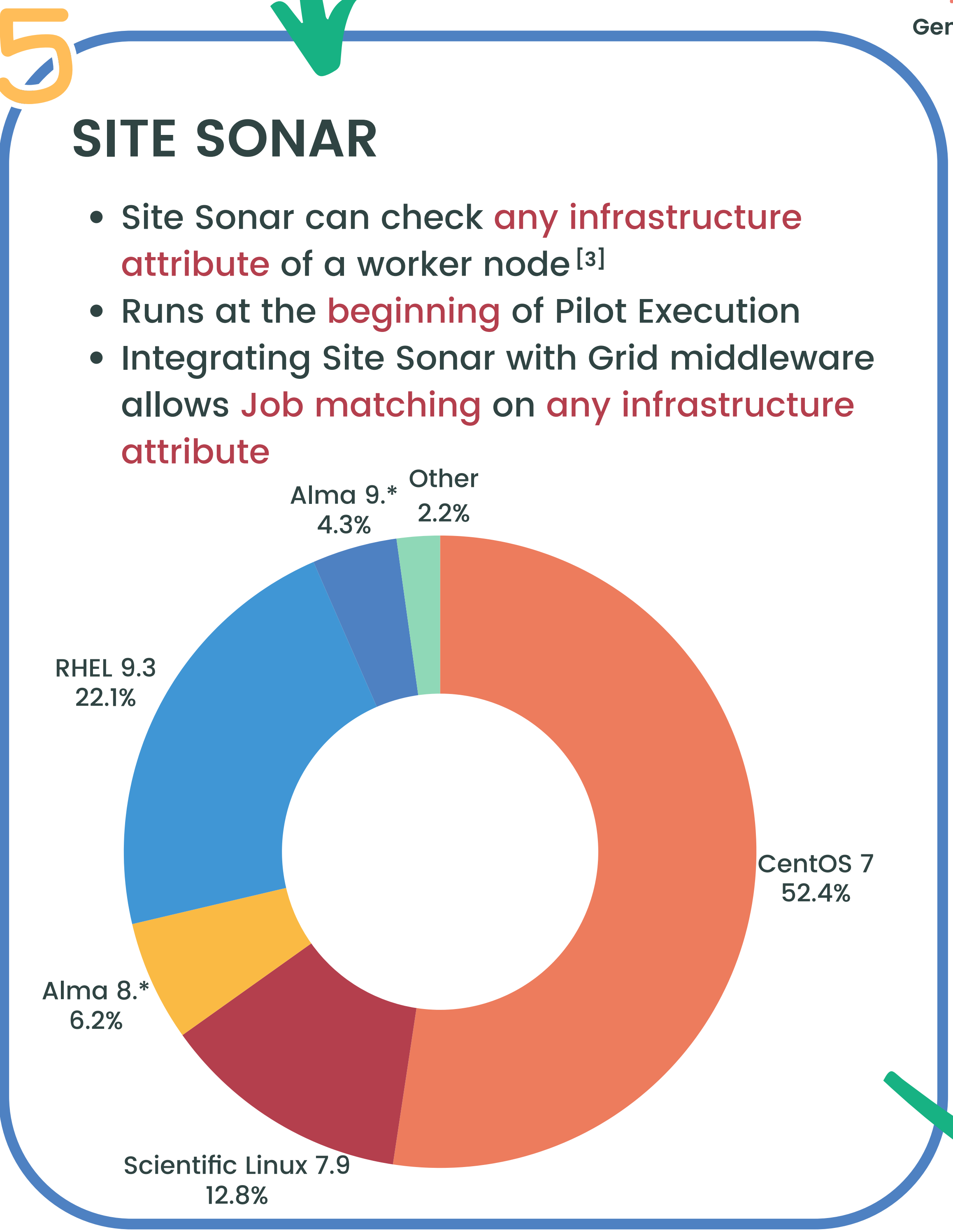
4 RESULT

- Possibility of **changing Job matching** parameters on demand
- Ability to run **GPU specific jobs** on GPU equipped nodes, **ARM optimized jobs** on ARM nodes etc.
- More **efficient resource usage**
- Less job failures** due to incompatible resource matching

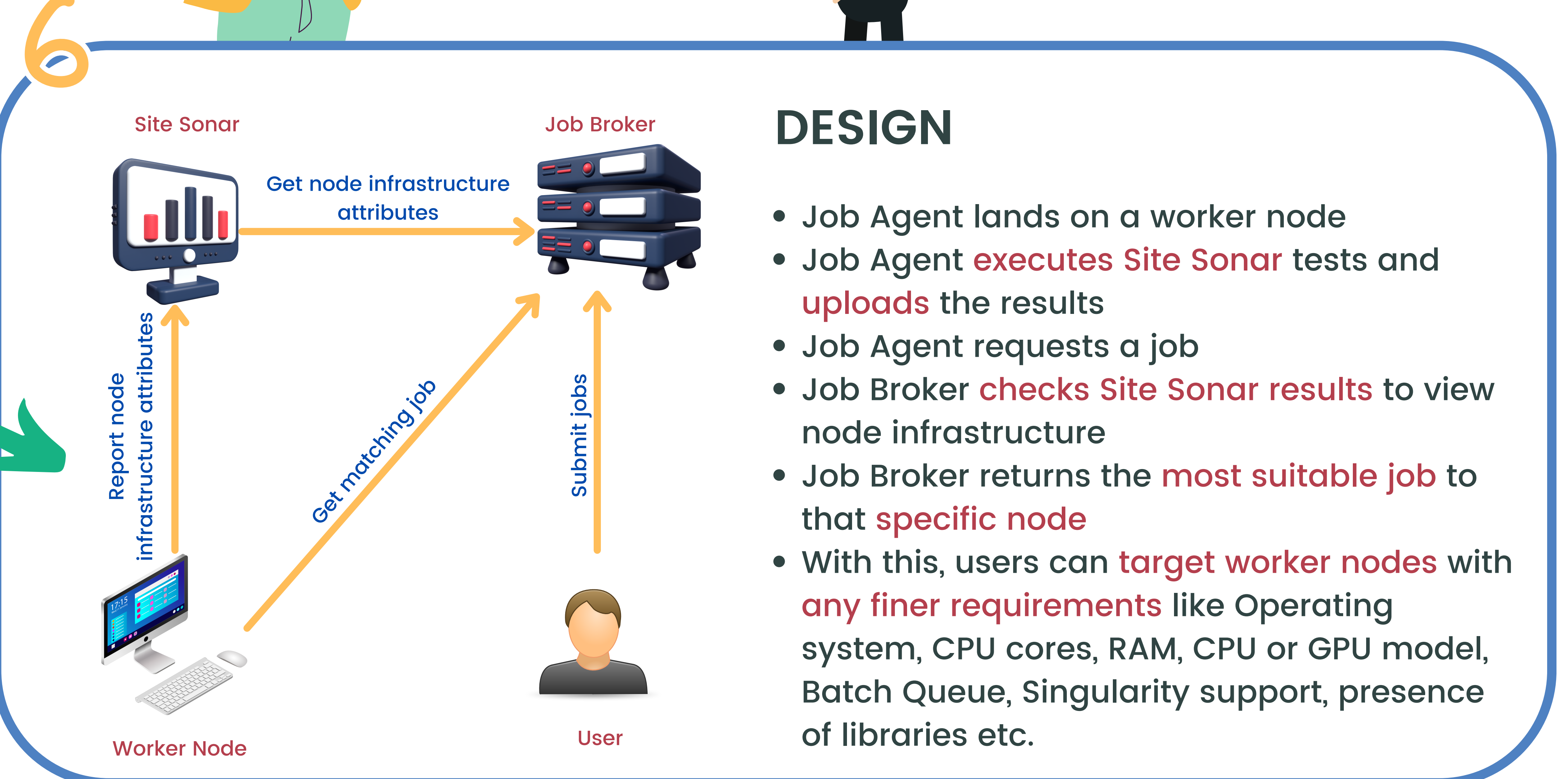
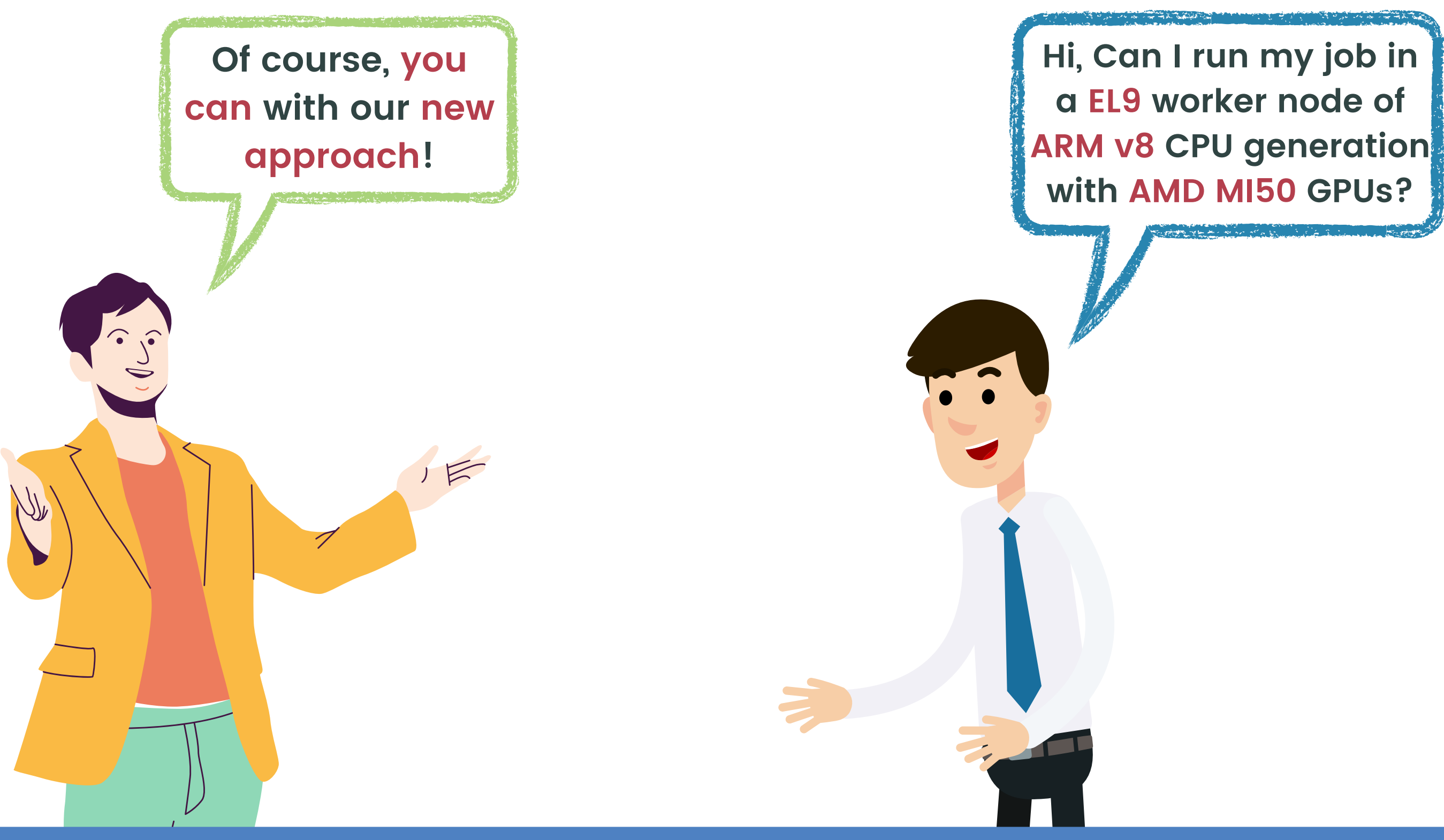


3 REQUIREMENT

- Grid is becoming more **heterogeneous** with diverse resources
- Users are more focused on **specific infrastructures**
- We should allow **more specific worker node targeting**
- We can use **data from Site Sonar** to do that^[2]



11 Operating Systems
118 CPU Models
36 Probes
220+ Parameters/node



REFERENCES

[1] https://indico.jlab.org/event/459/contributions/11473/attachments/9433/14185/ALICE_Grid_CHEP2023_2.pdf
 [2] https://indico.jlab.org/event/459/papers/11495/files/965-Site_Sonar_CHEP_revised.pdf
 [3] <https://gitlab.cern.ch/jalien/site-sonar>